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# Risk and Protective Factors of Problem Behaviors among Ethnic Minority Adolescents

Yoonsun Choi

A dissertation submitted in partial fulfillment
of the requirements for the degree of

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Abstract

Risk and Protective Factors of Problem Behaviors
among Ethnic Minority Adolescents

Yoonsun Choi

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A significant proportion of youth in the United States experience problem behaviors such as interpersonal violence, delinquency, substance use, and risky sexual behavior. These problem behaviors are highly and positively associated with negative mental health and other developmental outcomes. While many studies of youth outcomes have focused on ethnic majority youth, studies that have included ethnic minority youth frequently have neglected ethnic groups other than African- and Latin Americans. Consequently, although Asian Americans and mixed race youth are one of the fastest growing ethnic groups in the U.S., they remain as the least studied groups of people. Similarly, a large number of ethnic minority youth are immigrants, yet there is little understanding about how immigrant status affects development.

There is a dearth of theoretically guided research upon which to base the development of appropriate interventions to prevent or reduce problem behaviors among minority youth. This dissertation research will elaborate and test factors particularly pertinent to minority youth development upon which later preventive interventions can be based. This study utilizes the Social Development Model, a theory

that integrates a risk and protective factor approach to explain behavior problems in youth.

The dissertation research seeks to describe and compare rates and patterns of substance use and violent behaviors by race/ethnic groups, immigrant status, and by age, gender, and low income status; investigates whether ethnic identity and/or the subjective experience of racial discrimination are associated with rates and patterns of problem behaviors; test the Social Development Model (SDM) with an emphasis on the model's exogenous variables to explain problem behaviors among youth; and determine whether the SDM explains problem behaviors among youth equally well across different ethnic/racial groups and for immigrant and non-immigrant youth.

There is a need to better understand the factors and mechanisms that are contributing to maladaptive developmental processes, as well as to understand those factors and mechanisms that buffer risk. Knowledge from this study can lead to the development of appropriate interventive targets for each race/ethnic group that reduce problem behaviors and enhance resiliency among ethnic minority youth.

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To my mother

# CHAPTER I INTRODUCTION

## YOUTH PROBLEM BEHAVIORS & PREVENTION

It is estimated that about one half of youth aged 10 to 17 engage in problem behaviors such as delinquency, interpersonal violence and other serious crimes, substance use, and risky sexual behavior (Bogenschneider, 1996; Brooks-Gunn & Paikoff, 1993; CDC, 1996; CDC, 2000; Dryfoos, 1998; Gibbs, 1990; Graber, Brooks-Gunn, Paikoff, & Warren, 1994; Hawkins et al., 2000). A significant proportion of youth also experience mental health related problems such as depression, suicide, and eating disorders (Dryfoos, 1990; Gibbs, 1990; Graber et al., 1994; Liu et al., 1990; Wyche & Rotheram-Borus, 1990), as well as school dropout or failure (CDC, 2000; Panel on High-Risk Youth, 1993; Sabogal et al., 1987; Steinberg et al., 1996). Despite the evidence that the prevalence of some problem behaviors is declining, a significant number of youth continue to engage in behaviors that place them at risk (CDC, 2000). In addition, the impacts of problem behaviors among youth are not limited to adolescence. Although the frequency and severity of some problem behaviors, especially violent and delinquent behaviors, tends to decrease after adolescence and young adulthood (Moffitt, 1993), it is also true that some problem behaviors established during youth, such as substance abuse, are extended into adulthood (CDC, 2000). The prevalence and severity of youth problem behaviors call for attention.

Over the past two decades, etiological studies have tried to determine the origins and pathways of problem behaviors of youth (Bogenschneider, 1996; Hawkins

et al., 1992a; Hawkins et al., 2000; Newcomb et al., 1986). Several factors have been identified that distinguish between those with positive developmental outcomes and those with adverse outcomes (Bogenschneider, 1996; Brooks-Gunn & Paikoff, 1993; Hawkins et al., 1992a; Mufson, Moreau, Weissman, & Klerman, 1993; Newcomb, 1996; Yoshikawa, 1994). Factors associated with greater potential for problem behaviors are called "risk" factors. Factors that mediate or moderate the potential negative effects of risk are called "protective" factors. Preventive interventions can be developed to target those identified risk and protective factors to prevent adverse outcomes among youth (Bogenschneider, 1996; Hawkins, Catalano, & Miller, 1992a; Hawkins et al., 2000).

This dissertation study seeks to investigate risk and protective factors of problem behaviors among early adolescents, with special focus on ethnic minority youth. Specifically, this study seeks to better understand the familial and environmental factors that promote resilience and reduce the risk of problem behaviors among early adolescents, and that serve to inform the development of age- and culturally appropriate preventive social work interventions that support the healthy development of those children within an ecological context.

## ETHNIC MINORITIES - A GROWING AND DIVERSE POPULATION

The United States is undergoing one of its most profound demographic changes (Edmonston & Passel, 1994; Rumbaut, 1997a). By the year 2050, it is projected that non-Latino whites will account for barely one half of the American population, whereas ethnic minorities will account for 47% of the total population (US Census,

2000). It is estimated that between the years 2000 and 2010, specific ethnic minority populations will increase quite dramatically (e.g. the projected rates of increase are Asian/Pacific Islander American 42%, Latino American 30%, Native American 13.7%, and African American 12.4%) in contrast to a small increase in the non-Latino white population (2.8%)). The increase in the proportion of ethnic minorities is more prominent among adolescents and young adults. By the year 2010, it is projected that the population of adolescents and young adults age between 14-24 will be comprised of 60.4% non-Latino whites and 39.6% ethnic minorities (17.2% African American, 15.9% Latino American, 5.6% Asian Pacific Islanders Americans, and 0.9% Native Americans).

A large number of ethnic minority youth are immigrants or children of immigrants. The recent and projected increases in the proportion of racial and ethnic minorities in the U.S. population are primarily driven by higher immigration rates of minorities, compared to that of non-Latino whites. The number of foreign-born exceeded 28.4 millions which is 10.4% of the total population in the 2000 census and the majority of new immigrants are either from Asia or Latin America. It is projected that by the year 2010, children of immigrants alone will account for 22 percent of the school-age population. By 2040, one in four Americans will be an immigrant or a child of an immigrant.

Despite the growing size and diversity of the ethnic minority youth population, there is a dearth of theoretically guided research upon which to base the development of age- and culturally appropriate interventions to prevent or reduce problem

behaviors among minority youth (McLoyd, 1998). While many studies of youth outcomes have focused on white youth, studies that have included ethnic minority youth frequently have neglected ethnic groups other than African- and Latin Americans (Kandel, 1995; Newcomb, 1996; Wallace et al., 1995). Consequently, although Asian/Pacific Islanders are one of the fastest growing ethnic groups in the U.S., they remain one of the least studied groups of people (Kim, 1995). Mixed race children and mixed race adolescents are in a similar situation. Their numbers have been growing rapidly, especially during the last two decades (Bean, Cushing, Haynes, & Hook, 1997), but it is often the case that they are not regarded as a distinct group despite their distinct needs and situations (Brown, 1990; Overmier, 1990; Wardle, 1991). Thus, little is known about the determinants and consequences of problem behaviors in these ethnic minority groups. Further, study findings reveal dissimilarities across ethnic groups in terms of epidemiological rates of problem behaviors, and etiology for such behaviors (Newcomb, 1996).

There is also a lack of research specifically focused on immigrant youth and their developmental outcomes. Immigrant youth are frequently not distinguished from non-immigrant youth, even in studies of Hispanic and Asian youth, whose groups include the largest numbers of recent immigrants. This, in turn, can provide unclear or sometimes contradictory results because immigrant and non-immigrant youth have fundamental differences in factors, such as language familiarity, level of acculturation, sense of ethnic identity, and family context (Chavez & Roney, 1990), that may be related to problem behaviors.

To address these issues, this dissertation study examines the rates and patterns of problem behaviors among various ethnic/race groups of youth (African Americans, Asian Pacific Islander Americans, and mixed race Americans) in comparison to white, and immigrant youth in comparison to non-immigrant youth, and seeks to investigate risk and protective factors for problem behaviors, that are relevant to ethnic minority and immigrant youth; for example, ethnic identity and experiences of racial discrimination.

This dissertation is structured as follows. Chapter 2 reviews the theoretical foundation for this dissertation research, including social and contextual factors of problem behaviors, etiology and prevention of problem behaviors, and the Social Development Model and its applicability to explain problem behaviors in ethnic minority and immigrant youth. Chapter 3 describes the methods used in this study; including an overview of the Minority Youth Health project from which the data were obtained, the sample selection process, a sample description, description of the measures, and the data analysis strategy. Results from the data analyses are presented in Chapter 4. Lastly, in Chapter 5, the summary of findings, discussion, implications for social work practice and preventive interventions, and limitations of the study are discussed.

# CHAPTER II THEORETICAL FOUNDATION

This dissertation study is an attempt to fill the gaps and address issues in research on ethnic minority and immigrant youth. Despite the growing size and diversity of the ethnic minority population, there is a dearth of prevention research on ethnic minority and immigrant adolescents. Asian Pacific Islanders and mixed race Americans are particularly understudied groups. In addition, there have been dissimilarities in prevalence findings on problem behaviors across ethnic groups. Accordingly, this study seeks to expand research on ethnic minority adolescents, including Asian/Pacific Islanders and bi- or multi-race Americans. This study also seeks to expand research on immigrant youth. The gaps in epidemiological and etiological studies have resulted in a lack of empirically evaluated and culturally appropriate intervention programs. Thus, this dissertation study is an attempt to serve to inform the development of appropriate preventive social work interventions that support the healthy development of those children within an ecological context.

This chapter reviews the theoretical foundation of the dissertation research. First it reviews social and contextual factors related to problem behaviors among youth. The importance of these factors in understanding ethnic minority youth and immigrant youth is then discussed. Secondly, theories on the etiology of problem behaviors and their applicability to ethnic minority youth are reviewed. Ethnic identity and subjective experience of racial discrimination are discussed, as they are salient issues for ethnic minority youth. Lastly, the Social Development Model (Catalano &

Hawkins, 1996), the theoretical model that is used in this study is introduced followed by a summary of the dissertation study.

## Social & Contextual Factors of Problem Behaviors

Scholars have proposed various theories to understand adolescent development and youth problem behaviors. Adolescence is frequently described as a period of upheaval and turmoil. G. Stanley Hall, the first psychologist to advance a study of adolescent development, described adolescence as a period of "Sturm und Drang (storm and stress)". He believed that the storm and stress of development is universal and inevitable. Blos (1962) theorized that oppositional, rebellious, resistive, extreme, and experimental behaviors are results of sexual and physical development during this period of development, and that those behaviors are necessary for the establishment of autonomy. Alternatively, Erikson (1968) posits that identity confusion is the reason for youth problem behaviors. He states that identity must be explored and acquired by sustained individual efforts, to avoid role diffusion and identity confusion. Others agree that role diffusion and identity confusion may lead to delinquent behaviors, such as substance use and violent behaviors among adolescents (Erikson, 1968; Muuss, 1996; Phinney, Lochner, & Murphy, 1990; Rumbaut, 1996).

In addition to those psychological and individual constitutional factors, some scholars have proposed contextual theories to locate external and environmental factors that contribute to youth problem behaviors (Bandura, Ross, & Ross, 1963;

Bandura & Walters, 1959; Bandura & Walters, 1963; Benedit, 1934; Bronfenbrenner, 1976; Bronfenbrenner, 1990; Mead, 1950; Ogbu, 1981; Rutter, Champion, Quinton, Maughan, & Pickles, 1995). In fact, substantial attention has been paid to the importance of contextual factors in recent years (Bogenschneider, 1996; Bronfenbrenner, 1990; Brooks-Gunn & Attie, 1996; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Dryfoos, 1998; Eccles et al., 1993; Garbarino & Abramowitz, 1992a, 1992c; Gibbs & Huang, 1989; Ogbu, 1981; Steinberg & Darling, 1994; Steinberg, Dornbusch, & Brown, 1992). Many researchers concerned with adolescent development concur with the importance of context for understanding adolescents and their behaviors (LaFromboise, Coleman, & Gerton, 1993; Montgomery, 1996; Ogbu, 1981; Rutter et al., 1995; Slaughter-Defoe, Nakagawa, Takanishi, & Johnson, 1990; Tuan, 1995). Bronfenbrenner (1976) states "development never takes place in a vacuum, it is always embedded and expressed through behavior in a particular environment" (p27). His ecological perspective focuses on interactions between individuals and their environment, taking into account both the interrelationship of the growing organisms and the ever-changing social and physical environment (Bronfenbrenner, 1976). Ogbu (1981) proposes a cultural ecological perspective to avoid examining youth and their families in a micro setting and/or in an ethnocentric paradigm. He defines cultural ecology as a framework for broadening our conception of environmental influences on competences and its acquisition. Ogbu (1981) criticizes researchers for their preoccupation with events in micro settings because it results in an inability or unwillingness to examine the impact of social, economic, and political

systems, in which adolescents live and perform. Rutter and his colleagues (1995) also argue that children's development must be understood in context and that growth takes place in a social context, influenced by individual factors as well as a person's interactions and transactions in that social context. Despite the crucial effects of contextual factors in youth development posited by these theories, there is a paucity of empirical research examining such effects. This dissertation is an attempt to begin filling this gap by examining the relationship of social and contextual factors to youth problem behaviors.

## ETHNIC MINORITY YOUTH

Scholars studying minority children and adolescents insist that theories must incorporate contextual factors, specifically related to race and ethnicity, in order to provide an adequate understanding of minority youth development and their problem behaviors (Ogbu, 1981; Phinney & Alipuria, 1990; Phinney et al., 1990; Spencer, Swanson, & Cunningham, 1991). As minority youth go through physical, cognitive, emotional, and social changes related to adolescence, the issue of being different in terms of physical appearance, cultural values, belief systems, and attitudes becomes more salient, and may exacerbate puberty-linked insecurities and vulnerabilities (Gonzales & Cauce, 1995; Gustavsson & Balgopal, 1990; Spencer & Dornbusch, 1993; Spencer et al., 1991). In particular, if one belongs to a "disfavored" ethnic minority group, he or she might be constantly reminded of one's negative image within the eyes of the larger society (Gonzales & Cauce, 1995; Gustavsson & Balgopal, 1990; Spencer &

Dornbusch, 1993; Spencer et al., 1991). Spencer and Dornbusch (1993) observe that school age minority children must confront white culture and its values, and biases at school. They explain that schools support a white middle class culture, classroom contexts are not adapted to different learning styles, minority youth are evaluated by tests that are often culturally biased, and teachers may have negative stereotypes of minority children. They argue that ethnic minority youth become more aware of these situations as they enter or go through adolescence. At the same time, as minority adolescents expand the scope of their social relationships and contacts, they are more exposed to experiences of societal prejudice and discrimination. With cognitive maturity, they are better able to recognize negative evaluations made by the majority society. The experiences of injustice, societal inconsistency, and denial of personal competence represent what minority youth often encounter in this society (Spencer et al., 1991). Thus, it is argued that these contextual risk factors may place ethnic minority youth than majority youth at a greater risk for problem behaviors.

## IMMIGRANT YOUTH

One major issue facing immigrant youth is adaptation to a new country. This adaptation involves cultural, social, economic, and political dimensions (Zhou, 1997b). While going through adaptation, immigrant adolescents also face developmental issues and challenges as they go through adolescence (Matsuoka, 1990). Immigrant youth, particularly those who are ethnic minorities, encounter multiple risks and challenges as they deal with issues derived from both being minority and immigrant.

Portes and his colleagues emphasize the importance of the societal context to which immigrant youth are being incorporated. They argue that American society is segregated and immigrants settle into diverse and unequal segments of this society (Portes, 1995a; Portes, 1995b; Portes, 1997; Rumbaut, 1996; Zhou, 1997b; Zhou & Bankston, 1996; Zhou & Bankston, 1998). A disproportionate number of immigrants, in fact, are concentrated in inner cities where poverty is perpetuated. Portes and Zhou view class as the most crucial factor in determining the types of neighborhood, school and peers, which in turn has direct implications for the adaptation of children. In addition, they hypothesize a link between class and race. They maintain that, as "color status" plays a critical role in determining one's socioeconomic status, the majority of contemporary immigrants who are non-white have diminishing chances for upward mobility (Portes, 1995a, 1995b; Portes, 1997; Zhou, 1997; Zhou & Bankston, 1996, 1998).

However, there is a lack of understanding of how immigrant adaptation relates to a variety of immigrant outcomes, and studies report inconsistent findings on the relationship between immigrant status and various outcomes. For instance, some argue that the process of acculturation can be fraught with difficulties. Studies have shown that the adaptation process for immigrants is associated with resettlement stress or culture shock, depressive symptoms and/or major depression (Lin, Masuda, & Tazuma, 1982; Rumbaut & Rumbaut, 1976). It is reported that immigrant youth are vulnerable to behavioral and psychological problems (Pawliuk et al., 1996), school dropout or failure, street gang membership and violent youth crimes (Bankston & Zhou, 1997; Bankston, Caldas, & Zhou, 1997; Zhou & Bankston, 1998). On the other

hand, others show that immigrant youth (especially the 1.5 or 2nd generation[1] of immigrants) demonstrate positive adaptation such as higher levels of educational aspiration and achievement, lower prevalence and rates of violent and delinquent behaviors and substance use compared to non-immigrant youth (Bankston, Caldas, & Zhou, 1997; Chavez & Roney, 1990; Rumbaut, 1997; Rumbaut, 1997; Zhou, 1997; Zhou & Bankston, 1998). It is imperative to examine what factors lead immigrant youth either to positive or negative outcomes within their environmental, social and cultural contexts.

## ETIOLOGY & PREVENTION OF PROBLEM BEHAVIORS

Prevention scholars have utilized etiological theories and studies of youth problem behaviors to inform interventions to prevent negative youth outcomes. They have attempted to identify potential precursors of dysfunctional or healthy outcomes, respectively called risk and protective factors (Buckner & Cain, 1998; Coie et al., 1993; IOM, 1994). More specifically, risk factors are defined as "those characteristics, variables, or hazards that, if present for a given individual, make it more likely that this individual, rather than someone selected at random from the general population, will develop a disorder" (Marazek et al., 1994, p127). In their observations on risk

---

[1]Rumbaut (1997a) offers classifications of generation among children of immigrants, depending on their age at immigration/arrival at the place of destination: (1) 2nd generation is U.S. born children of immigrant parent(s); (2) 1.75 generation is those who came between 0-5, largely socialized here, whose experience and adaptive outcomes are most similar to the second generation; (3) 1.5 generation is those who came between 6-12; (4) 1.25 generation is who came during their adolescent year (13-17). Scholars tend to use these concepts somewhat arbitrarily such that 1.75 and 2nd are frequently grouped together into 2nd generation, while 1.25 and 1.5 are combined into 1.5 generation. Rumbaut argues these classifications are popularly used (or misused) without clear theoretical underpinnings (Rumbaut, 1997a).

factors, Coie and his colleagues (1993) report that risk factors related to a clinical disorder are complex; the salience of risk factors may fluctuate developmentally; exposure to many risk factors has cumulative effects; and diverse disorders and problems share fundamental risk factors (Coie et al., 1993). A clear understanding of risk factors and the processes by which they produce adverse outcome is needed to specify malleable targets for preventive interventions that can be designed to modify those factors and processes (Reiss & Price, 1996; West & Aiken, 1997). Protective factors are defined as "those factors that modify, ameliorate or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome" (Rutter, 1985). Protective factors may not constitute a positive or beneficial experience; rather, their role is to modify the negative response in the presence of adversity (Rutter, 1985). The goal of preventive interventions is to decrease risk factors and promote protective factors in order to disrupt the processes that lead to human dysfunction and mitigate the effects of risk factors on human development (Buckner & Cain, 1998; Coie et al., 1993; IOM, 1994).

Both risk and protective factors reside in a range of socializing domains, including the family, community, and institution, as well as within individuals themselves. The domains can be categorized into different levels, such as contextual (societal or cultural), interpersonal (e.g. family, school and peer) and individual levels. Table 2.1 presents a summary of risk and protective factors identified in the literature on youth outcomes, such as substance abuse (Hawkins et al., 1992a; Newcomb, 1996), positive youth development (Bogenschneider, 1996), sexual behaviors (Brooks-Gunn &

Paikoff, 1993), depression (Mufson et al., 1993), and delinquent behaviors (Yoshikawa, 1994). Although researchers have identified factors for each specific youth outcome, the factors tend to largely overlap, as suggested by Jessor & Jessor (Jessor & Jessor, 1977). For instance, many of risk factors for substance abuse are also risk factors for delinquent behaviors.

TABLE 2.1. Summary of Risk and Protective Factors

| Level | Risk Factors | Protective Factors |
|---|---|---|
| **Individual** | antisocial behaviors<br>alienation or rebelliousness<br>temperament<br>early initiation<br>genetic vulnerability | intellectural (cognitive) abilities<br>well-developed problem-solving skills<br>self-esteem, self-efficacy<br>well-developed social and interpersonal skills<br>religious commitment |
| **Family** | pooer parental monitoring<br>insecure attachment<br>distant, uninvolved, and inconsistent parenting<br>unclear family rules, expectations, and rewards<br>low family bonding<br>child maltreatment<br>marital/family conflict<br>family alcohol and drug behavior and attitude | close relationship with at least one person<br>family support<br>nurturing parenting<br>parental involvement w/school and community |
| **Peer** | association with peers engaged in risk behaviors<br>peer rejection | close friends who are prosocial |
| **School** | school transitions<br>academic failure<br>low commitment to school | positive school experiences |
| **Neighborhood** | low neighborhood attachment<br>availability of drugs<br>community disorganization<br>high mobility | belonging to a supportive community |
| **Society** | media influences<br>family and community SES<br>laws and norms favorable toward risk behaviors | |

## ETIOLOGY OF PROBLEM BEHAVIORS FOR ETHNIC MINORITY YOUTH

It has been argued that ethnic minority and immigrant youth have different and/or additional factors, or that the factors operate with different timing or in different ecological contexts than for white or non-immigrant youth (Gonzales & Cauce, 1995; Gustavsson & Balgopal, 1990; Spencer & Dornbusch, 1993; Spencer et al., 1991; Zhou, 1997b). For example, minority status and skin color themselves are crucial factors influencing minority youth development and behavior. In general, scholars maintain that minority status in society entails risk for a variety of stresses and psychosocial difficulties, such as identity confusion, poor self-image, and feelings of alienation/marginality, which all may adversely affect youth outcomes (Erikson, 1968; Phinney et al., 1990). A severe handicap is associated with skin color and the effects of continuing racial discrimination are embedded in every aspect of lives (Gonzales & Cauce, 1995; Gustavsson & Balgopal, 1990; Spencer & Dornbusch, 1993; Spencer et al., 1991). Societal factors, such as lack of structural opportunities, discrimination, prejudice and identity difficulties, serve a critical function in minority youth's development (Gonzales & Cauce, 1995; Gustavsson & Balgopal, 1990; Spencer & Dornbusch, 1993; Spencer et al., 1991). The hostile environment is likely to add risks that may affect positive youth outcomes (Ogbu, 1981; Phinney et al., 1990; Spencer et al., 1991). It is critical to incorporate societal factors and the effects of race and ethnicity, such as ethnic identity, the experience of racial discrimination, prejudice, and structural opportunity in theories of development (Gonzales & Cauce, 1995;

Gustavsson & Balgopal, 1990; Spencer & Dornbusch, 1993; Spencer et al., 1991). This dissertation research pursues this aim by investigating whether race and ethnicity, and factors related to ethnicity, such as ethnic identity and/or the subjective experience of racial discrimination, are associated with youth problem behaviors.

## ETHNIC IDENTITY

Ethnic identity is considered as an essential component of the self-concept of ethnic minority adolescents, and a factor that is hypothesized to moderate the relationship between status and adjustment (Garbarino & Kostelny, 1992; Gonzales & Cauce, 1995; Phinney, 1990; Phinney, 1991; Sodowsky, Kwan, & Pannu, 1995). It is a special task for minority youth to develop a positive self and ethnic identity during adolescence and to balance two value systems, that of their own and that of the majority group (Spencer & Dornbusch, 1993). Some studies suggest that, for ethnic minority and immigrant youth, the retention of the cultural values of one's ethnic group and having a strong sense of ethnicity are likely to operate as protective factors in youth development (Bankston & Zhou, 1997; Castro & Morgan-Lopez, 1999; Chavez & Roney, 1990; Gibson, 1995; Goldberg, 1999; LaFromboise et al., 1993; Phinney et al., 1990; Rumbaut, 1997a, 1997b; Steinberg et al., 1996; Zhou, 1997b; Zickler, 1999). For instance, research on Punjabi youth in Northern California shows that children who adhere to their own traditional values and avoid rapid acculturation had higher levels of psychological well-being and academic achievement, in spite of poverty, disadvantaged school location, and parents' lack of education than children who were

more acculturated to the mainstream culture (Steinberg et al., 1996; Zhou, 1997b). Similar findings are reported for Southeast Asian youth in Southern California and Florida (Bankston & Zhou, 1997; Rumbaut, 1997a; Zhou, 1997a, 1997b). The National Institute of Drug Abuse (NIDA) recently reported that adolescents who strongly identify with their ethnic community and culture are less vulnerable to risk factors for drug use (Zickler, 1999). Castro and colleagues report that Mexican American adolescents with strong ethnic pride were more responsive to tobacco preventive intervention programs than those with weak ethnic pride (Castro & Morgan-Lopez, 1999). These studies concur with the notion that strong ethnic identity and retention of one's culture reduce risk and enhance resiliency. Thus, it is hypothesized that ethnic identity operates as a protective factor that buffers the effects of risk on problem behaviors. That is, in the presence of a stronger ethnic identity, exposure to risk will have less negative effect on outcomes than when ethnic identity is weaker.

## Racial Discrimination

Social and cultural contexts include broad ideological and institutional patterns of a particular culture and subculture, ethnic attitudes and behaviors such as racial prejudice, discrimination, and social support (Bronfenbrenner, 1976; Garbarino & Abramowitz, 1992a). This context has a particular importance for ethnic minority youth because the collective experience of an ethnic community has strong social, cultural, economic and political implications for how individual adolescents perceive available options, and how they make choices about their prospects (Birman, 1994).

Race plays a major role in shaping perceptions of opportunity and many nonwhite American's lives are strongly and adversely influenced as a result of their race and national origin (Tuan, 1995). In short, societal factors, such as lack of structural opportunities, discrimination, prejudice, and identity difficulties increase the risk of negative development outcomes for minority youth (Anderson & Armstead, 1995; Gonzales & Cauce, 1995; Gustavsson & Balgopal, 1990; Spencer & Dornbusch, 1993; Spencer et al., 1991; Zhou, 1997).

Although an association between racism and negative outcomes has been postulated, there is a paucity of research empirically examining this claim (Anderson & Armstead, 1995; Johnson et al., 1995). This dissertation research seeks to extend our understanding of the effect of the subjective experience of racism on adverse behavioral outcomes among minority youth, by investigating the association between the experience of racial discrimination and problem behaviors among youth.

## EXAMINING THE SOCIAL DEVELOPMENT MODEL: ITS APPLICABILITY TO EXPLAIN PROBLEM BEHAVIORS IN ETHNIC MINORITY & IMMIGRANT YOUTH

### SOCIAL DEVELOPMENT MODEL

This dissertation research utilized the Social Development Model (SDM) (Catalano & Hawkins, 1996), a general theory of antisocial behaviors of children and adolescents, which builds on social control, social learning and differential association theories (Figure 1). The key features of the SDM are that it incorporates a developmental perspective in which age-specific behaviors are examined; salient

socialization units (such as family, school, community and peer) are examined; etiological processes are identified for different age groups; and a reciprocal process is described, i.e. development in one stage is expected to influence the subsequent developmental stages. It organizes the evidence regarding risk and protective factors of behaviors, and goes beyond individual psychological factors to integrate transactional natures of social interactions. In addition, the SDM incorporates social and environmental factors, examining both meso and macro levels of youth development.

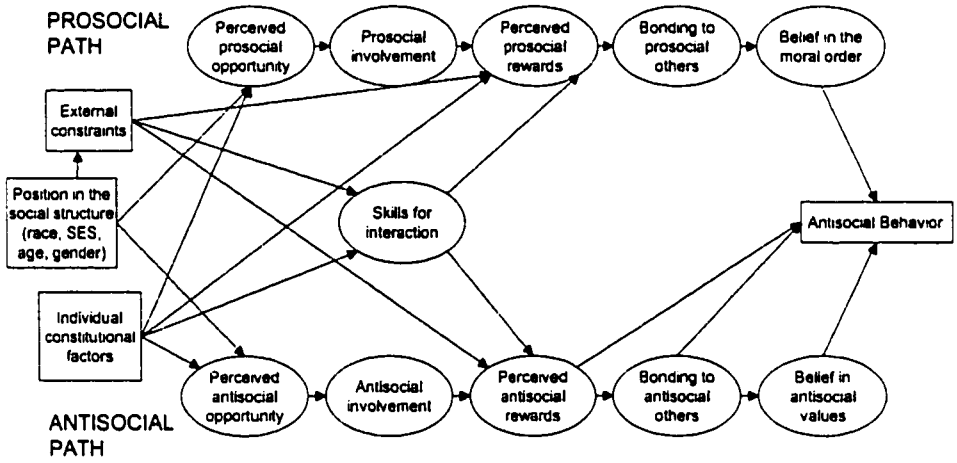


Figure 2.1 The General Social Development Model

The SDM hypothesizes two socialization pathways (Figure 2.1), suggesting that socialization follows the processes of social learning, whether it produces prosocial or antisocial behaviors. Individuals learn patterns of behavior, prosocial or antisocial, in different socializing units or groups (such as family, peer, school and community). With consistent opportunities, involvement, skills for interactions, and rewards, an

individual becomes bonded to the socializing units (Catalano & Hawkins, 1996). Depending on the predominant behaviors, norms, and values held by those to whom the individual is bonded, the child is encouraged to hold pro- or anti-social beliefs and behaviors.

The model has been empirically validated by predicting early antisocial behavior among elementary school children (Catalano et al., 1999). Additionally, it predicted later adolescent substance use (Catalano et al., 1996). The results indicate that the SDM explains outcomes well among the general population during these developmental periods. Additionally, other analyses have examined individual segments of the SDM, providing further support for its validation as an explanatory theory (Battin et al., 1998; Catalano et al., 1996; O'Donnell et al., 1995). The data used for some of these studies include a large number of ethnic minority youth. However, the model has not been tested across different ethnic/racial groups respectively to examine its applicability to ethnic minority youth groups.

According to Catalano and Hawkins (1996), the general model also includes three exogenous variables: (1) position in the social structure; (2) external constraints; and (3) individual constitutional factors. Position in the social structure includes socioeconomic status, age, gender and race. External constraints are formal and informal social reactions to behavior that affect the degree of reinforcement one perceives for involvement in behavior. These external constraints are not the punishments or rewards that one receives, but rather, the explicit rules, laws and norms, and the degree of consistency and immediacy of the sanctions imposed. For

example, during the early adolescent developmental period, family management practices, such as rules, supervision or monitoring and discipline practices, and peer norms represent the dominant external constraints. Children's psychological traits and cognitive ability are considered individual constitutional factors. To date, these exogenous variables of the SDM have been understudied. Given the importance of social and contextual factors in understanding the behaviors and development of youth, position in the social structure and external constraints need to be further investigated, especially in various ethnic/racial groups to test its relevancy and applicability to ethnic minority youth.

## TESTING THE SDM WITH URBAN YOUTH AND IMMIGRANT YOUTH

Traditional and existing theories of adolescent development were developed based largely on white middle class males. Therefore, some have argued that these theories may not be generalizable to other groups (Muuss, 1996; Ogbu, 1981, 1988; Spencer et al., 1991; Steinberg, 1990; Steinberg et al., 1996). However, there are few alternative theories available to explain the development of minority children and adolescents. Thus, the first step in extending the research to ethnic minority youth is to determine whether existing theoretical models predict equally well for ethnic minority youth. In this dissertation study, the Social Development Model (Catalano & Hawkins, 1996) is tested to determine whether the theory predicts problem behaviors among youth equally well across these different racial groups, i.e. white, African American, Asian American and mixed race American groups. The Social Development Model is a general theory that attempts to investigate factors, mechanisms or processes that

predict behaviors. As this study utilizes secondary data analyses, the theoretical constructs that could be examined were limited.

Risk-focused approaches have been criticized for their negative perspective. Studies on protective and resilient factors (Rutter, 1985; Werner & Smith, 1992) suggest that research on youth development must move beyond a focus on risk to examine conditions that facilitate positive youth development. It is critical to investigate circumstances and characteristics of children and families that foster health promoting behaviors and competence (Bogenschneider, 1996). Therefore, this dissertation study examines a part of the SDM, prosocial involvement, reward, and bonding, which are hypothesized to inhibit antisocial beliefs that are linked to antisocial behavior.

The focus in this dissertation is the family. Specifically the relationships between involvement in the family, rewards from parents and bonding to the family, and the effect of this bonding on antisocial values are examined. There are several reasons to choose the family unit as the focus of this investigation. The family is regarded as one of the central contexts of development and a critical socializing influence on youth development (Garbarino & Abramowitz, 1992b; Rumbaut, 1996; Rumbaut, 1997a). The quality of parent-child relationships, family structure, parenting practices, home environment, and other family-related factors have emerged as key determinants of adolescent health and behavioral outcomes, often accounting for meaningful variation in these outcomes (Garbarino & Abramowitz, 1992b; Rumbaut, 1996; Rumbaut, 1997a). Studies show that despite the increasing influence of peer interactions during middle and high school years, parents and family remain an

important force in the socialization of adolescents through high school (Catalano & Hawkins, 1996).

Family has a more profound impact for ethnic minority youth, as well as immigrant youth, than for ethnic majority youth and non-immigrant youth in terms of their school success, positive ethnic and self identity development, and successful adaptive outcomes (Gonzales & Cauce, 1995; LaFromboise et al., 1993; Matsuoka, 1990; Pawliuk et al., 1996; Earls, 1993; Sodowsky et al., 1995; Spencer et al., 1991; Vega & Rumbaut, 1991). For instance, a study on Vietnamese youth in Louisiana and Florida shows that parent's active involvement in their ethnic community is associated with positive outcomes (Bankston & Zhou, 1997; Zhou & Bankston, 1998). Parents play an instrumental role in establishing constructive social networks and support systems for their own children, producing marked differences in youth's mesosystems, such as school, community, and peer relations (Panel on High-Risk Youth, 1993; Spencer et al., 1991). In addition, the parent's role as cultural transmitter or gatekeeper is of importance (Earls, 1993; Spencer et al., 1991).

## EXTENDING OUR UNDERSTANDING OF THE EXOGENOUS VARIABLES IN THE SDM

As discussed earlier, variables exogenous to the model have been understudied. This study investigates social and contextual factors impacting problem behaviors of youth, and thereby explicitly attempts to expand the understanding of exogenous variables of the SDM, specifically position in the social structure and external constraints.

(1) POSITION IN THE SOCIAL STRUCTURE

The general SDM posits that one's position in the social structure (socioeconomic status, race, gender and age) has its impact through external constraints. Socioeconomic status (SES) has been found to be the most consistent and typically the most powerful predictor of adolescent success and well being (Panel on High-Risk Youth, 1993). It is argued that the consequences of being in poverty are severe and are not just confined to material deprivation. For families in poverty, economic hardship diminishes the emotional well being of parents, with direct and indirect effects on children's health and well being (Panel on High-Risk Youth, 1993). Adolescents from low-income families are more likely to show delinquent behaviors, engage in early sexual intercourse, be arrested, fail in school and drop out of school (Bogenschneider, 1996; Brooks-Gunn & Attie, 1996; Hawkins et al., 1992a; Zhou, 1997a). Poverty has a direct impact on determining environmental contexts for youth. The financial and class status of the family determines the type of neighborhoods in which children grow, the quality of schools they attend, the group of peers they associate with, and other supportive formal and informal organizations that affect life chances (Hawkins et al., 1992a; Newcomb, 1996; Yoshikawa, 1994; Zhou, 1997b; Zhou & Bankston, 1996). As well documented, underprivileged neighborhoods are prone to unemployment, violence, drugs and a generally disruptive social environment (Zhou, 1997b). Further, it is important to note that a disproportionate number of ethnic minority and immigrant youth grow up in poor neighborhoods (Alba & Nee, 1997; Portes & Rumbaut, 1996; Rumbaut, 1997a; Zhou, 1997b). As suggested by Portes and

Zhou (Portes, 1997; Zhou, 1997b), because the chances for upward mobility are bleak, a large number of ethnic minority and immigrant youth living in poor neighborhoods are likely to stay in poverty, and remain vulnerable to multiple risks.

This study extends the understanding of the relationship between SES and problem behaviors by examining the direct effect of SES on external constraints (i.e. family management and peer antisocial beliefs), as posited by the general SDM. It is well known that SES is associated with race/ethnicity and, for that reason, race/ethnicity is often used as a proxy for SES (Anderson & Armstead, 1995). However, this results in confounding the effect of both variables, and it is difficult to partition out the effect of SES and race on other factors. Thus, in addition to the model with race as an exogenous variable (shown in Figure 2), race/ethnicity is also examined as a moderator rather than an exogenous variable. This also allows the investigation of differences or similarities in the relationships among factors posited by the SDM across groups (age was not included because of the small age range in the sample).

(2) EXTERNAL CONSTRAINTS

External constraints in the SDM are defined as explicit clarity of rules, laws and norms, and the degree of consistency and immediacy of the sanctions imposed. Dominant external constraints during early adolescence are family management and peer norms. In addition to family management and peer norms as external constraints, this study includes the effects of adverse neighborhood environments as an external constraint, because neighborhood context operates as formal and informal social

reactions to behavior. The importance of neighborhood context in youth development has been well emphasized but under-researched (Bankston & Zhou, 1997; Bronfenbrenner, 1976; Brooks-Gunn, 1995; Garbarino & Abramowitz, 1992a; Hawkins et al., 1992a; Steinberg & Darling, 1994). In the SDM, external constraints are posited to have an effect on youth outcomes that is mediated by reward, bonding and belief constructs.

This effort to expand our understanding of the effects of exogenous variables, position in the social structure and external constraints, result in the revised SDM as depicted in Figure 2.

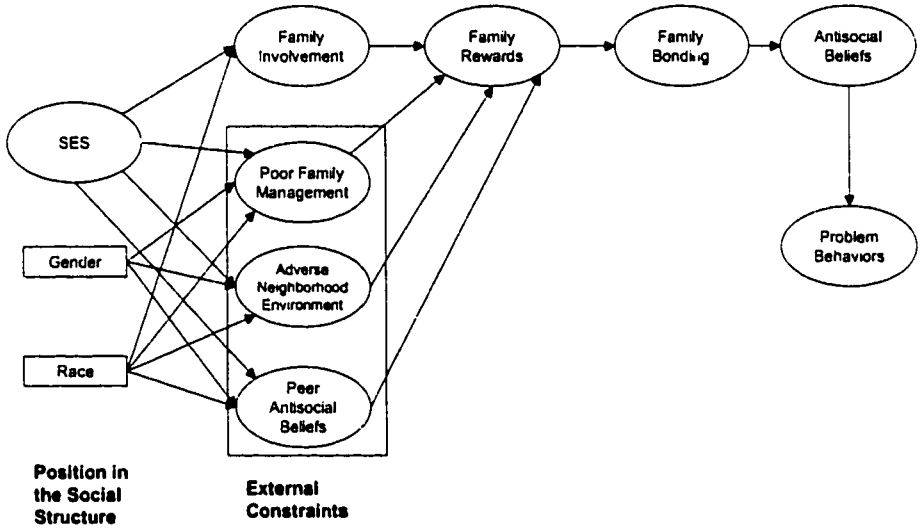


Figure 2.2. Revised Social Development Model

OUTCOMES OF INTEREST

In this study, two problem behaviors, violence and substance use, are examined. Costs to individuals, families, and society are greater for these particular problem behaviors than for other problem behaviors. While positively and explicitly linked to other adverse outcomes, substance use (including cigarette and alcohol) and violent behaviors are also directly linked to alcohol-related motor vehicle accidents, the leading cause of death among young people. They are also linked to a high number of juvenile arrests, for instance, 2 million in 1993 (Dryfoos, 1998). The prevalence of these problem behaviors is astonishingly high. Based on a national sample of high school students, the Centers for Disease Control reports that physical fights among youth are common, and increasing numbers of students carry weapons (CDC, 1996; CDC, 2000). Arrests for serious crimes like rape, aggravated assault and motor vehicle theft by youth rose 28.2%, 56.5%, and 54.2%, respectively, between 1981 and 1990 (Yoshikawa, 1994). The CDC also reports that more than 70% of students have tried cigarettes, 47% have smoked marijuana, 17% have had a cigar, 9.5% reported trying cocaine, and 81% have drunk alcohol (CDC, 2000). Substance use becomes more problematic as the age of initiation gets younger. In addition, the prevalence of substance use has consistently increased in recent years among youth (CDC, 1996; CDC, 2000; Dryfoos, 1998). Further, studies suggest that youth who are higher both in drug use and delinquency will be more likely to develop drug abuse in adulthood (Weber et al, 1989; White and Labouvie, 1994).

There is significant evidence indicating the co-occurrence of many problem behaviors, and this finding is consistent across both gender and age (Jessor & Jessor, 1977; Thornberry et al., 1995). For example, substance use has been found to be associated with antisocial behaviors such as interpersonal violence and delinquency, academic underachievement, and school problems (Huzinga & Jakob-Chien, 1998; Newcomb et al., 1986). A relationship between school problems and delinquency has also been demonstrated (Huzinga & Jakob-Chien, 1998; Maguin & Loeber, 1996; O'Donnell et al., 1995). Additionally, almost all youth who are incarcerated report some involvement with drugs (Dryfoos, 1998). These findings suggest that patterns of relationships among problem behaviors and factors related to such problem behaviors have considerable generalizability. Therefore, findings on violence and substance use shall be useful for understanding other problem behaviors of youth.

## SUMMARY OF THE DISSERTATION STUDY

The overall goal of this dissertation study is to investigate risk and protective factors of problem behaviors among early adolescents, with special attention to social and ecological factors for ethnic minority youth. First, the rates and patterns of a range of problem behaviors are investigated. Scholars point out that often in studies comparing ethnic or racial groups in the prevalence of problem behaviors, the societal factors, such as socioeconomic status, are not properly accounted for (McLoyd, 1998; Newcomb, 1996). Therefore, differences attributed to ethnic group are often in fact simply differences in societal factors such as income status. To address this gap, the

rates of problem behaviors are further examined by race/ethnicity group memberships, immigrant status, age, gender, and low-income status. In addition, factors related to race/ethnicity, such as ethnic identity and racial discrimination, and their associations with youth problem behaviors are examined. Lastly, the Social Development Model, which provides on framework that incorporates risk and protective factor, is examined with attention to social and environmental factors of youth behaviors. The SDM will be further examined for its applicability across various race/ethnic groups as well as across immigrant and non-immigrant groups. In short, the factors to be examined in this research include: (1) individual level factors - age, gender, antisocial beliefs (2) family factors - family involvement, reward, bonding, and management (3) peer factor - peer's antisocial beliefs (4) neighborhood factor - adverse neighborhood environment (5) societal factor - family's socioeconomic status, and lastly (5) factors related to race/ethnicity - ethnic identity, subjective experience of racial discrimination, and one's race.

In summary, this dissertation research specifically seeks to:

1. Describe and compare rates and patterns of problem behaviors for different race/ethnic groups of youth, African Americans, Asian Americans, mixed race youth, and white youth;
2. Describe and compare rates and patterns of problem behaviors for immigrant vs. non-immigrant youth;
3. Describe and compare rates and patterns of problem behaviors by age, gender, and low income status;

4. Investigate whether ethnic identity and/or the subjective experience of racial discrimination are associated with rates and patterns of problem behaviors;
5. Test the Social Development Model with an emphasis on the model's exogenous variables to predict problem behaviors among youth;
6. Determine whether the Social Development Model predicts problem behaviors among youth equally well across different ethnic/racial groups, African Americans, Asian Americans, mixed race youth and white youth; and
7. Determine whether the Social Development Model predicts problem behaviors in youth equally well for immigrant vs. non-immigrant youth.

# CHAPTER III METHODOLOGY

## OVERVIEW OF PROJECT AND SAMPLE SELECTION

The Minority Youth Health Project (MY Health) was the Seattle site of a seven-location study funded by the National Institute of Child Health and Human Development (NICHHD) and the Office of Minority Programs (Principal Investigator: Richard F. Catalano, Ph.D.). The primary aim was to improve minority youth health by focusing on preventing problem behaviors in four interrelated areas: interpersonal violence, adolescent pregnancy, sexually transmitted disease, and substance use. It was a community-based program, which sought to intervene at the neighborhood and individual level through the creation of community action boards and youth development workshops. The target sample for the project was minority youth between the ages of 10 and 14.

The data to be utilized in this proposed study were collected in 1997 as part of the MY Health Project. The 1997 data were collected after the community-based interventions by the Project. Data were collected from a student survey conducted at four middle schools in Seattle. An introductory letter was mailed to parents of all enrolled students alerting them to the survey. A postcard was enclosed that allowed parents to decline their child's participation. Project staff arranged to administer the survey during two separates class days at each of the middle schools. The survey was self-administered during a fifty-minute class period. Those students who declined to participate were asked to remain in the classroom reading other material during the

survey. Project staff remained in each of the classrooms during survey administration. Of the total number of enrolled students at the four schools (N=2,777), 472 students declined to participate in the study or were absent, resulting in 2,305 students completing the survey, an overall completion rate of 83.0%. Of this sample, 72.9% self-identified as ethnic minorities (N=1,680).

## SAMPLE DESCRIPTION

The average age of the students was 12.7 years. Approximately one third were in each of 6th, 7th, and 8th grades. Slightly over 50% were girls. Ethnic group composition included Asian American (20.8%), African American (16.7%), bi- or multi-race American (31.0%) and white American (27.1%)[2]. Slightly over 50% reported that their biological parents were married or living together; 38.9% were from low-income households, based on reports of receiving food stamps or free school lunch; and 21.8%reported being born outside of the U.S.[3]

Table 3.1 shows percentages of youth in the whole sample (N=2,305) that replied "Yes" for the questions listed. Forty-one percent reported that they have ever smoked a cigarette and 44% reported that they have ever drunk alcohol. About twenty percent reported having ever used marijuana and 18.5% having been ever drunk on alcohol or high on drugs. Slightly over eight percent have ever sniffed or inhaled glue, gas or paint. Crack or cocaine use was also reported by 2.1% of the sample. Physical

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[2] Hispanic (N=77, 3.3%) and Native Americans (N=25, 1.1%) were not included in the subsequent analyses due to their small sizes.

[3] Ethnic compositions of those who were born outside of the U.S. were Asian (N=192, 38.55%), mixed race (N=135, 27.10%), African (N=70, 14.05%) and white (N=51, 10.24%).

fights seemed common (68.2%); 54.5% reported that they have ever told someone they are going to beat them up, and 11.7% reported having been in physical fight *and* hurt badly. Thirty two percent reported having ever carried a knife or razor and 13.9% a gun. Four and a half percent reported ever having cut or stabbed someone, and 6.7% reported they threatened someone to stab in past month.

Table 3.1. Rates of Problem Behaviors among Overall Study Sample (N=2,305)

| Questions | Yes (%) |
|---|---|
| *Substance use* | |
| Have you ever smoked a cigarette? | 41.0 |
| Have you ever drunk alcohol? | 44.0 |
| Have you ever used marijuana? | 19.9 |
| Have you ever sniffed or inhaled glue, gas, or paint? | 8.3 |
| Have you ever used crack or cocaine? | 2.1 |
| Have you gotten drunk on alcohol or high on drugs? | 18.5 |
| *Violent Behaviors* | |
| Have you ever told someone you are going to beat them up? | 54.5 |
| Have you ever been in physical fight? | 68.2 |
| Have you ever been in physical fight and hurt badly? | 11.7 |
| Have you ever carried a gun? | 13.9 |
| Have you ever carried a knife or razor? | 32.3 |
| Have you ever cut or stabbed someone? | 4.5 |
| Past month, did you tell someone you are going to stab them? | 6.7 |

## MEASURES

*Race/Ethnicity.* A series of questions were used to establish the respondent's race and ethnicity allowing for identification with as many as five groups. The question "Are you black or African American?" was asked first of all individuals. Separate questions asking whether youth were Native American or American Indian or Alaska Native,

Asian or Pacific Islander, Caucasian or White, and Hispanic or Latino followed. Individuals were allowed to answer "yes" or "no" to each of the questions. A race variable was subsequently computed to categorize those students who self-reported as mono-racial (African American, Asian American, white, Hispanic and Native American), and a category for mixed race.

*Immigrant Status* was assessed by asking the youth how long they have lived in the United States. The response options were: born here; 5+ years, 2-4 years, and less than a year. An immigrant status variable with two categories, immigrant vs. non-immigrant, was computed based on whether they were born here or not.

## THEORETICAL MODEL CONSTRUCT

*Socioeconomic Status* was assessed by four items, which asked the youth whether the household received food stamps or free lunch and whether their mother or father had finished high school. The response options were "Yes" and "No." The alpha reliability coefficient is 0.63.

### *External Constraints*

*1. Poor family management* was assessed by two items about parental supervision. The questions were: "How often do your parents know where you are and who you are with?" and "In the evenings, how often is there at least 1 adult with you at

home?" The response categories ranged from (1) "All the time" to (4) "Rarely or never." The alpha reliability coefficient is 0.44.

2. *Adverse neighborhood environment* was assessed by six items asking the students about their perceptions of the safety of their neighborhoods. Items included statements such as "People in my neighborhood get robbed" and "People get in fights and get beat up." The response options ranged from (1) "Not at all" to (4) "A lot." The alpha reliability coefficient is 0.77.

3. *Peers' Antisocial Belief* was assessed by six items about peers' beliefs towards a range of antisocial behaviors. Example items are: "Most people my age think it is OK to get drunk once in a while" or "to use drugs." The response options range from (1) "Not true" to (3) "Very true." The alpha reliability coefficient is 0.86.

*Family Involvement* was assessed by four items. Sample items included "How often do your parents ask what you think before they make family decisions?" and "When you disagree with your parents, how often can you talk things out?" The response options range from (1) "Rarely or never" to (4) "All of the time." The alpha reliability coefficient is 0.82.

*Family Reward* was assessed by one item asking how often parents praise for doing good things. Because there is one item for this construct, it was tested as a measured variable rather than as a latent construct in the model.

*Family Bonding* was assessed by four to eight items, depending on whether the student lived in a one- or two-parent household. The items asked each student to describe his/her relationships with his/her mother and father, and the student's perception of his/her meaningful involvement in the family. Sample items are: "How much of the time do you feel very close to your mother/father?" and "How often do you share thoughts and feelings with him/her?" The response options range from (1) "Rarely or never" to (4) "All of the time." The alpha reliability coefficient is 0.87.

*Antisocial Belief* was assessed by seven items asking the students to describe their attitudes regarding antisocial behaviors such as drinking, using illegal drugs or carrying a gun/knife. The response options range from (1) "Strongly disagree" to (4) "Strongly agree." The alpha reliability coefficient is 0.89.

## OUTCOME

*Problem Behavior* was assessed by fifteen items from the survey regarding frequency of the following behaviors for the past month, past 3 month or past year: (1) violent behaviors: threatening to beat up or to stab someone, physical fighting, serious injury from physical fighting, carrying a knife or gun, or shooting someone; (2) substance use: drinking, smoking tobacco or marijuana, sniffing inhalants, use of cocaine or crack, or getting high or drunk. The response options varied, so the individual items were standardized. The alpha reliability coefficient as one scale is .91. The alpha reliability coefficient was 0.90 for substance use items and 0.81 for violent behaviors respectively.

ADDITIONAL CONSTRUCTS

*Ethnic Identity* The Multigroup Ethnic Identity Measure (MEIM) (Phinney, 1992), 14 items, was used to assess ethnic identity. The measure was designed to measure ethnic identity as a general phenomenon that could be compared and contrasted across diverse groups of individuals. Items include questions about ethnic behaviors, sense of pride, sense of belonging and attachment to one's ethnic group, and seeking behaviors to find more about one's ethnicity. Response categories ranged from (1) "Not true," (2) "Somewhat true," to (3) "Very true." The alpha reliability coefficient of the overall scale is 0.86.

*Subjective Experience of Racial Discrimination* was assessed by two items asking the students whether they have been treated unfairly in the neighborhood or in school because of their ethnicity. The response categories ranged from (1) "All the time" to (4) "Rarely or never." Each item was examined separately for subsequent analyses. The correlation of the two items is 0.48.

## DATA ANALYSIS STRATEGY

Specific Aim #1 - To describe and compare rates and patterns of problem behaviors for different race/ethnic groups in an urban school-based sample, including African Americans, Asian Americans, mixed race youth and White youth;

Specific Aim #2 - To describe and compare rates and patterns of problem behaviors for immigrant vs. non-immigrant youth of the samples;

Specific Aim #3 - To describe and compare rates and patterns of problem behaviors by age, gender, and low-income status in the samples;

To investigate Aims #1, #2, and #3, analyses were undertaken (e.g. means, standard deviations, proportions) to describe the rates and patterns and frequency of problem behaviors across the four different race/ethnic groups and the immigrant vs. non-immigrant youth groups, as well as by age, gender, and family income status. Independent sample t-test, analysis of variance (ANOVA), and Pearson's Chi-square statistics in cross-tabs were used to determine if the rates differ significantly across the groups.

Specific Aim #4 - To investigate whether ethnic identity and the subjective experience of racial discrimination are associated with rates and patterns of problem behaviors in the samples;

To investigate Aim #4, bivariate correlations of ethnic identity and the subjective experience of racial discrimination with problem behaviors were examined. The correlations were further examined by race/ethnic groups.

Specific Aim #5 - To test the Social Development Model with an emphasis on exogenous variables to predict problem behaviors among youth;

Specific Aim #6 - To determine whether the Social Development Model predicts problem behaviors among youth equally well across different race/ethnic groups, including African Americans, Asian Americans, mixed race youth and white youth;

Specific Aim #7 - To determine whether the Social Development Model predicts problem behaviors in youth equally well for immigrant vs. non-immigrant youth.

Analyses for Specific Aims #5 and #6 utilized the EQS Structural Equations Program (V. 5.7b) (Bentler, 1999), using maximum likelihood (ML) estimation. Before measurement and structural model testing, descriptive analyses are necessary to determine whether the assumptions of using ML estimation are met (Bentler, 1990; Byrne, 1994; Kline, 1998). ML estimation requires data to be multivariate normal. In most cases, multivariate non-normality can be detected through examination of univariate distributions (Kline, 1998). Thus, to investigate Aims #5, #6 and #7, descriptive analyses were conducted first to examine means, proportions, standard deviations, range and measures of skewness and kurtosis for all indicators; examined scatterplots of each predictor indicator with the outcomes; and computed the correlations among all indicators.

## MEASUREMENT AND STRUCTURAL MODEL

Structural equation modeling (SEM) (Bentler, 1991; Bentler, 1993; Byrne, 1994; Kline, 1998) was utilized to examine Specific Aims #5, #6 and #7. Latent variable structural equation modeling entails developing multiple indicators for latent factors (the measurement model), and estimating the structural relationships among the latent factors (the structural model). A two-step process was used to first establish the fit of the measurement model and then to proceed to estimate the fit of the structural model (Anderson & Gerbing, 1988). First, confirmatory factor analyses (CFA) with the full sample were conducted to determine the adequacy of factor loadings, model fit, and the pattern of intercorrelations among the latent factors, followed by a confirmatory factor analysis using multiple group comparisons for the various ethnic groups as well as immigrant and non-immigrant groups. The second step, testing the structural model, consisted of testing the SDM with the full sample and then tested for the multiple group comparison.

In each step, multiple group confirmatory factor analysis and multiple group structural equation modeling [MGCFA & MGSEM (Bentler & Wu, 1995; Byrne, 1994)] were used to determine if there are differences in the factor loadings, covariance structures, and paths across the four ethnic groups specified in Aim #5 and the immigrant and non-immigrant groups in Aim #6. The respondents were grouped based on their race/ethnicity (Aim #5) and immigrant status (Aim #6). A reference group was selected, so that the comparisons are made between the reference group and other groups. No comparisons are made among non-reference groups. For example, in this study, white group was selected as a reference group, and the

comparisons were made between white and African Americans, white and Asian Americans, but not between African and Asian Americans. The multiple-group models were run first unconstrained and then constrained. The unconstrained model estimates the parameters and structures freely for each group, and the constrained model imposes equality constraints on the factor coefficients, covariances, and paths between the reference group and other groups compared (Byrne, 1994; Kline, 1998; Raykov, 1997). The effects of the constraints are evaluated by comparing the goodness of fit of the unconstrained and the constrained models. If the chi-square difference is significant between the unconstrained and constrained models, it indicates group specific effects, i.e. that there are group differences in the factor structure and/or covariances, or that group membership moderates the relationship between factors. Additionally, the multivariate Lagrange Multiplier (LM) tests were used to understand specific coefficients and pathway differences across the groups in the hypothesized model (Bentler, 1990).

Because no single fit index is ideal, the goodness of fit of both the measurement and structural models was evaluated by examination of four statistics (Hu & Bentler, 1998; Kline, 1998). These included the Bentler Comparative Fit Index [CFI, (Bentler, 1990)], Root Mean Square Error of Approximation [RMSEA; (Steiger & Lind, 1980)], Chi-square, and the Standardized Root Mean Squared Residual [SRMR; (Bentler & Wu, 1995)]. CFI is an incremental fit index that indicates improvement in the hypothesized model's fit in comparison to the null model. Values equal to or greater than .90 are desirable (Kline, 1998). The RMSEA can be thought of as an estimate of the discrepancy

between the actual population covariance matrix and the postulated covariance matrix produced by the model per degree of freedom (Browne & Cudeck, 1993). The guidelines for interpreting RMSEA are as follows: RMSEA less than 0.05 indicate a close (good) fit; between 0.05 and 0.08, a fair (acceptable fit); between 0.08 and 0.10 a mediocre fit; and greater than 0.10 a poor (unacceptable) fit (MacCallum et al., 1996). Chi-square is a test of the difference between the specified model and the just identified model. As chi-square is sensitive to sample size, it is recommended that chi-square be evaluated by dividing it by the degrees of freedom and looking for a value less than three (Kline, 1998). SRMR represents the difference between the observed covariance matrix and that of the specified model. Values less than 0.10 are desirable. When all the indices point to the same conclusion, one can have greater confidence in the results.

## Missing Data Analysis Strategy

The data set for these analyses contained missing data which would result in a number of cases being dropped if listwise deletion were used. Listwise deletion has been shown to produce biased estimates of the relationships among variables, and is therefore undesirable. There are various missing data techniques available, such as EM (expectation-maximization) algorithm (EMCOV, Graham and Hofer, 1993), multiple imputations (NORM, Schafer, 1997), and raw maximum likelihood estimates employed by AMOS 4.0 (Arbuckle & Wothke, 1999) and M-plus 2.0 (Muthen & Muthen, 2000). As each technique has strengths and limitations, it is recommended that a combination

of these methods be used (Taylor, Graham, Cumsille, & Hansen, 2000). Accordingly, this study utilized various missing data techniques, described below.

The EM (expectation-maximization) algorithm (EMCOV, Graham and Hofer, 1993) was used to estimate missing data and generate a conditioned covariance matrix which was primarily utilized for the analyses for Aim 5 & 6. The EM technique is quick, convenient, and produces accurate parameter estimates. Using a conditioned covariance matrix as output is also a quick and convenient way to get model fit information as well as other information such as correlations among indicators, factors, and error variances. For this study, a conditioned covariance matrix from EMCOV was used for the analyses utilizing EQS. While EMCOV is convenient, there is a possibility that the standard errors produced using the covariance matrix from EMCOV may be underestimated. Therefore, it is suggested that one not rely solely on EM estimates for hypothesis testing. NORM (Schafer, 1997), which employs multiple imputations, produces accurate estimates of parameters and significance levels, so it was used to validate hypotheses testing as well as parameter estimates. A disadvantage of NORM is that it is cumbersome and takes a long time as it entails multiple imputations. NORMEQS (Graham, 2000), a NORM utility program, was used to expedite the procedures to get parameter estimates and t-ratios However, one shortcoming of the NORMEQS is that it does not provide standardized coefficients, fit indices and other diagnostic information. In addition, raw maximum likelihood estimates (employed in AMOS) were used to verify chi-square estimates from unconstrained and constrained multiple group structural model analyses. AMOS versions lower than 4.0 do not

provide chi-square information for estimating with missing data. However, AMOS 4.0 does not provide standardized coefficients for the multiple group analyses containing missing data. In this study, as the parameter estimates, significant level as well as chi-square estimates from each technique were quite similar and close to each other, the results from analyses using EMCOV generated covariance entered into EQS are reported in the following result section.

## COMBINING CONTROL AND EXPERIMENTAL GROUPS FOR THE ANALYSES

Abbott, Catalano and Hawkins (1991) argue that intervention and control groups can be combined for etiological studies, as intervention effects aim to change the degree or level of a construct, but not the relationships of constructs (Abbott, Catalano, & Hawkins, 1991). Preliminary analyses therefore were conducted to test the equivalence of the covariance structures of the intervention and control groups using multiple group comparisons (Bentler & Wu, 1995; Byrne, 1994) (see discussion of multiple group comparisons in later part for details). The difference between the covariance structures of the two groups, the intervention and control groups, was non-significant ($\Delta\chi^2(36) = 71.233$, $p < 0.001$). The unconstrained model was CFI = .971, RMSEA = .032, $\chi^2$ (348) = 1157.51 and constrained model CFI = .970, RMSEA = .032, $\chi^2$ (384) = 1228.743). The fit indices were almost identical and indicated that both models fit the data well. The coefficients for the indicators were all statistically significant and their magnitudes were also almost identical. Subsequently, the intervention and control groups were combined for these analyses.

# CHAPTER IV RESULTS

## RATES & PATTERNS OF SUBSTANCE USE & VIOLENT BEHAVIORS BY RACE/ETHNICITY & IMMIGRANT STATUS

### ETHNICITY/RACE DIFFERENCES

First, rates and patterns of substance use and violent behaviors were examined by race/ethnicity. It was hypothesized that there would be race/ethnic group differences in the rates of substance use and violent behaviors as suggested by other studies (Gibbs, 1998; Kim, Coletti, Williams, & Hepler, 1995; Ogbu, 1994; Wallace, Bachman, Patrick, & Johnston, 1995). It was also hypothesized that African American and mixed race youth are at a greater risk and are more likely to report problem behaviors. Pearson's Chi-square statistics were used to determine if the rates differ significantly across the groups.

The hypothesis was supported in which there were race/ethnic group differences in the rates of substance use and violent behaviors and that mixed race and African American youth reported higher rates of problem behaviors than white and Asian American youth. The upper part of Table 5.1 contains the items related to substance use. The table shows that mixed race students were more likely to have initiated smoking (50.15%), drunk alcohol (53.57%), used crack or cocaine (3.72%), sniffed glue (9.78%), and to have gotten drunk on alcohol or high on drugs (24.89%) in comparison to White, African and Asian American students. African American students reported a slightly higher rate (27.53%) of having ever used marijuana than mixed race students (27.44%). Asian American students were less likely to report

drinking (32.98%), to have initiated marijuana (10.04%), sniffed glue (6.11%), used crack or cocaine (0.86%), and ever being drunk on alcohol or high on drugs (11.51%), in comparisons to all other groups. They were slightly more likely (35.61%) to have ever smoked cigarettes than white students (32.13%), but less than African American (43.37%) and mixed race students (50.15%). Race/ethnic group differences were statistically significant for all the substance use related items, except the item of having ever sniffed glue, paint or gas.

The items related to violent behaviors presented similar patterns of race/ethnic group differences as the substance use items. Mixed race students were more likely to report ever being in a physical fight and badly hurt (16.7%), carrying a gun (17.6%), carried a knife or razor (35.6%), cut or stabbed someone (9.8%), and having said that they were going to stab someone (11.4%), in comparison to other groups. African American students reported higher rates of having told someone he or she is going to beat them up (71.8%), and having been in physical fight (82.5%). Asian American students were less likely than all other groups to report having a physical fight (56.9%), having been in a physical fight and badly hurt (6.8%), ever carrying a knife or razor (26.9%), ever cutting or stabbed someone (5.1%) and having said that they are going to stab someone (5.1%). However, they reported slightly higher rate of having told someone they are going to beat up (46.3%) than white students (38.1%), and reported a higher rate of ever carrying a gun (13.2%) than white (10.6%) and African American (12.4%) students. The ethnic/race group differences of rates of these violent behaviors were statistically significant.

Table 5.1. Rates of Substance Use and Violent Behaviors by Race/ethnicity and Pearson's Chi-square Test

| | Race/ethnicity | | | | | |
|---|---|---|---|---|---|---|
| | White | African | Asian | Mixed | | |
| | N=625 | N=385 | N=479 | N=714 | | |
| Questions | Yes (%) | | | | $\chi^2$ | p-value |
| *Substance Use* | | | | | | |
| Have you ever smoked a cigarette? | 32.1 | 43.4 | 35.6 | 50.2 | 48.99 | 0.000 |
| Have you ever drunk alcohol? | 39.5 | 48.5 | 33.0 | 53.6 | 55.67 | 0.000 |
| Have you ever used marijuana? | 14.5 | 27.5 | 10.0 | 27.4 | 76.19 | 0.000 |
| Have you ever sniffed or inhaled glue, gas, or paint? | 8.7 | 6.8 | 6.1 | 9.8 | 6.08 | 0.108 |
| Have you ever used crack or cocaine? | 1.5 | 1.2 | 0.9 | 3.7 | 14.78 | 0.002 |
| Have you gotten drunk on alcohol or high on drugs? | 15.3 | 21.4 | 11.5 | 24.9 | 38.95 | 0.000 |
| *Violent Behaviors* | | | | | | |
| Have you ever told someone you are going to beat them up? | 38.1 | 71.8 | 46.3 | 66.9 | 161.09 | 0.000 |
| Have you ever been in physical fight? | 58.7 | 82.5 | 56.9 | 76.7 | 106.74 | 0.000 |
| Have you ever been in physical fight and hurt badly? | 9.0 | 12.5 | 6.8 | 16.7 | 31.65 | 0.000 |
| Have you ever carried a gun? | 10.6 | 12.4 | 13.2 | 17.6 | 13.69 | 0.003 |
| Have you ever carried a knife or razor? | 31.6 | 31.8 | 26.9 | 35.6 | 9.56 | 0.023 |
| Have you ever cut or stabbed someone?4. | 5 | 5.7 | 5.1 | 9.8 | 17.95 | 0.000 |
| Past month, did you tell someone you are going to stab them? | 4.5 | 8.3 | 5.1 | 11.4 | 26.41 | 0.000 |

## Table 5.2. Substance Use Initiation Age by Race/ethnicity and ANOVA

| Questions | White | | African | | Asian | | Mixed | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | F | p-value |
| How old were you when you first smoked cigarette? | 10.92 | 1.72 | 10.69 | 1.70 | 10.52 | 1.93 | 10.53 | 1.82 | 2.32 | 0.074 |
| How old were you when you first drunk alcohol? | 10.23 | 1.84 | 10.49 | 1.98 | 10.43 | 2.01 | 10.13 | 1.92 | 1.84 | 0.138 |
| How old were you when you first used marijuana? | 12.02 | 1.59 | 11.59 | 1.62 | 11.62 | 1.73 | 11.44 | 1.76 | 2.35 | 0.072 |
| How old were you when you first sniffed or inhaled glue, gas or paint? | 10.90 | 1.53 | 10.59 | 2.14 | 10.40 | 1.61 | 10.12 | 1.92 | 1.89 | 0.132 |
| How old were you when you first used crack or cocaine? | 11.00 | 2.21 | 10.83 | 2.48 | 9.80 | 2.49 | 10.56 | 2.27 | 0.32 | 0.809 |
| How old were you when you first got drunk on alcohol or high on drugs? | 11.46 | 1.60 | 11.58 | 1.64 | 11.18 | 1.93 | 11.24 | 1.81 | 1.49 | 0.218 |

## Table 5.4. Rates of Substance Use and Violent Behaviors by Race/ethnicity AND Poor variable and Pearson's Chi-square Test

| Questions | Not Poor | | | | | | Poor | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | White | African | Asian | Mixed | | | White | African | Asian | Mixed | | |
| | Yes (%) | | | | $\chi^2$ | p-value | Yes (%) | | | | $\chi^2$ | p-value |
| *Substance Use* | | | | | | | | | | | | |
| Have you ever smoked a cigarette? | 29.4 | 36.1 | 28.9 | 45.0 | 28.39 | 0.000 | 55.6 | 48.2 | 44.2 | 56.9 | 8.99 | 0.029 |
| Have you ever drunk alcohol? | 38.4 | 54.9 | 32.7 | 50.1 | 32.20 | 0.000 | 49.2 | 44.2 | 33.3 | 58.2 | 30.42 | 0.000 |
| Have you ever used marijuana? | 13.8 | 23.4 | 8.0 | 24.9 | 39.71 | 0.000 | 20.6 | 30.2 | 12.6 | 30.9 | 25.81 | 0.000 |
| Have you ever sniffed or inhaled glue, gas, or paint? | 7.8 | 8.6 | 6.0 | 9.3 | 2.36 | 0.502 | 16.1 | 5.6 | 6.2 | 10.4 | 9.72 | 0.021 |
| Have you ever used crack or cocaine? | 1.5 | 0.7 | 1.2 | 3.7 | 8.74 | 0.033 | 1.7 | 1.5 | 0.5 | 3.7 | 6.50 | 0.090 |
| Have you gotten drunk on alcohol or high on drugs? | 15.0 | 23.4 | 9.9 | 23.6 | 25.86 | 0.000 | 18.3 | 20.2 | 13.5 | 26.6 | 12.74 | 0.005 |
| *Violent Behaviors* | | | | | | | | | | | | |
| Have you ever told someone you are going to beat them up? | 35.0 | 67.6 | 43.7 | 61.3 | 86.86 | 0.000 | 65.6 | 74.6 | 49.5 | 74.4 | 40.82 | 0.000 |
| Have you ever been in physical fight? | 58.1 | 82.7 | 53.6 | 73.8 | 57.58 | 0.000 | 63.9 | 82.4 | 61.2 | 80.6 | 34.94 | 0.000 |
| Have you ever been in physical fight and hurt badly? | 8.5 | 8.6 | 7.2 | 15.7 | 16.91 | 0.000 | 13.3 | 15.3 | 6.3 | 18.1 | 14.54 | 0.002 |
| Have you ever carried a gun? | 10.0 | 11.6 | 11.8 | 15.2 | 5.75 | 0.125 | 15.9 | 12.9 | 15.0 | 20.6 | 5.68 | 0.129 |
| Have you ever carried a knife or razor? | 31.0 | 26.1 | 25.6 | 33.6 | 5.97 | 0.113 | 36.5 | 35.9 | 28.6 | 38.4 | 5.17 | 0.159 |
| Have you ever cut or stabbed someone? | 3.9 | 4.3 | 3.8 | 8.1 | 9.54 | 0.023 | 9.7 | 6.6 | 6.8 | 12.2 | 6.22 | 0.101 |
| Past month, did you tell someone you are going to stab them? | 3.7 | 8.6 | 3.8 | 9.2 | 16.07 | 0.001 | 11.3 | 8.1 | 6.8 | 14.3 | 8.62 | 0.035 |

In terms of age of initiation of the various substances, no differences were found in terms of ethnic/race group differences (Table 5.2). In terms of drug use progression, the youth from all groups tended to begin drinking first, or about the same time as initiating cigarette and glue sniffing before moving onto marijuana, crack and cocaine.

Scholars point out that often in studies comparing ethnic or racial groups in the prevalence of problem behaviors, the societal factors, such as socioeconomic status, are not taken into account (McLoyd, 1998; Newcomb, 1996). Therefore, differences in ethnic groups are often in fact simply differences in societal factors such as SES. To address this gap, the proportions of problem behaviors, i.e. substance use and violent behaviors, were further examined by race/ethnicity group memberships and low-income status simultaneously (Table 5.4).

Table 5.3 Sample size in low-income groups by race/ethnicity

| | | Not Poor | | Poor | |
|---|---|---|---|---|---|
| | Total N | N | % | N | % |
| White | 625 | 559 | 89.4 | 66 | 10.6 |
| African American | 385 | 152 | 39.5 | 233 | 60.5 |
| Asian American | 479 | 267 | 55.7 | 212 | 44.3 |
| mixed race | 714 | 403 | 56.4 | 311 | 43.6 |

The samples were grouped into the not poor and poor categories based on the responses of getting free lunch or public assistance. Table 5.3 shows sample size in each poor or not poor group by ethnicity. The percentage is a rate within each race/ethnic group. Disproportionate number of white students reported not being poor (89.4%), whereas over sixty percent of African American students reported being

poor. Asian American and mixed students both reported a slightly higher rate of not being poor (55.7% and 56.4% respectively) than rate of being poor (44.3% and 43.6%).

Results indicate that race/ethnic group differences still exist both in the not poor and poor groups in eight out of thirteen items (Table 5.4). However, for five of the items, race/ethnic group differences became non-significant once low-income status was controlled for. The items for which race/ethnic differences remained after controlling for low-income status were having sniffed or inhaled glue, gas or paint in the not poor group, having used crack or cocaine in the poor group, and having cut or stabbed someone in the poor group. No race/ethnic group differences were found for both in the poor and the not poor group in having carried a gun, and a knife or razor.

## IMMIGRANT STATUS DIFFERENCES

Substance use and violent behaviors were examined by students' immigrant status (Table 5.5). It was hypothesized that there are group differences by immigrant status and that immigrant youth report less substance use and violent behaviors. The hypothesis that there are group differences was not supported. The majority of the items, with exceptions of three substance use items, showed non-significant differences by the immigrant status. However, immigrant youth reported statistically lower rates of ever drinking alcohol (36.5%), using marijuana (15.6%), and having gotten drunk or high (14.6%) than non-immigrant youth (46%, 21.1%, and 19.5% respectively), partially supporting the hypothesis that immigrant youth report less substance use than non-immigrant youth.

Table 5.5. Rates of Substance Use and Violent Behaviors by Immigrant Status and Pearson's Chi-square Test

| | Immigrant Status | | | |
|---|---|---|---|---|
| | Non-imm | Immigrant | | |
| | N=1,733 | N=448 | | |
| Questions | Yes (%) | | $\chi^2$ | p-value |
| *Substance Use* | | | | |
| Have you ever smoked a cigarette? | 41.7 | 40.0 | 0.23 | 0.635 |
| Have you ever drunk alcohol? | 46.0 | 36.5 | 13.49 | 0.000 |
| Have you ever used marijuana? | 21.1 | 15.6 | 6.84 | 0.009 |
| Have you ever sniffed or inhaled glue, gas, or paint? | 7.9 | 9.7 | 1.55 | 0.213 |
| Have you ever used crack or cocaine? | 1.9 | 2.7 | 0.88 | 0.347 |
| Have you gotten drunk on alcohol or high on drugs? | 19.5 | 14.6 | 5.86 | 0.015 |
| *Violent Behaviors* | | | | |
| Have you ever told someone you are going to beat them up? | 55.4 | 51.2 | 2.51 | 0.114 |
| Have you ever been in physical fight? | 68.7 | 66.3 | 0.94 | 0.332 |
| Have you ever been in physical fight and hurt badly? | 11.2 | 13.6 | 2.00 | 0.158 |
| Have you ever carried a gun? | 13.5 | 15.1 | 0.78 | 0.378 |
| Have you ever carried a knife or razor? | 32.5 | 31.6 | 0.14 | 0.709 |
| Have you ever cut or stabbed someone? | 6.5 | 7.7 | 0.88 | 0.348 |
| Past month, did you tell someone you are going to stab them? | 7.5 | 7.6 | 0.00 | 0.976 |

## YOUTH PROBLEM BEHAVIORS AND RELATED FACTORS

The MY Health survey also contains information about the frequency of substance use and violent behaviors. A substance use scale was created by averaging seven items regarding frequency of a range of substances used during the past month or year (e.g. "How often did you drink during the past month?" and "How often did you use marijuana during the past year?"). A violent behaviors scale was also created by averaging eight items regarding frequency of a range of violent behaviors for the past three months or past year (e.g. "How often were you involved in a physical fight during the past three months?").

The individual samples were grouped by factors, such as race/ethnicity, immigrant status, gender, socioeconomic status, and age. Specifically these were white, African American, Asian American and mixed race groups, immigrant and non-immigrant groups, males and females, low- and high-income groups, and age groups of 11 to 15 year old. The hypotheses were that there are race/ethnic group differences (African Americans and mixed raced with higher frequency of problem behaviors) and immigrant status (immigrant group with lower frequency of substance use and violent behaviors), and that males, low-income and older age groups report higher frequency of substance use and violent behaviors. Means and standard deviations for each scale are reported by group to present similarities and differences in the rates of substance use and violent behaviors. The analysis of variance (ANOVA) and independent t-tests were used to determine if the rates differ significantly by the groups.

First, the scales of substance use and violent behaviors were examined by the four race/ethnic groups (white, African American, Asian American, and mixed race students) (Table 5.6). As hypothesized, there were statistically significant differences among the groups on both substance use and violent behaviors. African American and mixed race youth reported higher average frequencies of violent behaviors than the other two groups. Mixed race youth reported the highest frequency of substance use. While white and Asian Americans reported lower frequencies of substance use and violent behaviors than African and mixed race Americans, Asian American youth reported a higher frequency of violent behaviors and a lower frequency of substance use than those of white youth.

The frequencies of substance use and violent behaviors were also examined by immigrant status (Table 5.7). Results indicate that the average frequencies of substance use and violent behaviors were not statistically significant by immigrant status. The hypothesis was not supported by the results. Although non-significant, immigrant youth who were not born in this country reported a higher frequency of substance use, and violent behaviors than those of non-immigrant youth.

Table 5.8 shows that males reported a significantly higher frequency of violent behaviors than females. However, the average frequency of substance use was not significantly different between the genders. Samples were grouped into high- and low-income groups based on responses whether youth family have received public assistance and/or free lunch at school. If yes to any of these questions, youth were grouped into "low-income" category. Results indicated that youth categorized into

low-income reported higher frequencies of substance use and violent behaviors, and the differences were statistically significant (Table 5.9). When youth behaviors were examined across age groups (Table 5.10), the average frequencies of substance use and violent behaviors were statistically different. Older children reported more frequent substance use and violent behaviors. Therefore, the hypotheses that male, low income and older youth report higher frequency of substance use and violent behaviors were supported by the data.

Table 5.6. Problem Behaviors -- Mean, Standard Deviations, & ANOVA by Race/ethnicity Groups

| | Race & Ethnicity | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | White | | | African Am | | | Asian Am | | | Mixed | | | | |
| | N | Mean | S.D. | N | Mean | S.D. | N | Mean | S.D. | N | Mean | S.D. | F value | Sig. |
| Substance use | 613 | 1.160.49 | | 354 | 1.230.52 | | 472 | 1.130.46 | | 664 | 1.310.69 | | 12.45 | 0.000 |
| Violent behaviors | 612 | 0.870.44 | | 337 | 1.110.56 | | 470 | 0.910.46 | | 657 | 1.110.63 | | 30.47 | 0.000 |

Table 5.7. Problem Behaviors -- Mean, Standard Deviations, & Independent t-tests by Immigrant Status

| | Immigrant Status | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Non-immigrant | | | Immigrant | | | | |
| | N | Mean | S.D. | N | Mean | S.D. | t-value | Sig. |
| Substance use | 1671 | 1.210.53 | | 417 | 1.230.68 | | -0.75 | 0.456 |
| Violent behaviors | 1666 | 0.980.52 | | 420 | 1.030.61 | | -1.73 | 0.085 |

Table 5.8. Problem Behaviors -- Mean, Standard Deviations, & Independent t-tests by Gender

| | Gender | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Male | | | Female | | | | |
| | N | Mean | S.D. | N | Mean | S.D. | t-value | Sig. |
| Substance use | 1006 | 1.220.59 | | 1083 | 1.190.49 | | 1.36 | 0.174 |
| Violent behaviors | 986 | 1.080.58 | | 1076 | 0.910.46 | | 7.28 | 0.000 |

Table 5.9. Problem Behaviors -- Mean, Standard Deviations, & Independent t-tests by Low-income status

| | SES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | High SES | | | Low SES | | | | |
| | N | Mean | S.D. | N | Mean | S.D. | t-value | Sig. |
| Substance use | 1298 | 1.180.50 | | 765 | 1.260.59 | | -3.16 | 0.000 |
| Violent behaviors | 1288 | 0.920.41 | | 748 | 1.110.58 | | -8.04 | 0.000 |

Table 5.10. Problem Behaviors -- Mean, Standard Deviations, & ANOVA by Age

| | Age | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 11 | | | 12 | | | 13 | | | 14 | | | 15 | | | | |
| | N | Mean | S.D. | N | Mean | S.D. | N | Mean | S.D. | N | Mean | S.D. | N | Mean | S.D. | F | Sig. |
| Substance use | 279 | 1.090 | .35 | 643 | 1.120 | .38 | 690 | 1.270 | .67 | 429 | 1.290 | .69 | 40.00 | 1.33 | 0.60 | 13.18 | 0.000 |
| Violent behaviors | 275 | 0.910 | .49 | 629 | 0.940 | .50 | 692 | 1.030 | .57 | 422 | 1.010 | .52 | 36.00 | 1.24 | 0.72 | 6.17 | 0.000 |

## RELATIONSHIP BETWEEN PROBLEM BEHAVIORS AND ETHNIC IDENTITY & RACIAL DISCRIMINATION

Next, the relationship between ethnic identity and problem behaviors was examined. First, the average ethnic identity scale for ethnic minority youth[4] was examined. The averages were 2.30 for African American (N=373, SD = .41, Minimum = 1, Maximum =3), 2.38 for Asian American (N=473, SD = .36), and 2.21 for mixed race students (N=670, SD = .44). Asian Americans scored highest followed by African American and mixed race youth. The group differences in the average rate of ethnic identity were statistically significant ($F = 25.6$, $p < .05$).

The rate of having felt that they were treated unfairly in their neighborhood and schools was also examined. About thirty three percent of African American, 34% of Asian American, and 31% of mixed race youth in the sample reported that they felt they were treated unfairly in their neighborhood as a result of their ethnicity. In addition, 41% of African American, 40% of Asian American, and 45% of mixed race youth in the sample reported that they felt they were treated unfairly at school due to their ethnicity. The group differences in the rates were not statistically significant ($\chi^2 = 1.88$, $p > .05$ in their neighborhood and $\chi^2 = 2.37$, $p > .05$ at school).

It was hypothesized that ethnic identity operates as a protective factor that buffers the effects of risk on problem behaviors and that racial discrimination functions as a risk factor on problem behaviors. To test these hypotheses, the relationships of

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[4] White youth were not included in this part of analyses examining relationship between problem behaviors and ethnic identity and racial discrimination, as these issues are more salient for ethnic minority youth.

ethnic identity and racial discrimination to substance use and violent behaviors were examined. The correlations between the ethnic identity scale and the substance use and violent behavior scales were first examined with all ethnic minority youth combined as one group. The ethnic identity scale was significantly correlated with substance use ($N = 1445$, $r = -0.096$, $p < .01$) and violent behaviors ($N = 1420$, $r = -0.099$, $p < .01$). The direction of the relationship showed that the higher one's ethnic identity, the less substance use and violent behaviors were reported. The relationships were further examined by ethnic/race groups (African, Asian and mixed race Americans) to see if the relationship remained the same for each group (Table 5.11). The correlations were non-significant among African and Asian American youth. However, the correlations were significant and in expected direction among mixed race Americans for both substance use, and violent behaviors. The hypothesis was supported only among mixed race youth.

The correlations between substance use and violent behavior scales and racial discrimination were also examined (Table 5.11). First, racial discrimination in one's neighborhood was examined by race/ethnic groups. The correlation between violent behaviors and racial discrimination in neighborhood was statistically significant for all three race/ethnic groups. The substance use scale was significantly correlated only in mixed race group, but not in African and Asian American groups. However the directions of correlations were all in the expected direction.

Secondly, racial discrimination at one's school was examined. The correlations were all significant for mixed race youth and Asian Americans and violent behaviors

but non-significant among African Americans. The direction of the correlations were consistent and in expected directions in all three groups. The hypotheses were partially supported by the results.

Table 5.11. Correlations between Outcome Variables and Ethnic Identity, Racial Discrimination in neighborhood & at school

| | | Substance Use | | Violent Behaviors |
|---|---|---|---|---|
| **Ethnic identity** | N | | N | |
| African Americans | 343 | 0.022 | 328 | -0.064 |
| Asian Americans | 467 | 0.022 | 464 | 0.002 |
| Mixed race | 635 | -0.140** | 628 | -0.113** |
| **Racial discrimination in neighborhood** | | | | |
| African Americans | 333 | -0.106 | 318 | -0.142* |
| Asian Americans | 463 | -0.011 | 461 | -0.139** |
| Mixed race | 632 | -0.223** | 622 | -0.240** |
| **Racial discrimination at school** | | | | |
| African Americans | 331 | -0.016 | 316 | -0.042 |
| Asian Americans | 459 | -0.093* | 457 | -0.173** |
| Mixed race | 631 | -0.268** | 624 | -0.274** |

* $p < .05$, ** $p < .01$ (2 tailed)

## TESTING THE SOCIAL DEVELOPMENT MODEL

### MEASUREMENT MODEL TESTING - CONFIRMATORY FACTOR ANALYSIS

Multiple indicators of latent constructs were developed to reflect the SDM constructs, as well as the outcome construct, problem behaviors[5]. Standardized scores of the measured survey items were first computed and then used to create indicators. Higher scores reflect more of the indicated construct. See Appendix A for the listing of constructs, indicators, and survey items.

The measurement model was estimated using the eight factors including, Socioeconomic Status (F1), Poor Family Management (F2), Adverse Neighborhood Environment (F3); Peer Antisocial Beliefs (F4) and Family Involvement (F5); Family Bonding (F6); Antisocial Beliefs (F7) and, the dependent factor, Problem Behaviors (F8). For the full group confirmatory factor analysis (CFA), all factor loadings varied freely while the factor variances were constrained to 1.00. All factor loadings were significant (ranging from 0.393 to 0.928) and in the hypothesized direction, as were all intercorrelations among the latent factors (range from -0.522 to 0.745) (See Table 5.12 & 5.13). The fit was good with a CFI of .976 and RMSEA of .043, with $\chi^2(154) = 775.530$.

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[5] The outcome variables, substance use and violent behaviors, were combined to create the problem behavior construct. Studies show that problem behaviors such as violence and substance use are highly correlated and have similar etiological factors (Jessor & Jessor, 1977), which justifies conceptualizing problem behaviors as a single factor construct. Others suggest that a single higher-order factor might be able to explain significantly more of the relationships among the problem behaviors. In this study, the items were combined to create a single factor construct, taking Jessor and Jessor's approach. The alpha reliability of items from substance use and violent behaviors as a single scale was high (.91) and the correlation between the substance use and the violent behaviors is also high and significant ($N = 2103$, $r = .637$, $p < .05$). The fit of the model was good and the factor loadings were high and statistically significant with a single factor construct.

TABLE 5.12. Factor loadings and Z-statistics for the Full Group Measurement Model

| Latent Factors | Indicator | loading | z-statistics |
|---|---|---|---|
| F1 | V1 | 0.837 | 22.578 |
| SES | V2 | 0.641 | 20.223 |
| F2 | V7 | 0.727 | 22.571 |
| Poor family management | V8 | 0.393 | 15.726 |
| F3 | V9 | 0.828 | 36.882 |
| Adverse neighborhood environment | V10 | 0.807 | 36.052 |
| F4 | V11 | 0.928 | 53.972 |
| Peer antisocial beliefs | V12 | 0.841 | 46.641 |
| | V13 | 0.756 | 40.224 |
| F5 | V14 | 0.804 | 41.552 |
| Family involvement | V15 | 0.812 | 42.045 |
| F6 | V17 | 0.888 | 51.611 |
| Family Bonding | V18 | 0.866 | 42.629 |
| | V19 | 0.865 | 49.617 |
| F7 | V20 | 0.864 | 49.645 |
| Antisocial beliefs | V21 | 0.876 | 50.772 |
| | V22 | 0.900 | 52.948 |
| F8 | V23 | 0.847 | 48.058 |
| Problem behaviors | V24 | 0.893 | 52.151 |
| | V25 | 0.887 | 51.611 |

Note: F1 = SES; F2 = Family management; F3 = Neighborhood environment; F4 = Peer antisocial beliefs; F5 = Family involvement; F6 = Family bonding; F7 = Antisocial beliefs; F8 = Problem behaviors
* $p < .05$

Table 5.13. Factor Inter-correlations for the Full Sample

| | F1 | F2 | F3 | F4 | F5 | V16 | F6 | F7 | F8 |
|---|---|---|---|---|---|---|---|---|---|
| F1 | 1 | | | | | | | | |
| F2 | 0.195* | 1 | | | | | | | |
| F3 | 0.306* | 0.308* | 1 | | | | | | |
| F4 | 0.215* | 0.290* | 0.408* | 1 | | | | | |
| F5 | -0.269* | -0.522* | -0.234* | -0.216* | 1 | | | | |
| V16 | -0.144* | -0.546* | -0.196* | -0.135* | 0.573* | 1 | | | |
| F6 | -0.132* | -0.441* | -0.070* | -0.163* | 0.745* | 0.445* | 1 | | |
| F7 | 0.116* | 0.490* | 0.351* | 0.457* | -0.227* | -0.232* | -0.205* | 1 | |
| F8 | 0.169* | 0.367* | 0.439* | 0.398* | -0.139* | -0.168* | -0.068* | 0.640* | 1 |

Note: F1 = SES; F2 = Poor family management; F3 = Adverse neighborhood environment; F4 = Peer antisocial beliefs; F5 = Family involvement; V16 = Family rewards; F6 = Family bonding; F7 = Antisocial beliefs; F8 = Problem behaviors

$p < .05$

## STRUCTURAL MODEL TESTING - STRUCTURAL EQUATION MODELING

The SDM was tested first with the race construct entered as three dummy variables reflecting Position in the Social Structure, as hypothesized in the general SDM. Because there were multiple constructs as exogenous variables (i.e. Position in the Social Structure & External Constraints), paths among the exogenous variables and with Family Involvement (F5) were first tested with the full sample and only statistically significant paths were kept in the model for the further analyses. Gender was coded as a dummy variable. The reference groups were female and white. The paths from SES (F1) to all other constructs were significant and kept in the model. The paths from gender (V3 - dummy variable) to Poor Family Management (F2) and Peer Antisocial Beliefs (F3) were significant and retained in the model. This finding indicated that males were more likely to report poor family management and higher peer antisocial beliefs, than females. Being Asian Americans (V4 - dummy variable) was significantly associated only with Family Involvement (F5) and Adverse Neighborhood Environment (F3), but not with the other two external constraints (Poor Family Management (F2) and Peer Antisocial Beliefs (F4)). Being mixed race (V5 - dummy variable) was significantly associated with all other constructs and the paths were included in the model. Lastly, being African Americans (V6 - dummy variable) was significantly related with Peer Antisocial Beliefs (F4) and Family Involvement (F5). These significant paths were included in the model for analyses.

Next, the entire SDM was estimated. All structural paths were significant with the exceptions of Adverse Neighborhood Environment (F3) → Family Rewards (V16),

and Peer Antisocial Beliefs (F4) →Family Rewards (V16) (Figure 5.1). Factor loadings of each indicator were all significant and in the hypothesized direction. The amount of variance accounted for by the model was 40.7%. The model fit was moderate with a CFI of 0.880 and RMSEA of .077, with $\chi^2(256) = 3564.419$.

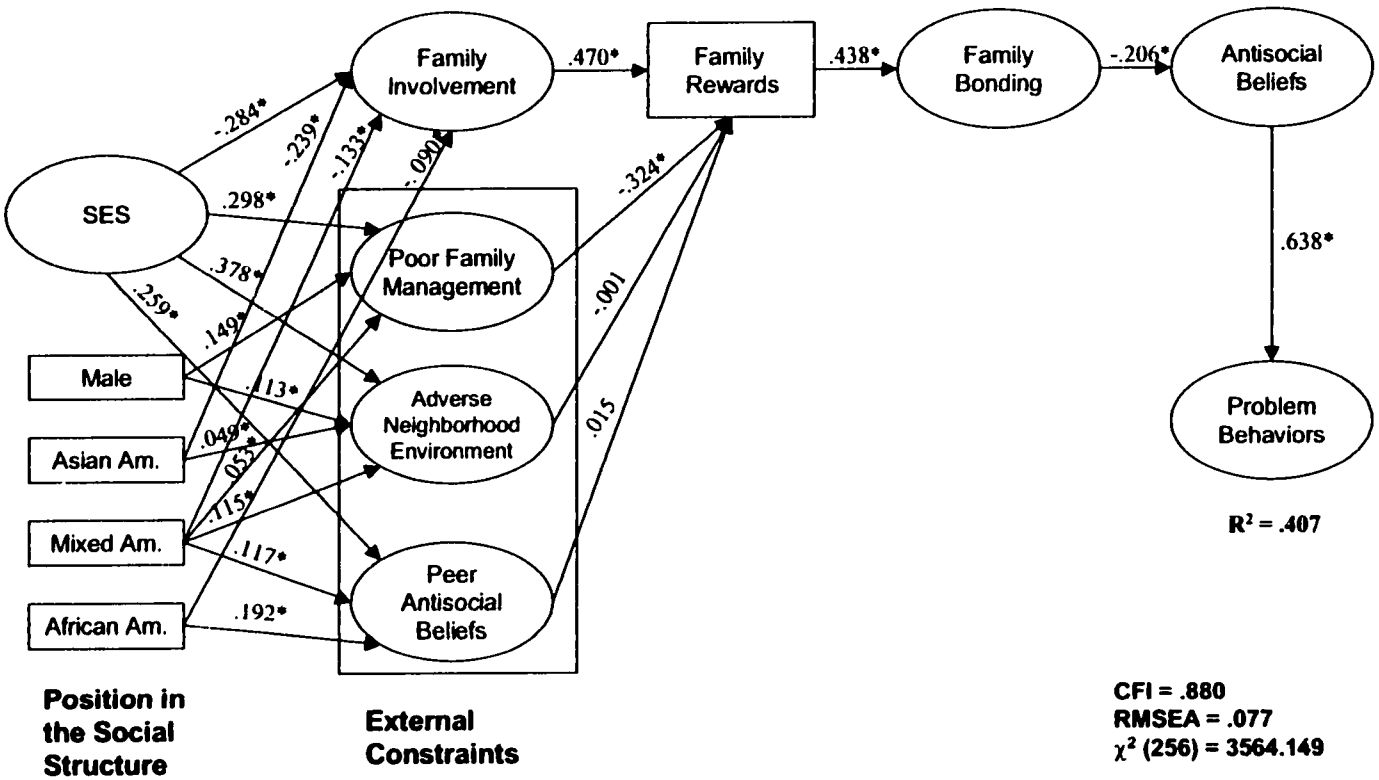


Figure 5.1. The SDM with the full sample

## POST-HOC MODEL FITTING & RE-SPECIFIED MODEL

Given the moderate fit of the model, I examined possible re-specifications to the originally hypothesized model. Researchers are strongly advised to be cognizant of both the exploratory nature of, and the dangers associated with post hoc model-fittings (Byrne, 1994). Fitting decisions, i.e. dropping and adding some paths but not others, must be based on a "judicious" combination of both the statistical information in the output and the substantive knowledge of the area. In other words, re-specification must make both substantive and statistical sense (Byrne, 1994).

In terms of statistical support and evidence, the followings issues were closely examined in the process of re-specification: large standardized residuals, distribution of standardized residuals, and the Lagrange Multiplier test (for adding parameters) as well as the WALD test (for dropping parameters). These diagnostic tests provide information on possible paths to drop or add. At the same time, changes in parameter coefficients, the significance level as well as model fit indices were closely monitored. Substantive explanations were sought as much as possible.

First, as the WALD test suggested, non-significant paths (Adverse Neighborhood Environment (F3) → Family Rewards (V16), and Peer Antisocial Beliefs (F4)) →Family Rewards(V16)) were dropped. Additional paths were added between Peer Antisocial Beliefs (F4) → Antisocial Beliefs (F7) and Adverse Neighborhood Environment (F3) → Problem Behaviors (F8). Large standardized residual patterns and the LM test suggested that these paths be added to the model. Adding these paths made substantive sense as well. Numerous studies have demonstrated a relationship

between peer influence on youth's belief system, as well as the effect of neighborhood crimes on youth problem behaviors (Battin, Hill, Abbott, Catalano, & Hawkins, 1998; Bogenschneider, 1996; Catalano, Berglund, Ryan, Lonczak, & Hawkins, 1998; Csikszentmihalyi, Rathunde, & Whalen, 1993; Erikson, 1968; Panel on High-Risk Youth, 1993; Thornberry & Krohn, ). Therefore, adding paths from F3 → F8 and F4 → F7 seemed both supported by the empirical evidence and made substantive sense. In addition, a path from Family Involvement (F5) → Family Bonding (F6) was added as it was strongly suggested by the largest standardized residual patterns, and the LM tests.

As some paths were added or dropped, some of the paths between the race dummy variables and other constructs became non-significant, and were dropped in the model. The WALD test also supported dropping of these paths. They were being Asian American (V4) → Adverse Neighborhood Environment (F3); being mixed race (V5) → Poor Family Management (F2); being mixed race (V5) → Family Involvement (F5); and being African American (V6) → Family Involvement (F5).

This re-specification resulted in the model presented in Figure 5.2. The finalized model fit better as indicated by the CFI of 0.932 and RMSEA of .057, with $\chi^2(256) = 2114.318$. All structural paths were significant and the amount of variance accounted for by the model was 43%.

The results based on this finalized model showed that SES was significantly associated with all three external constraints factors (poor family management (path coefficient = 0.307, $p < .05$), adverse neighborhood environment (0.390, $p < .05$), and peer antisocial beliefs (0.267, $p < .05$). The relationships between the exogenous variable

(SES and external constraints) and other SDM constructs of the model were also significant. SES was negatively and significantly related to family involvement (-0.315, $p < .05$). Poor family management was negatively and significantly associated with family rewards (-0.296, $p < .05$). The relationships among these constructs were as hypothesized by the SDM. In addition, it was shown that adverse neighborhood environment was directly and positively related to problem behavior outcome (0.262, $p < .05$), and peer antisocial beliefs were directly associated with students' antisocial beliefs (0.449, $p < .05$). The SDM hypothesized that external constraints are mediated by other SDM constructs (i.e. family rewards and bonding), but the results present direct rather than mediated relationships among the constructs. As hypothesized by the SDM, family involvement was significantly related to family rewards (0.477, $p < .05$) and to family bonding (0.699, $p < .05$). Although the association was weak, family reward was significantly related to family bonding (0.063, $p < .05$). Family bonding showed a negative association with antisocial beliefs (-0.149, $p < .05$), and antisocial beliefs had a significant and strong direct relationship with problem behaviors (0.583, $p < .05$). In terms of the relationship between gender and race/ethnicity, and other SDM constructs, the results showed differences between males and females, and between each ethnic minority group (Asian Americans, African Americans and mixed race) and white. Males reported higher poor family management and adverse neighborhood environment than females (0.148 & 0.115, $p < .05$). Asian youth reported lower family involvement than white youth (-0.146, $p < .05$), and mixed race students reported higher adverse neighborhood environment (0.120, $p < .05$) as well as peer antisocial

beliefs (0.169, $p < .05$) than white students. Lastly African American youth reported higher peer antisocial beliefs than white students (0.117, $p < .05$).

In addition to the model with race as an exogenous variable (shown in Figure 5.2), the model was tested using the multiple group structural equation modeling to examine possible moderating effects of race/ethnicity. To examine moderating effects through the multiple group analyses, the SDM model without the race dummy variables was examined first with the full sample (Figure 5.3). The model also showed an adequate model fit by CFI of 0.938 and RMSEA of .061, with $\chi^2(196) = 1817.39$. The amount of variance explained by the model stayed the same, with only slight changes in path coefficients. Again, the paths were all significant, as well as factor loadings in the model.

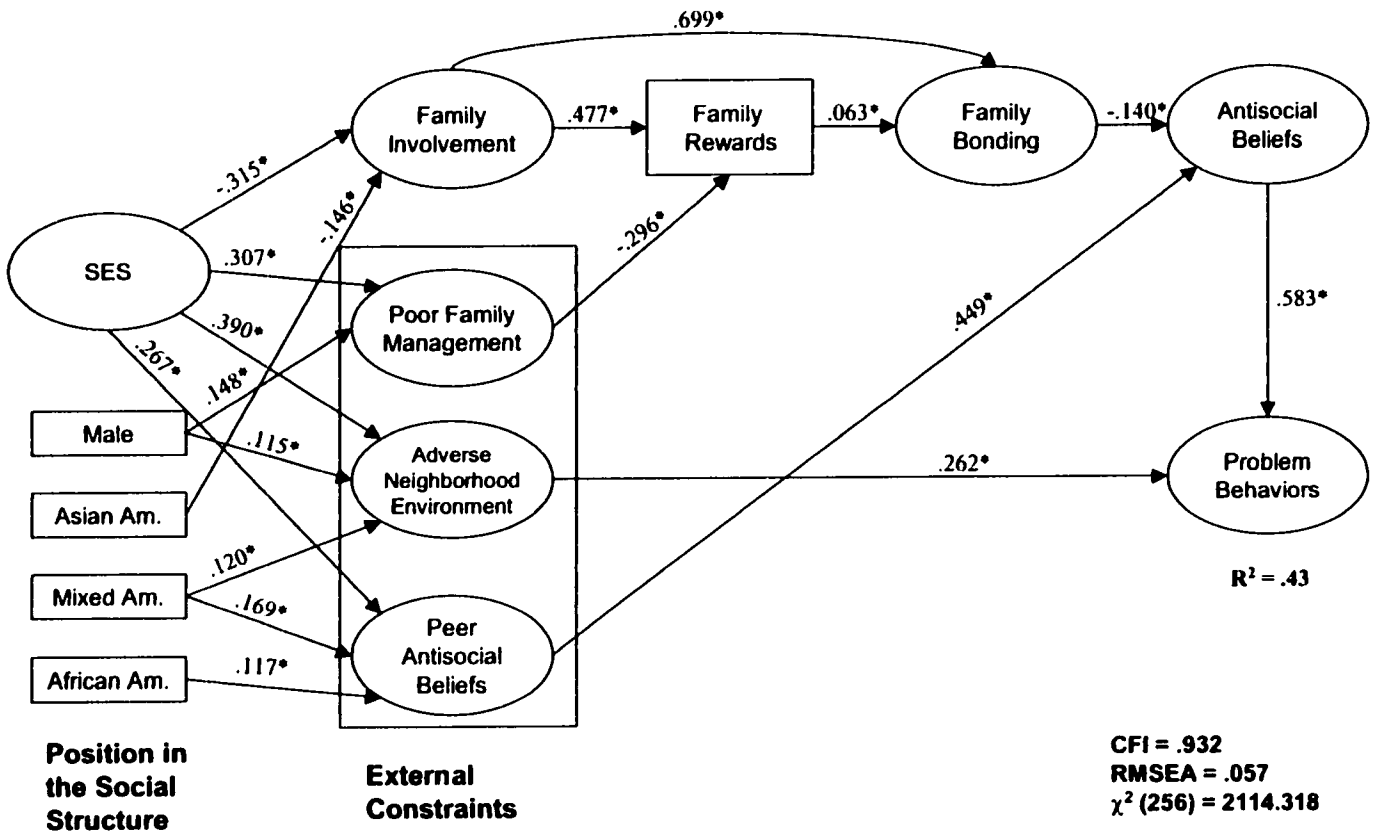


Figure 5.2. Re-specified SDM with the full sample (N = 2,203)

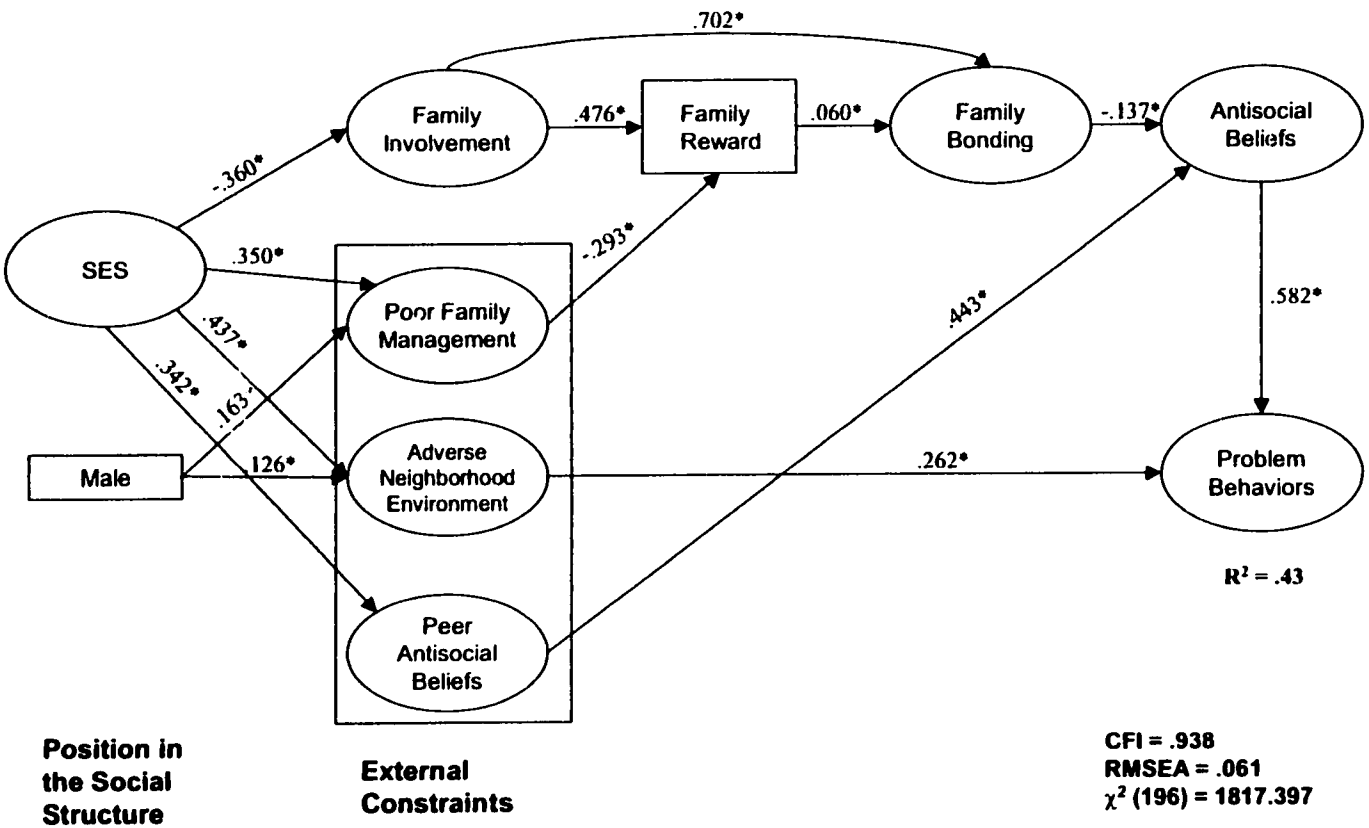


Figure 5.3. Re-specified SDM without the race dummy variables (N = 2,203)

## MULTIPLE GROUP COMPARISON: ETHNIC/RACIAL GROUPS

### MULTIPLE GROUP MEASUREMENT MODEL TESTING - CONFIRMATORY FACTOR ANALYSIS

The next step was a multiple group analysis that compared the factor loadings and covariances for the four groups: (1) White American; (2) African American; (3) Asian American; and (4) Bi- or Multi-race American. The white American group was selected as a reference group. First a multiple-group model was run unconstrained and then constrained. Equality constraints were placed on the factor loadings and covariances. The unconstrained model fit the data well with a CFI of 0.961 and RMSEA of 0.027 $\chi^2(616) = 1590.053$. The constrained CFA also fit the data well with a CFI of 0.946 and RMSEA of 0.029 $\chi^2(760) = 2124.874$. The difference between the constrained and unconstrained models was calculated by subtracting the chi-square values and degrees of freedom to determine whether the constrained model fit significantly worse than the unconstrained model (Byrne, 1994). The unconstrained and constrained models were significantly different ($\Delta\chi^2(144) = 534.821$, $p < 0.05$) indicating that the measurement models for the four groups were not equivalent.

Despite the fact that the unconstrained and constrained model showed statistical differences, the factor loadings for the latent factors were all statistically significant, and in the hypothesized direction across the groups. The Lagrange Multiplier (LM) test for releasing constraints indicated that the largest differences existed in V23 (0.774 vs. 0.893) and V25 (0.910 vs. 0.876) of F8 (Problem Behaviors) between the white and mixed race groups, and V23 (0.774 vs. 0.802) between the white

and Asian groups. In addition, the LM test showed that the largest differences in intercorrelations were among latent factors Poor family management (F2) and Adverse neighborhood environment (F3) (0.471 vs. 0.179), and F3 and Problem behaviors (F8) (0.283 vs. 0.553) in the white and mixed race groups, and between F3 and Peer antisocial beliefs (F4) (0.495 vs. 0.092) in the white and African American groups. Factor loadings and z-statistics, and factor intercorrelation matrices for each group are presented in Table 5.14 and 5.15.

## MEASUREMENT INVARIANCE

To be able to proceed to testing of the structural model with multiple sample groups, one needs to be confident of measurement invariance across groups. In other words, the corresponding factors in the models should represent the same latent constructs across the groups. Complete factorial invariance is obtained if identical corresponding loadings, identical corresponding error variances, and identical factor variance and covariances across the groups are indicated (Hancock, Stapleton, & Berkovits, 1999). However, the equality of error variances and error covariances tend to be the least important hypotheses to test (Byrne, 1994). With few exceptions, researchers usually seek less restrictive invariance criteria in which only the corresponding loadings are equivalent across groups (Byrne, Shavelson, & Muthen, 1989). When the influence of a factor on each measured variable is the same (i.e. factor loadings are equivalent), this is called as metric invariance (Horn & McArdle, 1992). It is argued, though, that metric invariance is too rigid and unrealistic for cross-group

analysis (Hancock et al., 1999; Horn & McArdle, 1992). However, there is no consensus as to how much of measurement variance is acceptable or tolerated to be able to compare models across groups, and researchers have proposed various methods. For instance, Byrne and her colleagues suggest partial invariance as an acceptable option, in which at least one of the freely estimated factor loadings is equivalent across groups in addition to one factor loading fixed to 1 for identification purposes. Horn and McArdle (1992) take a more lenient position on what they term configural invariance. Configural invariance is indicated when the magnitudes of salient loadings are not identical, but the overall pattern of non-zero and zero loadings are consistent across groups. Meredith (1993) further expands configural invariance to mean salient loadings that are the same sign across groups.

In this study, equality constraints were placed both on factor loadings and factor covariances. The results showed that there was a statistically significant difference between the unconstrained and the constrained models. When the equality constraints were placed only on the factor loadings, the difference was reduced, but still significant ($\Delta\chi^2(36) = 221.123$, $p < 0.05$). However, it should be noted that the majority of the factor loadings had metric invariance, and even when there were differences, there was at least one factor loading per factor that was equivalent across groups. In addition, the differences were in varying degrees of magnitudes but not in direction. The factor loadings were all statistically significant, and in the hypothesized direction across the groups. In sum, while the majority of the factor loadings indicated metric invariance, all of the factor loadings indicated at least configural invariance. As

the differences of magnitudes were relatively small, it was concluded that reasonable measurement invariance was obtained. Subsequently, it was decided to proceed to testing of the multiple group structural model.

TABLE 5.14. Factor Loadings and Z-statistics for the Ethnic/race groups

| | | White | | Black | | Asian | | Mixed | |
|---|---|---|---|---|---|---|---|---|---|
| Factors | Indicator | Loadings | z-stat | Loadings | z-stat | Loadings | z-stat | Loadings | z-stat |
| F1 | V1 | 0.636 | 9.341 | 0.702 | 6.769 | 0.763 | 10.455 | 0.845 | 12.854 |
| | V2 | 0.620 | 9.259 | 0.652 | 6.641 | 0.738 | 10.315 | 0.629 | 11.448 |
| F2 | V7 | 0.649 | 11.618 | 0.710 | 8.938 | 0.687 | 9.522 | 0.799 | 15.994 |
| | V8 | 0.347 | 8.527 | 0.358 | 6.013 | 0.380 | 6.811 | 0.460 | 10.958 |
| F3 | V9 | 0.748 | 16.787 | 0.817 | 11.678 | 0.778 | 16.109 | 0.862 | 23.800 |
| | V10 | 0.803 | 17.762 | 0.765 | 11.264 | 0.867 | 17.731 | 0.805 | 22.130 |
| F4 | V11 | 0.935 | 29.312 | 0.916 | 20.979 | 0.896 | 23.765 | 0.951 | 31.657 |
| | V12 | 0.852 | 25.470 | 0.825 | 18.240 | 0.854 | 22.141 | 0.808 | 24.983 |
| | V13 | 0.751 | 21.334 | 0.690 | 14.614 | 0.777 | 19.415 | 0.733 | 21.926 |
| F5 | V14 | 0.786 | 21.485 | 0.757 | 15.703 | 0.810 | 19.844 | 0.811 | 23.406 |
| | V15 | 0.785 | 21.448 | 0.826 | 17.347 | 0.840 | 20.783 | 0.782 | 22.429 |
| F6 | V17 | 0.884 | 27.364 | 0.852 | 19.789 | 0.914 | 25.588 | 0.872 | 28.392 |
| | V18 | 0.849 | 25.698 | 0.810 | 18.393 | 0.912 | 25.494 | 0.861 | 27.814 |
| | V19 | 0.887 | 27.483 | 0.847 | 19.613 | 0.872 | 23.691 | 0.855 | 27.540 |
| F7 | V20 | 0.865 | 26.525 | 0.815 | 18.503 | 0.854 | 22.742 | 0.875 | 28.971 |
| | V21 | 0.886 | 27.523 | 0.781 | 17.439 | 0.924 | 25.763 | 0.877 | 29.097 |
| | V22 | 0.897 | 28.073 | 0.906 | 21.522 | 0.871 | 23.441 | 0.911 | 30.961 |
| F8 | V23 | 0.774 | 22.427 | 0.849 | 19.577 | 0.802 | 20.464 | 0.893 | 29.961 |
| | V24 | 0.914 | 28.714 | 0.844 | 19.373 | 0.903 | 24.689 | 0.892 | 29.898 |
| | V25 | 0.910 | 28.553 | 0.825 | 18.814 | 0.915 | 25.231 | 0.876 | 29.016 |

Note: F1 = SES; F2 = Poor family management; F3 = Adverse neighborhood environment; F4 = Peer antisocial beliefs; F5 = Family involvement; F6 = Family bonding; F7 = Antisocial beliefs; F8 = Problem behaviors

$p < .05$

TABLE 5.15. Factor Correlations by Ethnic/race Groups

| | | F1 | F2 | F3 | F4 | F5 | V16 | F6 | F7 | F8 |
|---|---|---|---|---|---|---|---|---|---|---|
| F1 | WHITE | 1 | | | | | | | | |
| | AFRICAN | 1 | | | | | | | | |
| | ASIAN | 1 | | | | | | | | |
| | MIXED | 1 | | | | | | | | |
| F2 | WHITE | 0.194* | 1 | | | | | | | |
| | AFRICAN | 0.042 | 1 | | | | | | | |
| | ASIAN | 0.204* | 1 | | | | | | | |
| | MIXED | 0.197* | 1 | | | | | | | |
| F3 | WHITE | 0.090 | 0.471* | 1 | | | | | | |
| | AFRICAN | 0.136 | 0.400* | 1 | | | | | | |
| | ASIAN | 0.320* | 0.307* | 1 | | | | | | |
| | MIXED | 0.317* | 0.179* | 1 | | | | | | |
| F4 | WHITE | 0.172* | 0.479* | 0.495* | 1 | | | | | |
| | AFRICAN | -0.112 | 0.166* | 0.092 | 1 | | | | | |
| | ASIAN | 0.154* | 0.333* | 0.330* | 1 | | | | | |
| | MIXED | 0.260* | 0.179* | 0.456* | 1 | | | | | |
| F5 | WHITE | -0.317* | -0.642* | -0.347* | -0.271* | 1 | | | | |
| | AFRICAN | -0.235* | -0.480* | -0.075 | -0.048 | 1 | | | | |
| | ASIAN | -0.178* | -0.550* | -0.138* | -0.240* | 1 | | | | |
| | MIXED | -0.153* | -0.470* | -0.223* | -0.161* | 1 | | | | |
| V16 | WHITE | -0.164* | -0.488* | -0.201* | -0.160* | 0.579* | 1 | | | |
| | AFRICAN | -0.085 | -0.591* | -0.092 | -0.066 | 0.503* | 1 | | | |
| | ASIAN | -0.123* | -0.568* | -0.152* | -0.138* | 0.566* | 1 | | | |
| | MIXED | -0.114* | -0.558* | -0.142* | -0.108* | 0.594* | 1 | | | |
| F6 | WHITE | -0.170* | -0.633* | -0.277* | -0.268* | 0.765* | 0.452* | 1 | | |
| | AFRICAN | -0.187* | -0.311* | 0.052 | -0.045 | 0.736' | 0.402* | 1 | | |
| | ASIAN | -0.130* | -0.384* | 0.025 | -0.190* | 0.762* | 0.457* | 1 | | |
| | MIXED | -0.072 | -0.432* | -0.050 | -0.117* | 0.714* | 0.426* | 1 | | |
| F7 | WHITE | 0.226* | 0.618* | 0.310* | 0.487* | -0.390* | -0.240* | -0.423* | 1 | |
| | AFRICAN | -0.063 | 0.472* | 0.158* | 0.278* | -0.104 | -0.265* | -0.116* | 1 | |
| | ASIAN | 0.052 | 0.371* | 0.329* | 0.445* | -0.215* | -0.195* | -0.101* | 1 | |
| | MIXED | 0.145* | 0.480* | 0.411* | 0.443* | -0.187* | -0.232* | -0.184* | 1 | |
| F8 | WHITE | 0.226* | 0.448* | 0.283* | 0.372* | -0.251* | -0.127* | -0.236* | 0.591* | 1 |
| | AFRICAN | -0.003 | 0.324* | 0.260* | 0.273* | 0.057 | -0.161* | 0.016 | 0.496* | 1 |
| | ASIAN | 0.071 | 0.197* | 0.400* | 0.348* | -0.108* | -0.145* | -0.006 | 0.552* | 1 |
| | MIXED | 0.247* | 0.401* | 0.553* | 0.433* | -0.157* | -0.202* | -0.042 | 0.720* | 1 |

Note: F1 = SES; F2 = Poor family management; F3 = Adverse neighborhood environment; F4 = Peer antisocial beliefs; F5 = Family involvement; F6 = Family bonding; F7 = Antisocial beliefs; F8 = Problem behaviors

* $p < .05$

MULTIPLE GROUP STRUCTURAL MODEL TESTING - BY RACE/ETHNICITY

Next, a multiple group comparison of the structural model by race/ethnic groups was conducted. The procedures and the groups remained the same as with the CFA. The multiple-group structural model was run unconstrained and then constrained. The unconstrained structural model fit the data well with a CFI of 0.924 and RMSEA of 0.034 $\chi^2(784) = 2733.827$. The coefficients for the structural paths for each group are presented in Figure 5.4 through 5.7. The amount of variance explained in the outcome variable was 36% for whites, 27% for African Americans, 33% for Asian Americans, and 56% for mixed race group.

The constrained structural model was run with equality constraints placed on the structural paths. Hancock and his colleagues recommend that when the focus of research is on the latent structural relations, researchers should minimize the use of constraints (Hancock et al., 1999). Bollen takes a similar position (Bollen, 1989). Hancock et al. further argue that if improper constraints are placed (i.e. constraints on metric variant loadings), it is likely to disrupt the accuracy of structural invariance tests by compromising the integrity of the group's inter-factor covariances and by introducing badness of fit (Hancock et al., 1999). Since the measurement model did not obtain complete metric invariance, and although the differences were small, equality constraints were not placed on factor loadings. One factor loading per factor was fixed to 1 across the groups. This resulted in a CFI of 0.913, and RMSEA of 0.035 and $\chi^2(829) = 3049.804$. The unconstrained and constrained models were significantly different ($\Delta\chi^2(45) = 315.977$, $p < 0.05$) indicating that there were group differences in the

structural models across the groups, i.e. race/ethnicity moderated the relationships of constructs in the model.

The LM test indicated that largest statistical differences were on the following paths: Adverse neighborhood environment (F3) → Problem Behaviors (F8), Antisocial beliefs (F7) → F8 between whites and mixed race groups, Family bonding (F6) → F7 between whites and Asian Americans, and Low SES (F1) → Peer antisocial beliefs (F4) between whites and African Americans. See Table 5.16 for a complete list of paths that were statistically different, $\chi^2$ increment, as well as path coefficients for the groups.

Table 5.16. Statistically different paths across the groups

| Path | Group | Factor Loadings | Group | Factor Loadings | $\chi^2$ |
|---|---|---|---|---|---|
| F3→F8 | White | 0.414 | mixed | 0.435 | 20.50 |
| F7→F8 | White | 0.557 | mixed | 0.641 | 19.20 |
| F6→F7 | White | -0.312 | Asian | -0.033 | 18.47 |
| F1→F4 | White | 0.572 | African | -0.050 | 15.16 |
| F1→F5 | White | -0.654 | Asian | -0.235 | 14.22 |
| F1→F5 | White | -0.654 | mixed | -0.240 | 9.60 |
| F6→F7 | White | -0.312 | mixed | -0.131 | 7.01 |
| F1→F2 | White | 0.823 | mixed | 0.309 | 6.36 |
| F1→F4 | White | 0.572 | Asian | 0.235 | 6.27 |
| F1→F4 | White | 0.572 | mixed | 0.370 | 6.46 |
| F4→F7 | White | 0.126 | African | 0.194 | 6.10 |
| F6→F7 | White | -0.312 | African | -0.108 | 5.60 |
| F5→F6 | White | 0.762 | Asian | 0.725 | 3.95 |

Note: F1 = SES; F2 = Poor family management; F3 = Adverse neighborhood environment; F4 = Peer antisocial beliefs; F5 = Family involvement; F6 = Family bonding; F7 = Antisocial beliefs; F8 = Problem behaviors

Results showed that problem behaviors of mixed race students were more likely than white students to be associated with adverse neighborhood environment and with their beliefs in antisocial behaviors. The relationship of family bonding to

antisocial beliefs was weaker or non-significant in all ethnic minority groups than in the white group. Peer antisocial beliefs of all three ethnic minority students were less likely than of white students to be related with SES. SES showed a weaker association with family management in mixed race than in white as well. In fact, among African American students the associations of SES with all three external constraints were non-significant. Family involvement in Asian American and mixed race students were less likely to be related to SES. Peer antisocial beliefs showed stronger association with antisocial beliefs among African American students.

However, it should be noted that the differences were only in coefficient magnitudes, but not in direction. In addition, the fit indices showed that both the unconstrained and the constrained models fit the data well. Thus, it was concluded that, while some group differences were found among a few relationships of the SDM constructs, the model in general fit well for all ethnic groups, meaning the SDM could be utilized in various race/ethnic groups to explain problem behaviors.

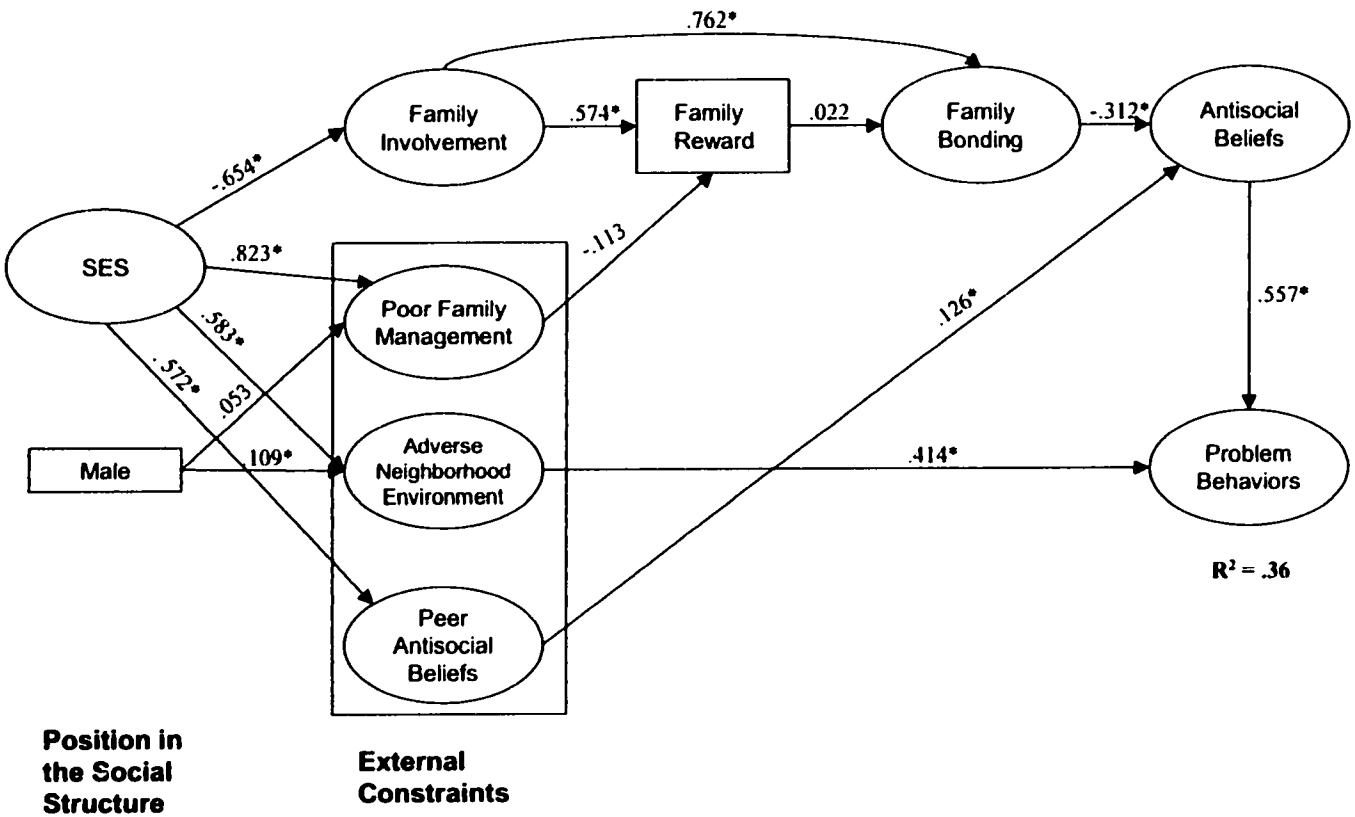


Figure 5.4. The SDM with the white group (N = 625)

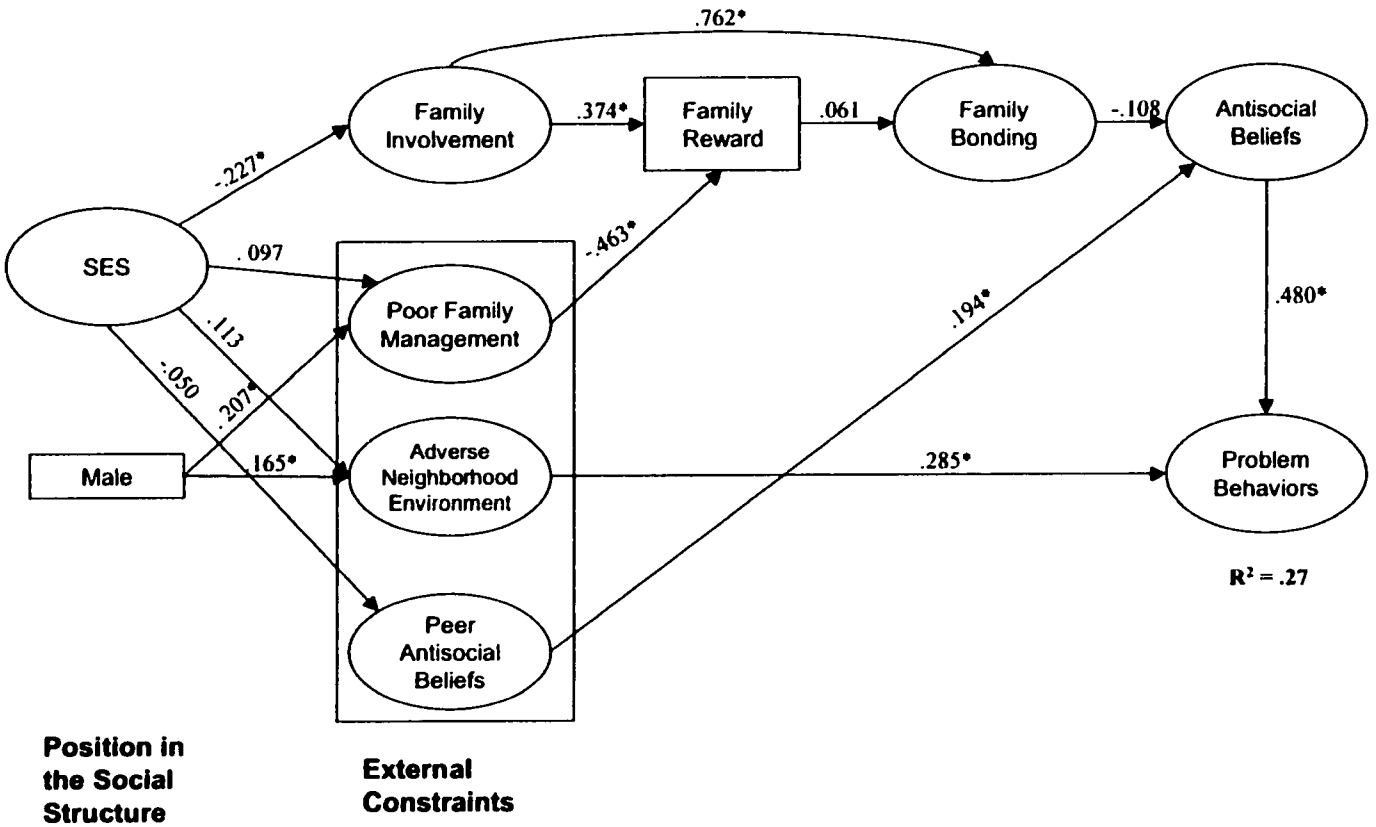


Figure 5.5. The SDM with the African American group (N = 385)

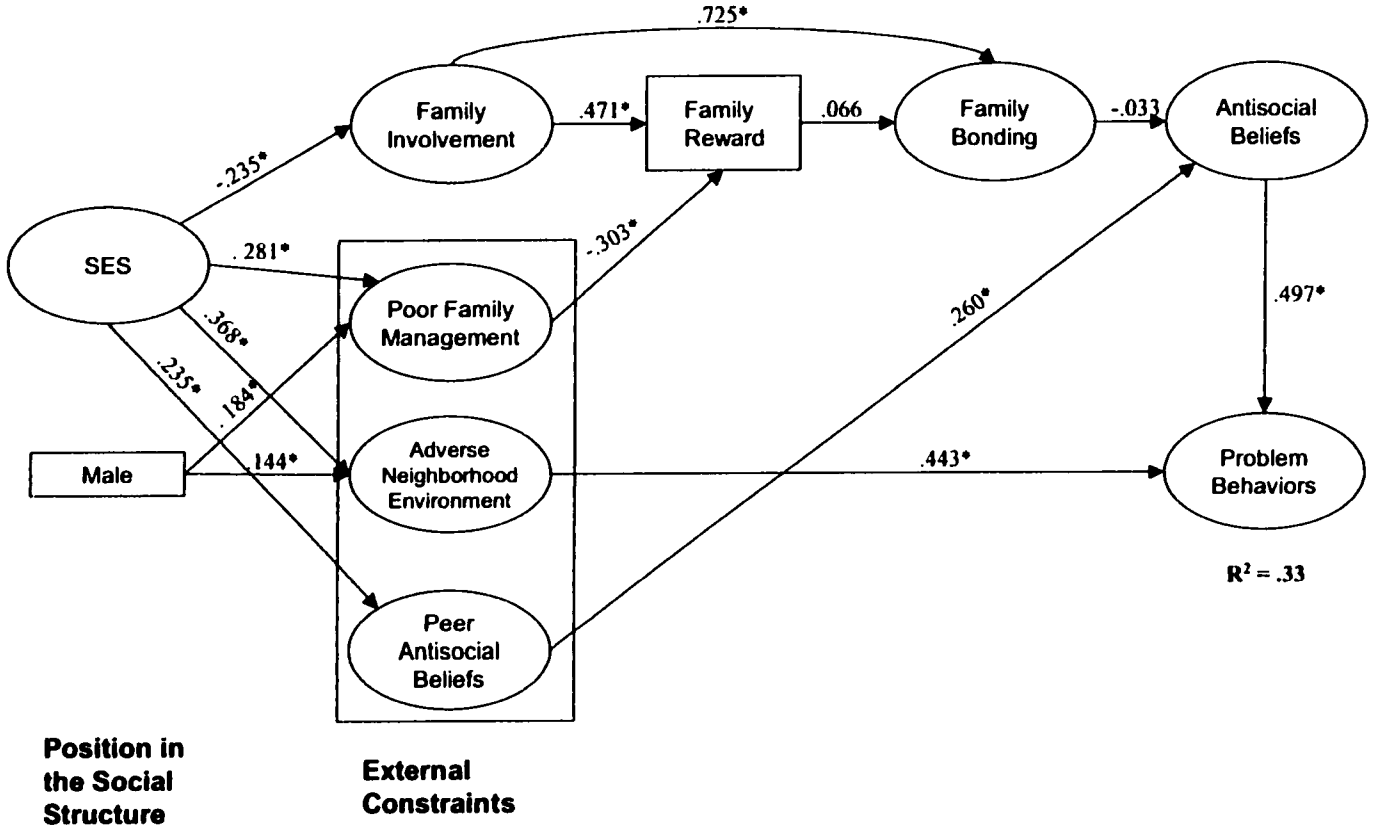


Figure 5.6. The SDM with the Asian American group (N = 479)

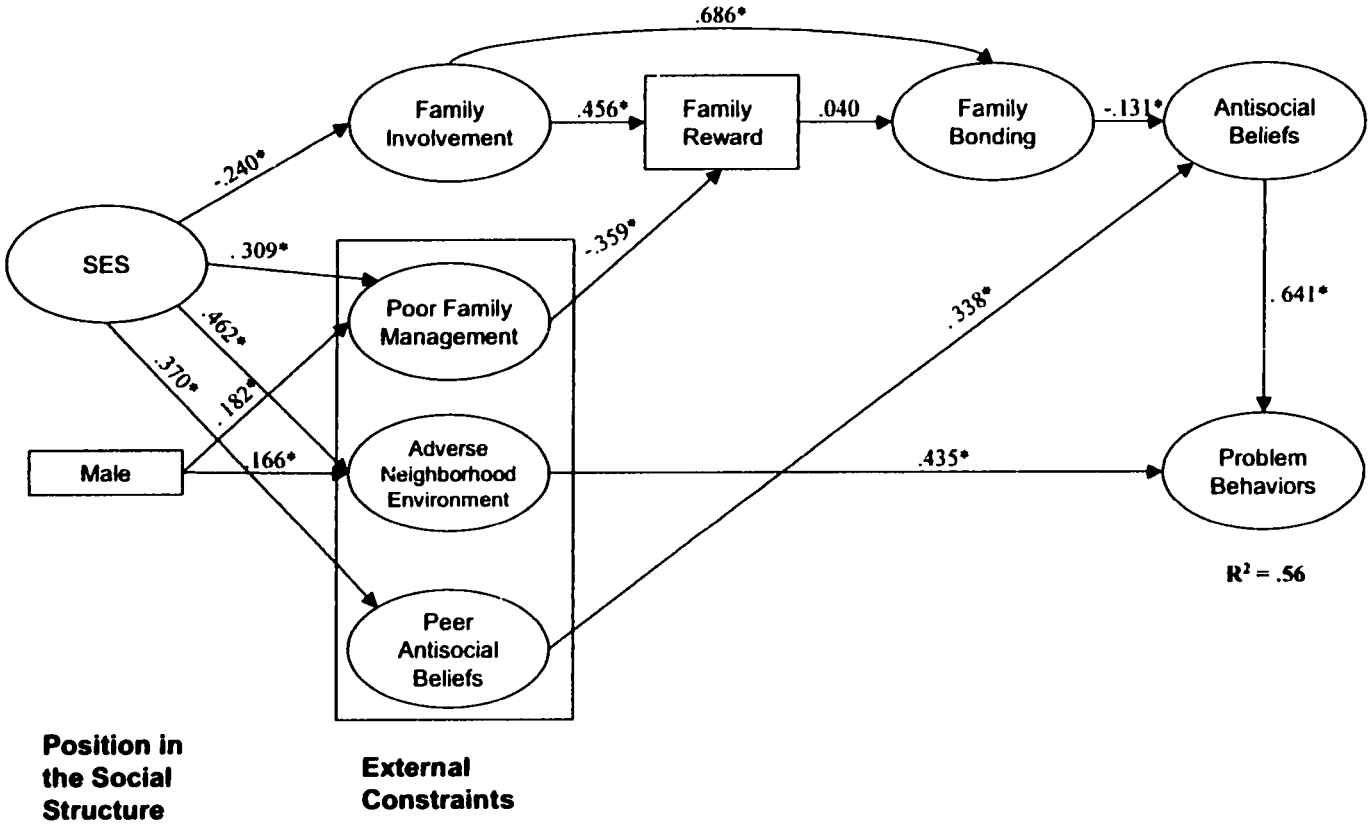


Figure 5.7. The SDM with the mixed race group (N = 714)

## MULTIPLE GROUP COMPARISON: NON-IMMIGRANT VS. IMMIGRANT GROUPS

### MULTIPLE GROUP MEASUREMENT MODEL TESTING - CONFIRMATORY FACTOR ANALYSIS

Multiple Group CFA compared the factor loadings and covariances by immigrant status. The non-immigrant group (N = 1,733) was selected as the reference group. The procedures and the groups remained the same as with the MGCFA by race/ethnic groups. First a multiple-group comparison was run unconstrained and then constrained. Equality constraints were placed both on the factor loadings and covariances. The unconstrained model fit the data well with a CFI of 0.972 and RMSEA of 0.033 $\chi^2(308) = 1021.536$. The constrained CFA fit the data well with a CFI of 0.965 and RMSEA of 0.034 $\chi^2(356) = 1250.045$. The unconstrained and constrained models were significantly different ($\Delta\chi^2(48) = 228.509$, $p < 0.05$) indicating that the measurement models for the two groups are not equivalent. When the equality constraints were placed only on factor loadings, the difference was reduced, but still significant ($\Delta\chi^2(12) = 123.90$, $p < 0.05$).

As it was the case with MGCFA by race/ethnic group, although the difference between the unconstrained and constrained model were statistically significant, the factor loadings for latent factors were all statistically significant, and in the hypothesized direction across the groups. The Lagrange Multiplier (LM) test for releasing constraints indicated that the largest differences existed in V23 (0.814 vs. 0.930) and V25 (0.871 vs. 0.926) of F8, V13 (0.746 vs. 0.801) of F4, and V21 (0.864 vs. 0.919) of F7. In addition, the LM test showed the largest differences in intercorrelations among the latent factors were Family involvement (F5) and Antisocial beliefs (F7) (-

0.201 vs. -0.297), and Adverse neighborhood environment (F3) and Problem behaviors (F8) (0.390 vs. 0.540). Factor loadings, z-statistics, and factor intercorrelation matrices for each group are presented in Table 5.17 and 5.18.

The majority of factor loadings indicated metric invariance, and all of the factor loadings indicated at least configural invariance. All the factor loadings were statistically significant and in the hypothesized directions. In addition, the differences of magnitudes were relatively small. Therefore, it was concluded that reasonable measurement invariance was obtained, and to proceed to testing the multiple group structural models.

TABLE 5.17. Factor loadings and Z-statistics for Non-immigrant and Immigrant Groups

| | | Non-immigrant | | Immigrant | |
|---|---|---|---|---|---|
| Factors | Indicator | Loadings | z-stat | Loadings | z-stat |
| F1 | V1 | 0.792 | 18.206 | 0.912 | 12.513 |
| | V2 | 0.620 | 16.665 | 0.671 | 10.740 |
| F2 | V7 | 0.698 | 19.078 | 0.801 | 11.743 |
| | V8 | 0.386 | 13.564 | 0.419 | 7.784 |
| F3 | V9 | 0.820 | 31.900 | 0.848 | 18.031 |
| | V10 | 0.795 | 31.028 | 0.840 | 17.876 |
| F4 | V11 | 0.929 | 48.051 | 0.909 | 23.453 |
| | V12 | 0.852 | 42.191 | 0.823 | 20.303 |
| | V13 | 0.746 | 35.108 | 0.801 | 19.573 |
| F5 | V14 | 0.806 | 36.996 | 0.763 | 17.436 |
| | V15 | 0.825 | 38.081 | 0.761 | 17.383 |
| F6 | V17 | 0.885 | 45.399 | 0.900 | 24.098 |
| | V18 | 0.853 | 42.884 | 0.921 | 25.066 |
| | V19 | 0.864 | 43.786 | 0.870 | 22.838 |
| F7 | V20 | 0.867 | 44.148 | 0.855 | 22.236 |
| | V21 | 0.864 | 43.878 | 0.919 | 24.984 |
| | V22 | 0.888 | 45.776 | 0.928 | 25.409 |
| F8 | V23 | 0.814 | 39.919 | 0.930 | 25.661 |
| | V24 | 0.899 | 46.389 | 0.886 | 23.673 |
| | V25 | 0.871 | 44.114 | 0.926 | 25.491 |

Note: F1 = SES; F2 = Poor family management; F3 = Adverse neighborhood environment; F4 = Peer antisocial beliefs; F5 = Family involvement; F6 = Family bonding; F7 = Antisocial beliefs; F8 = Problem behaviors

* $p < .05$

TABLE 5.18. Factor Correlations among Non-immigrant and immigrant groups

| | | F1 | F2 | F3 | F4 | F5 | V16 | F6 | F7 | F8 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F1 | NON-IMM | | 1 | | | | | | | | |
| | IMM | | 1 | | | | | | | | |
| F2 | NON-IMM | 0.203* | | 1 | | | | | | | |
| | IMM | 0.148* | | 1 | | | | | | | |
| F3 | NON-IMM | 0.330* | 0.328* | | 1 | | | | | | |
| | IMM | 0.205* | 0.220* | | 1 | | | | | | |
| F4 | NON-IMM | 0.250* | 0.316* | 0.439* | | 1 | | | | | |
| | IMM | 0.122* | 0.202* | 0.316* | | 1 | | | | | |
| F5 | NON-IMM | -0.220* | -0.534* | -0.268* | -0.218* | | 1 | | | | |
| | IMM | -0.349* | -0.478* | -0.022 | -0.203* | | 1 | | | | |
| V16 | NON-IMM | -0.139* | -0.534* | -0.179* | -0.143* | 0.557* | | 1 | | | |
| | IMM | -0.119* | -0.595* | -0.620 | -0.109* | 0.594* | | 1 | | | |
| F6 | NON-IMM | -0.121* | -0.475* | -0.103* | -0.158* | 0.731* | 0.431* | | 1 | | |
| | IMM | -0.169* | -0.349* | 0.072 | -0.169* | 0.813* | 0.471* | | 1 | | |
| F7 | NON-IMM | 0.145* | 0.467* | 0.346* | 0.473* | -0.201* | -0.220* | -0.222* | | 1 | |
| | IMM | 0.054 | 0.449* | 0.355* | 0.431* | -0.297* | -0.249* | -0.138* | | 1 | |
| F8 | NON-IMM | 0.173* | 0.320* | 0.390* | 0.408* | -0.124* | -0.113* | -0.078* | 0.631* | | 1 |
| | IMM | 0.158* | 0.427* | 0.540* | 0.401* | -0.125* | -0.231* | 0.041 | 0.658* | | 1 |

Note: F1 = SES; F2 = Poor family management; F3 = Adverse neighborhood environment; F4 = Peer antisocial beliefs; F5 = Family involvement; F6 = Family bonding; F7 = Antisocial beliefs; F8 = Problem behaviors

* $p < .05$

MULTIPLE GROUP STRUCTURAL MODEL TESTING BY IMMIGRANT STATUS

A multiple group comparison of the structural model by immigrant status was conducted. The multiple-group structural model was run unconstrained and then constrained. The unconstrained structural model fit the data well with a CFI of 0.935 and RMSEA of 0.044 $\chi^2(392) = 2073.234$. The coefficients for the structural paths for each group are presented in Figure 5.8 for the non-immigrant group and Figure 5.9 for the immigrant group. The constrained structural model was run with equality constraints placed on the structural paths. The CFI was 0. 931, RMSEA of 0.045 and $\chi^2(407) = 2173.491$. The unconstrained and constrained models were significantly different ($\Delta\chi^2(15) = 100.257$, $p < 0.05$) indicating that the structural models are not equivalent for the four ethnic groups. The LM test indicated that the largest statistical differences were on the paths SES (F1) → Peer antisocial beliefs (F4) ($\chi^2$ increment = 17.425), being male (V3) → Poor family management (F2) ($\chi^2 = 11.240$), and Family involvement (F5) → Family bonding (F6) ($\chi^2 = 9.187$). See Table 5.19 for a complete list of paths that were statistically different, $\chi^2$ increment, as well as path coefficients for the groups.

The association of SES with peer antisocial beliefs was significantly weaker in the immigrant group. The gender difference on family management was greater for the immigrant group. Also, the relationship of family involvement to family bonding was stronger for the immigrant group, as was the relationship of adverse neighborhood environment to problem behaviors. SES had weaker effects on family management, adverse neighborhood environment as well as family involvement in the immigrant

group. Lastly, although the difference of path coefficients were not significant, the association of family bonding with antisocial beliefs was not significant among the immigrant youth, and the relationship of gender to adverse neighborhood environment was also not significant for the immigrant youth.

However, it should be noted that the differences were only in magnitudes, but not in direction. In addition, the fit indices showed that both the unconstrained and the constrained models fit the data well. Thus, it was concluded that, while the magnitude of difference in the relationships among factors across the groups informed which relationships were stronger or weaker in one group than the other, the model in general fit well for both the immigrant and the non-immigrant group, suggesting that the SDM could be utilized in both groups to explain problem behaviors.

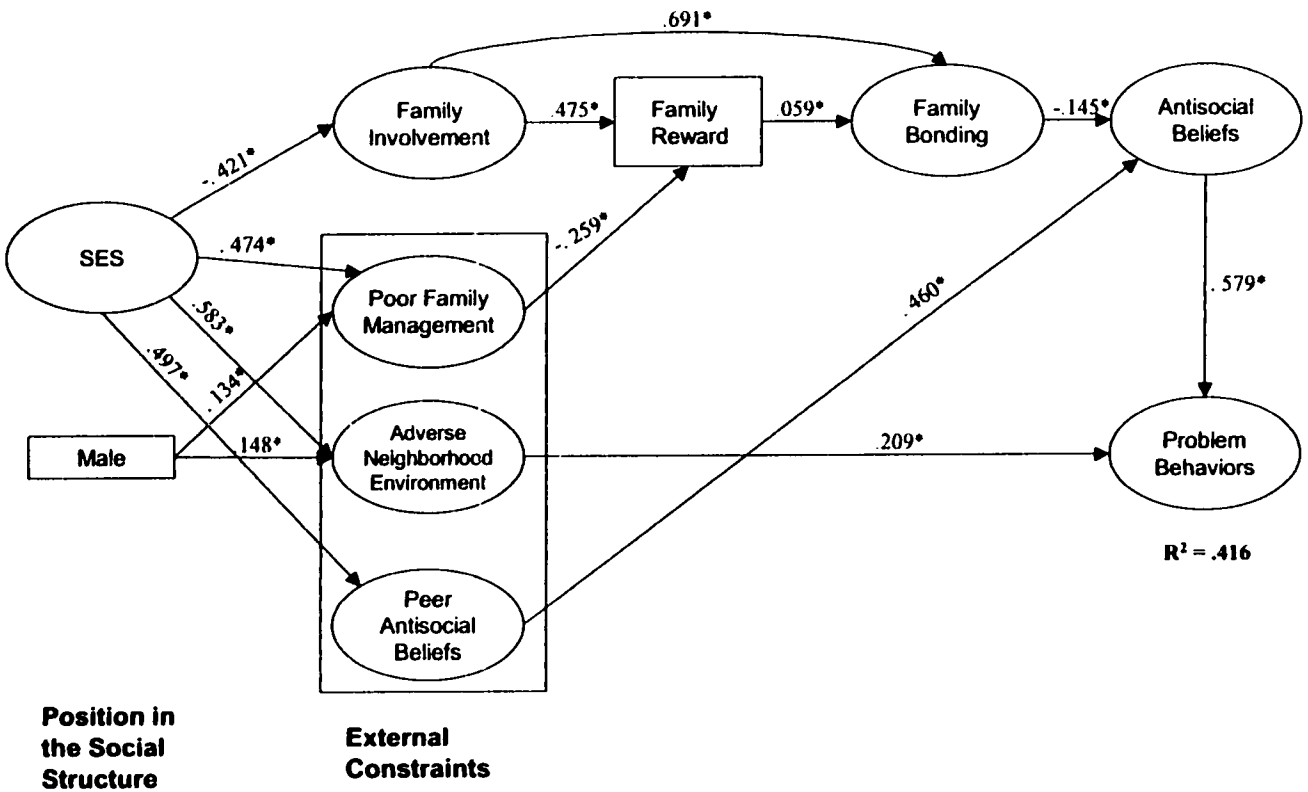


Figure 5.8. The SDM with the non-immigrant group (N = 1,733)

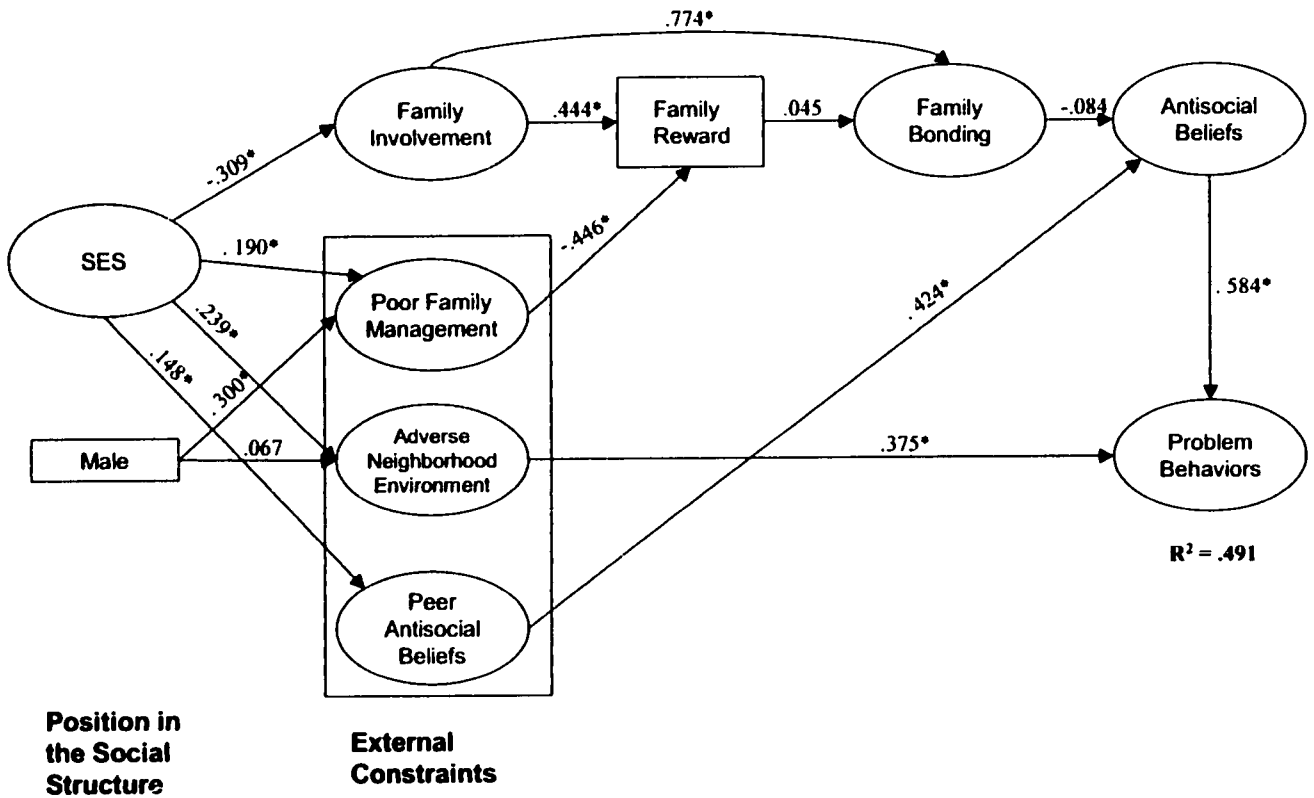


Figure 5.9. The SDM with the immigrant group (N = 448)

# CHAPTER V DISCUSSION

The development of preventive interventions requires a thorough understanding of the risk and protective factors for youth problem behaviors. However, there has been limited research examining the generalizability of known risk and protective factors among ethnic minority youth groups. While some studies have contributed to the examination of similarities and differences of etiological factors across racial and cultural groups (see Catalano et al., 1993; Kim, McLeod, & Shantezis, 1992; Maddahian, Newcomb, & Bentler, 1988; Orlandi, 1986; Trimble, Bolek, & Niemcryk, 1992), few have included Asian Americans and mixed race youth among their comparison samples. Research examining immigrant status in association with youth outcomes is extremely limited as well. Given the dramatic increase in ethnic minority and immigrant populations, it is critical that efforts be expended to encourage more etiological research focused on these growing communities.

This dissertation study sought to examine the risk and protective factors associated with two important problem behaviors, substance use and violent behaviors among ethnic minority. The goals of this study were to understand the familial and environmental processes specified by the SDM that influence ethnic minority children and their development. These results serve to inform the development of preventive social work interventions that support the healthy development of diverse children within an ecological context.

## RISK AND PROTECTIVE FACTORS

### RACE & ETHNICITY

This dissertation study found race/ethnic differences in the rates of substance use and violent behaviors. The general pattern of differences was that mixed race youth reported the highest rates of substance use and violent behaviors, followed by African American youth, white and Asian American youth. It is often argued that race/ethnic group differences are in fact an artifact of socioeconomic status difference. Therefore, the results were re-analyzed controlling for low-income status. The results showed that race/ethnic group differences still existed in eight out of thirteen problem behavior items after low-income status was accounted for. In other words, the pattern remained constant with mixed race youth continuing to report the highest rates of substance use and violent behaviors followed by African American, white, and Asian American youth.

The fact that race/ethnic group differences remained unchanged after low-income status was controlled requires an explanation. Race/ethnic groups reside in diverse ecological contexts, both micro and macro level, and differences in the rates of substance use and violent behaviors may be a reflection of differences in contexts, i.e. differences in individual, family, school, community level factors, as well as differences in broader historical, economic, and socio-cultural domains (Ogbu, 1994). Racial and cultural variations are critical factors in this society as they play a significant role in determining distinctly different historical experiences, ways of being incorporated into

this society, and opportunities for occupational and economic success. Ethnic minority youth are more likely than white youth to encounter disadvantaged status, poverty, limited social opportunities, and racial discrimination in social environments. Race/ethnic groups with a negative stereotype are in particular more vulnerable to risk factors than others (Gibbs, 1990; Ogbu, 1988; Phinney, 1991). Higher rates of violent behaviors among African American youth can be interpreted as an adaptive response to a discriminating society, i.e. a reflection of higher vulnerability to risk factors (Gibbs, 1990, 1998). Gibbs (1998) reported that most of the African American youth who engage in violent crime and assaultive behaviors are exposed to family and community violence. In addition, they are often victims of the psychological violence of poverty, discrimination, and a chronic stressful environment (Gibbs, 1998). Their higher involvement in problem behaviors places them at a greater risk for a range of other types of social and psychological consequences and their higher vulnerability is perpetuated.

Mixed race youth who reported the highest rates of substance use and violent behaviors appear to be at a greater risk than any other groups in the study. Research on mixed race youth is in its infancy and empirical data on their rates of various problem behaviors are rare (Brown, 1990; Overnier, 1990; Wardle, 1991). The limited available studies suggest that mixed race youth are more prone to conduct disorders, substance use, academic problems, psychosomatic disorders, depression, and suicidal behaviors (Brown, 1990; Gibbs, 1989; Overnier, 1990; Wardle, 1991). Gibbs (1989) suggests that mixed race adolescents are more vulnerable than mono-racial white and

other ethnic minorities because they experience "(1) conflicts about their dual racial/ethnic identity, (2) conflicts about their social marginality, (3) conflicts about their sexuality and choice of sexual partners, (4) conflicts about separation from their parents, and (5) conflicts about their educational or career aspirations" (p331). Because of their conflicts about their dual or multiple racial identity, mixed race youth are expected to develop a weaker sense of ethnic identity than mono-racial ethnic minority youth (Brown, 1990; Gibbs, 1989; Wardle, 1991). The findings of this dissertation concur with the literature in that mixed race youth reported a lower ethnic identity score. Spencer and his colleagues (2000) also found similar results in their study regarding a lower ethnic identity score. Many of the past studies relied on samples drawn from social service populations. In contrast, the findings of this study represent a general school-based sample, however, continue to depict mixed race at great risk. The finding also implies that mixed race youth may be in an ecological context that is distinctly different from those of mono-racial youth. This group of mixed race youth was comprised of diverse combinations of race/ethnicity and was not dominated by one kind of race/combination (e.g. African American and white or Asian American and white). Unfortunately, the data do not allow for further investigation to examine whether different combinations of race/ethnicity are associated with different rates of behaviors. One might speculate that certain combinations of race/ethnicity may be at more or less risk than others.

One unusual finding in this study was that rates of having ever used tobacco, alcohol, and marijuana were higher among African American youth than among white

youth. This contradicts many other studies reporting lower prevalence of substance use among African American youth in national studies[6] (CDC, 2000; Dryfoos, 1990; Newcomb, 1996; Wallace et al., 1995). However, the percentage of low-income white youth who had smoked, drunken alcohol, sniffed glue and used crack or cocaine was higher than that of low-income African American youth. In other words, among the low-income group, white youth reported higher rates of smoking, drinking, sniffing glue, and using crack/cocaine than African American youth. The finding may be an indication that African American youth who are not poor in this particular geographical area have higher rates of substance use than non-poor white youth. One may argue that middle class African American youth have different kinds of psychological issues to confront in terms of their marginality, their ethnic identity and their mobility in the society (Gibbs, 1998), which may lead to higher rates of substance use.

Some studies suggest that Asian cultures function as a protective factor against problem behaviors (Kim et al., 1995; Lee & Edmonston, 1994; Steinberg et al., 1992; Sue & Sue, 1995). Asian American youth reported the lowest rates for most of the substance use and violent behavior indicators. It is suggested that cultural background and norms governing substance use in various cultures differ and that substance use is presumed to be more congruent with Western cultures than Eastern cultures (Kim et al., 1995). Studies further suggest that less assimilated Asian American immigrants

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[6] Results from the Teen Health Survey (Hillard, 1999) which was conducted with all 7th and 8th grade students in the School District showed findings consistent with the literature, i.e. African American youth reported lower rates of tobacco, alcohol, and marijuana than white youth. This suggests this study's sample from only four of the middle schools in the same District may be unique.

have better health outcomes along with lower rates of substance use (Kim et al., 1995; LaFromboise et al., 1993; Rumbaut, 1997; Rumbaut, 1997; Zhou, 1997). Immigrant Asian American youth are thus expected to have better outcomes than non-immigrant Asian American youth as they tend to maintain their cultural values, traits and behaviors in comparison to non-immigrants. Thus, one might argue that the large proportion of immigrant Asian youth may have contributed to the lower rates of substance use and violent behaviors among the Asian American youth. However, there were no differences between immigrant Asian youth (N= 192) and Asian youth who were born in U.S. (N= 282) in the rates of substance use and violent behaviors ($0.094 < \chi^2 < 2.464$, $p > .05$), with one exception in which non-immigrant Asian youth reported a higher rate of having ever sniffed or inhaled glue, gas or paint ($\chi^2 = 4.312$, $p < .05$). Therefore, having a disproportionate number of immigrants in the group did not contribute to the relatively lower rates of problem behaviors among Asian American youth. Nonetheless, it is imperative to examine (1) what aspects of culture benefit children, (2) what are the mechanisms in which culture functions as a protective factor in preventing youth problem behaviors, and (3) how do individuals maintain the protective nature of cultural values and traits.

In addition, it is important to note diversity within Asian youth. At least thirty distinct subgroups exist within the Asian American population, each with unique values, customs, religions and languages (Sue & Sue, 1995). Further, differences exist within each group in terms of reasons for migration, immigration status, languages and generation status in the United States (Sue & Sue, 1995; Takaki, 1989). With such

diversity among Asian youth, it is critical to investigate further to better understand sub-group differences. For example, Asian subgroup differences were reported in studies (Harachi, Catalano, Kim, & Choi, 2001), in which some Asian subgroups reported higher rates of substance use than other Asian subgroups and their rates were comparable to those of whites.

## IMMIGRANT STATUS

Immigrant status was also examined to see whether it operates as a protective factor as suggested by numerous studies (Portes, 1995a; Rumbaut, 1997; Steinberg et al., 1992; Zhou & Bankston, 1996, 1998). The results did not support the existing literature, showing non-significant differences in the average frequency and rates of substance use and violent behaviors. However, a few findings were consistent with the existing studies. For example, having drunk alcohol, used marijuana and gotten drunk on alcohol or high on drugs were higher among non-immigrant youth. With a few exceptions, immigrant youth were at a similar level of risk and vulnerability as non-immigrant youth in terms of substance use and violent behaviors.

Two possible reasons might explain the similarities between the immigrant and the non-immigrant groups in this study. The first reason relates to how immigrant and non-immigrant youth were grouped. It is important to note that this study categorized youth into immigrant and non-immigrant based on whether they were born in U.S. However, most studies comparing outcomes among immigrant and non-immigrant youth include second generation children with the immigrant group. It is argued that,

although to a lesser extent than the first generation children of immigrants, second generation children are still influenced by parents' culture of origin and immigration experience, and that the protective effect of culture and immigration remains in the second generation (Portes, 1995a; Rumbaut, 1997; Zhou & Bankston, 1996, 1998). Therefore, it is conceivable that the inconsistency in our finding was a result of not including second generation immigrants into the immigrant sample.

A second explanation for the similarities between immigrant groups is related to the "bipolar" outcomes of immigrant youth[7]. Zhou and Bankston report that among immigrant youth there are two distinctive and extreme groups of outcomes, one positive and the other negative, but little in between (Bankston & Zhou, 1997; Zhou & Bankston, 1998). While the most prestigious high school academic contests and academic fast tracks are dominated by the 1.5 or 2nd generation of immigrants, many other immigrant children are extremely vulnerable to multiple high-risk behaviors, school dropouts or failure, street gang membership and violent youth crimes (Bankston & Zhou, 1997; Zhou & Bankston, 1998). Therefore, when these two groups of immigrant youth are aggregated as one group, the differences are obscured.

## OTHER FACTORS

As shown in numerous studies (Bogenschneider, 1996; CDC, 2000; Dryfoos, 1998; Hawkins, Catalano, & Miller, 1992; Newcomb, Maddahain, & Bentler, 1986), the

[7] In Zhou and Bankston's studies and many other studies on immigration, immigrant youth are defined as immigrant youth who were born outside of U.S. and immigrated to this country, and whose at least one parent is immigrant, i.e. both first and second generation of immigrants.

study results confirmed that male, older, and poor adolescents were more likely to report higher rates of substance use and violent behaviors.

However, there was no gender difference in the average frequency of substance use. Gender differences on the average frequency of substance use were significant for the white sample ($F = 4.086$, $p < .05$), and Asian Americans ($F = 6.778$, $p < .05$), in which females reported less frequent use of substance use. Gender differences remained non-significant among African Americans ($F = 1.674$, $p > .05$) and mixed race groups ($F = 2.099$, $p > .05$). This suggests that gender may play a differential role in affecting substance use among various race/ethnic groups, and different cultural values, attitudes, and behaviors toward female substance use may affect substance use. One possible explanation suggests that white and Asian American females may be more prohibited or discouraged from using substances, while there may be less gender-specific attitudes or norms toward substance use among African American and among mixed race youth.

## ETHNIC IDENTITY AND RACIAL DISCRIMINATION

This study sought to investigate ethnic identity and racial discrimination among urban minority youth. The first hypothesis, that greater one's ethnic identity is related to less problem behaviors, was supported by the data when ethnic minority youth were treated as one group. However, the relationship became non-significant in African and Asian American youth groups when these groups were examined separately. On the other hand, mixed race youth who reported less substance use and

violent behaviors, had a stronger sense of ethnic identity. The lack of association between ethnic identity, and substance use and violent behaviors may be due to the age of the respondents and a measurement issue. The youth in the study were young and may be at a developmental stage in which ethnic identity may not be fully formed or present as a salient issue. When compared by age, older youth (14 years and older) showed a significant association between ethnic identity and substance use ($r$ = -0.222**, $p < .01$), and violent behaviors ($r$ = -0.165**, $p < .01$). However, younger youth (13 years and younger) had a non-significant association between ethnic identity and substance use ($r$ = -0.039, $p > .05$), and a significant but fairly weak association between ethnic identity and violent behaviors ($r$ = -0.068*, $p < .05$). These findings are consistent with the interpretation that young adolescents in the early stages of development may have not formalized their sense of ethnic identity. Another possible reason for the finding is a measurement issue, which is also related to the age of the respondents. The Multigroup Ethnic Identity Measure (MEIM) (Phinney, 1992) was originally developed with college student samples and has been used among high school samples. However, it has not been used among early adolescents.

What is interesting is that although the mean of ethnic identity was lower for mixed race youth than that of mono-racial ethnic minority youth, the associations between ethnic identity and substance use and violent behaviors were stronger and consistently negative among mixed race youth. This might suggest that mixed race youth are keener to the issues of ethnic identity than mono-race youth as a result of their mixed backgrounds (Brown, 1990; Gibbs, 1989; Ovemier, 1990; Wardle, 1991).

This issue will be discussed in further detail later along with a discussion on the association between racial discrimination and problem behaviors among mixed race youth.

The hypothesis that subjective experiences of racial discrimination operate as a risk factor was supported by the data. Perceived racial discrimination both in the neighborhood and at school were negatively correlated with substance use and violent behaviors. However, the patterns of associations varied across the groups. One consistent pattern was that violent behaviors were significantly associated with perceptions of neighborhood racial discrimination across all ethnic groups. It is unclear whether violent behaviors is a response to their feelings of being discriminated against in their neighborhood because of their race/ethnicity. The results were inconsistent in terms of the association between violent behaviors and school context, and to a greater degree the relationship between substance use and neighborhood and school contexts. The study results showed that racial discrimination in different contexts, i.e. in the neighborhood and at school, operates differently among various ethnic minority youth groups.

Mixed race youth indicated the strongest, most consistent and significant correlations between ethnic identity and racial discrimination, and problem behaviors. Studies have speculated that mixed race youth may be cognizant of skin color differences sooner, and be aware of race at an earlier age because their status is so often called into question by others (Brown, 1990; Gibbs, 1989). Consequently, they are keener to the issue of race and experience a sense of marginality at an earlier age than

other minority youth. Although they are more accepted within minority groups than majority groups, they may not be fully accepted as a regular group member in either group (Brown, 1990). The findings of this dissertation provide empirical evidence that ethnic identity operates as a protective factor and racial discrimination as a risk factor among racially mixed youth. As they are more likely to be engaged in problem behaviors, one can argue that it is imperative to address the issues of multi-race backgrounds as well as issues related to race/ethnicity among racially mixed youth early in their development. Thus, earlier preventive interventions targeting these etiological factors are more likely to benefit mixed raced youth.

## TESTING THE SDM WITH A FOCUS ON EXOGENOUS VARIABLES

This dissertation tested the SDM to investigate the etiology of problem behaviors, and to explicitly attempt to expand our understanding of the model's exogenous variables, position in the social structure (defined as SES, gender, race), and external constraints (defined as poor family management, adverse neighborhood environment and peer antisocial beliefs) in explaining problem behaviors. The modified SDM fit the data well with the full sample.

The role of SES in youth development and health has been well described in numerous studies and in the literature, but the pathways or processes through which SES operates to influence youth outcomes have been understudied (Anderson & Armstead, 1995). The SDM posits that the position in the social structure has a direct effect on external constraints. This study demonstrated that low SES adolescents are more likely to lack adult supervision, live in adverse neighborhoods and to associate with peer whose beliefs are antisocial. In addition, they are less likely to be involved in family activities.

This dissertation study demonstrated significant relationships between external and contextual factors, such as neighborhood and peer factors, with adolescent problem behaviors. Although family plays a critical role in youth development and it is still important to target families in preventive intervention to reduce youth problem behaviors, it is also critical to understand what contexts youth and their families reside in and to target contextual factors like neighborhood and peer factors along with

family factors in preventing youth problem behaviors. The strong effects of neighborhood, peers and other social and contextual issues on adolescents should be taken into account in designing interventions targeting families.

## EXAMINING SDM - ACROSS ETHNIC MINORITY YOUTH GROUPS

Some scholars argue that traditional and existing theories of adolescent behaviors may not be generalizable to ethnic minorities as they were developed based largely on white middle class males (Muuss, 1996; Ogbu, 1981, 1988; Spencer et al., 1991; Steinberg, 1990; Steinberg et al., 1996). In this dissertation study, the modified SDM was tested across various race/ethnic groups of youth to examine its applicability among ethnic minority youth. The moderating effect of immigrant status on the model was also examined.

The study showed that the modified SDM fit well for all ethnic groups, suggesting the modified SDM could be utilized to explain problem behaviors across various race/ethnic groups to explain problem behaviors. Some group differences were found among a few relationships of the SDM constructs. However, the differences were in the magnitudes of coefficient, not in direction. The comparisons of SDM across groups were instrumental as it helped illustrate similarities and differences between the race/ethnic groups in terms of degrees of relationships among the model's constructs.

The results suggest that a number of risk and protective factors for youth problem behaviors derived from research based on the majority group may also be predictors for ethnic minority populations. The results demonstrated that the relationship between neighborhood and problem behaviors was significant across all groups. There has been increasing recognition in recent years of neighborhood influences on adolescent behavior (Bowen & Chapman, 1996; Bowen & Bowen, 1999; Brook, Nomura, & Cohen, 1988; Duncan, Duncan, & Strycker, 2000; Nurco, Kinlock, O'Grady, Lerner, & Hanlon, 1996; Ramirez-Valles, Zimmerman, & Newcomb, 1998). However the findings have not been conclusive. The findings of this dissertation study support that neighborhood context is associated with problem behavior outcomes among youth and that it is the case in ethnic minority youth groups as well as in majority youth group. Additionally, peer antisocial beliefs were significantly associated with antisocial beliefs in all groups. Peer influence is regarded as the most prominent determinant of youth beliefs and behaviors (Hawkins, Catalano, & Miller, 1992; Newcomb, 1996; Thornberry & Krohn, 1997). The findings of this study support the strong relationship of peers with antisocial beliefs and that the relationship is significant across all ethnic groups of youth. Lastly, antisocial belief was significantly associated with problem behaviors across all the groups. Thus, adverse neighborhood environment, peer antisocial beliefs and youth antisocial beliefs appear to be common risk factors for problem behaviors among the race/ethnic groups compared.

Race/ethnic group differences were found in the degrees of associations among constructs in the SDM. The problem behaviors of mixed race youth were more likely to

be associated with adverse neighborhood environment, and with their antisocial beliefs than those of white youth. This might be another indication that racially mixed race youth are more vulnerable to contextual factors like neighborhoods. In addition, the path from family bonding to antisocial beliefs was weaker in all ethnic minority groups than in white group. This suggests that family bonding, when measured by sharing feelings/thoughts with parents, wanting to be the kind of person as their parents, feeling very close to parents, and enjoying spending time with parents, was not strongly associated with youth antisocial beliefs among ethnic minority youth as it was among white youth. This finding may suggest that the role of the family bonding as a protective factor in preventing youth problem behaviors is weaker among ethnic minorities. However, studies have demonstrated the critical role of family in youth development, its protective effect in preventing antisocial behaviors, and in fact a stronger effect among ethnic minority (Bankston & Zhou, 1997; Chan, 1992; Garbarino & Abramowitz, 1992b; Kim & Choi, 1994; Rumbaut, 1996; Spencer et al., 1991; Zhou & Bankston, 1998). Although the factor loadings suggested measurement equivalency, one may be the question of whether there was conceptual equivalency. It is possible that the way family bonding was assessed may have not adequately captured the construct of bonding between parents and their children in ethnic minority cultures, i.e. youth's bonding to parents and family might be expressed in different ways among ethnic minority youth. The issue of conceptual equivalency is critical in order to consider parenting styles across various cultural groups. Chao (1994) argues that the conceptualization of Asian parenting styles, Chinese in particular, based on

authoritative and authoritarian categories[8], is ethnocentric and misleading. She maintains that in the Chinese culture (and other Asian cultures with Confucian traditions like Korean, Japanese, and Vietnamese) obedience to parents and some aspects of strictness may be equated with parental concern, caring or involvement, rather than with manifestations of parental hostility, aggression, mistrust, and dominance, as in white middle class culture (Chao, 1994). She adds that Chinese parents pay special attention to "training" their children to adhere to socially desirable and culturally approved behavior, and this training takes place in the context of a supportive, highly involved, and physically close parent (mother in most cases) and child relationship (Chao, 1994). Consequently the concept of parenting styles in Asian cultures may require different conceptualization and operationalization (Chao, 1994). Further study is needed to investigate the possible reasons for the discrepancy between white and ethnic minorities.

The associations of SES with some constructs were weaker among ethnic minority youth. Family involvement among Asian and mixed race youth was less likely to be associated with SES. SES showed a weaker relationship with family management in mixed race. In addition, as shown in the initial analyses of the SDM that included race (see Figure 5.1), both Asian American and mixed youth showed lower levels of family involvement than whites. Therefore, the study findings can be

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[8] Baumrind categorizes parenting practices into four parenting styles -- authoritative, authoritarian, permissive, and disengaged (Baumrind, 1991). Among the four, authoritative parenting, which is characterized by warmth, acceptance, and involvement with structure, maturity demands, and firm behavioral control, is thought to be superior to other parenting styles (Baumrind, 1991), and incorporated in many prevention programs targeting parenting practices.

interpreted as a reflection of different parenting styles in various cultures. In other words, it is possible that Asian and mixed race youth families involve their children less in the family decision making processes; it is less likely that youth feel their parents listen to their side when they misbehave; it is also less likely that youth and parents talk things out when they disagree; and youth find it not easy to discuss problem with their parents, all in comparison to white youth and their families. And these styles do not vary by socioeconomic status of families.

It was also noted that the path from SES to peer antisocial belief was weaker in all three ethnic minority groups than in the white group. In addition, the paths from SES to all three external constraints (poor family management, adverse neighborhood environment, and peer antisocial beliefs) were non-significant among African American youth. The weaker association between low SES and peer antisocial beliefs might be due to other factors that may determine peer associations for different race/ethnic groups. In other words, while SES is a strong and significant predictor of whom white youth hang out with, some other factors might be operating for ethnic minority groups, such as race and ethnicity. It is not uncommon to see children and adolescents hang out with friends from the same ethnic group. Therefore, for them, it might be that SES is less of an issue. In terms of a non-significant effect of low SES on all three external constraints, one can argue that it might be due to the lack of variance among African American youth, i.e. they are disproportionately concentrated in low SES, and this restricted range attenuated the magnitude of associations. While it was true that a higher proportion of African Americans were from low SES, the factor

variance of F1 (low SES) was 0.105* ($p < 0.05$) for white, 0.282* ($p < 0.05$) for African, 0.522* ($p < 0.05$) for Asian, and 0.519* ($p < 0.05$) for mixed race youth. So, in fact, the white group had less variance, and Asian American and mixed race groups had greater variance than African American group. Therefore, the lack of variance was ruled out as a possible reason for the non-significant effect of SES on external constraints. Further investigation is warranted to understand the group differences. In addition, studies to determine if there are other factors that affect youth antisocial beliefs, if not family bonding, among ethnic minority youth are also needed.

## EXAMINING SDM – ACROSS IMMIGRANT AND NON-IMMIGRANT YOUTH GROUPS

The study showed that the SDM fit well for both immigrant and non-immigrant groups, indicating the SDM could be utilized in both groups to explain problem behaviors. Some group differences were found among a few relationships of the SDM constructs. However, the differences were in the magnitudes of the coefficients, not in direction. Various explanations can be given for these differences between the groups, such as the effect of culture (i.e. parenting practice in family involvement and family management), vulnerability of immigrant youth to their neighborhood, and again issues of the measurement equivalence.

It is noted that some of the patterns of path coefficient differences between immigrant and non-immigrant groups were similar to those between white and ethnic minorities. It might be due to the fact that there was a higher percentage of ethnic

minority youth in the immigrant group than in the non-immigrant group (89% vs. 67%). Race/ethnic compositions of the immigrant and non-immigrant groups are (1) immigrant group (Total N=448) - African (N=70, 15.62%), white (N=51, 11.38%), Asian (N=192, 42.85%), and mixed race (N=135, 30.13%), total ethnic minority 89%, and (2) non-immigrant group (Total N=1,733) - African (N=309, 17.83%), white (N=572, 33.0%), Asian (N=282, 16.27%), and mixed race (N=570, 32.89%), total ethnic minority 67%. Therefore although the non-immigrant group is composed of a substantial percentage of ethnic minorities, some of the path differences can be interpreted as the differences between the groups with higher and lower number of ethnic minorities. To further investigate this possible confounding effect, future studies might categorize immigrant and non-immigrant groups of youth by their ethnicity, to examine the interaction of immigration and ethnicity.

## IMPLICATIONS FOR PREVENTIVE SOCIAL WORK INTERVENTION

The race/ethnic group differences in the rates of problem behaviors among early adolescents highlight risk and vulnerability that ethnic minority youth, especially African Americans and mixed race youth, are exposed to. This dissertation suggested that mixed race youth could benefit from early intervention targeting issues related to race/ethnicity, as they appear more affected by the issues. A limited number of studies have proposed intervention guidelines to serve mixed race youth (See Brown, 1990; Gibbs, 1989; Overnier, 1990; Wardle, 1991). Further studies are warranted to better

understand mixed race youth, so that theoretically guided and empirically tested interventions can be developed to facilitate the healthy development of mixed group of youth.

This dissertation study which examined the etiology of problem behaviors across various race/ethnic groups suggests that a number of the risk and protective factors identified in studies of white youth may also be relevant predictors for ethnic minorities. In addition, this study demonstrated that there are group differences between white and ethnic minorities in etiological factors, suggesting that programs and interventions should be designed and tailored to address these differences in order to be effective and to adequately address the needs of ethnic minority youth. Dent and colleagues suggest that cultural sensitivity in prevention programming is both desirable and necessary to increase program accessibility and utility (Dent, Ellickson, Brown, & Richardson, 1996).

The dramatic demographic changes in the U.S. and the fact that many people are and will be from diverse cultures and backgrounds signify the importance of studies on ethnic minorities and immigrant populations. Ethnic minority and immigrant youth will be a significant part of our future generation on which the society will depend upon for their productivity and citizenship. Social work interventions also have to be responsive to these demographic as well as cultural changes to adequately serve the growing populations and to meet their needs.

## LIMITATIONS OF STUDY

This study has limitations that bear mentioning. First, it utilized cross-sectional data and causal claims about associations cannot be made. The data were based on self-reporting and no other sources of information, such as teachers, official records or parents were available to cross-validate the youth assessments. Not all SDM constructs were included. For instance, the antisocial paths of the model were not included in the analyses. In addition, other SDM constructs, such as skills, opportunities and individual constitutional factors, were not included in the model analyses. It would be ideal to include all of the constructs, i.e. opportunities and skills constructs, as well as the antisocial path, and examine the model with longitudinal data to determine the applicability of the SDM to ethnic minority groups more accurately. Lastly, family reward was a measured variable and therefore it would be useful to test the construct as a latent factor with multiple indicators. The model needs to be further validated and supported by replicating the model test with a different set of data.

Another limitation of the study is that Hispanic and Native Americans were not included in the analyses. The sample sizes of these groups were too small to be included in the analyses. Also Asian American youth were aggregated as one group, despite their diversity. Unfortunately, information about the sub-group membership was not available from the data. It is highly recommended that researchers acknowledge that the use of "Asian" as an ethnic category may mask true differences that exist among the 60 plus separate race/ethnic groups and subgroups that compromise this category. Therefore, it is hoped that future research will not merely

focus on the etiology and prevention of problem behaviors among Asian American youth as a group, but should study particular race/ethnic subgroups of Asian-American youth. The issue of diversity within the group also applied to mixed race groups and the immigrant groups as well. It is hoped that future research would be able to examine these within-group differences to enhance our understanding.

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## Appendix A: Items Used to Create Indicators for Latent Constructs

| | | |
|---|---|---|
| **POSITION IN SOCIAL STRUCTURE** | | |
| SES | | |
| V1 | V1_ses | Did mom finish high school |
| V2 | V2_ses | Did dad finish high school |
| V2 | V2_ses | Over the last yr, have you or anyone in household rec'd food stamps/WIC |
| V1 | V1_ses | Do you receive free lunches at school |
| | | |
| **EXTERNAL CONSTRAINTS** | | |
| FAMILY MANAGEMENT | | |
| V3 | V3_fmtg | How often do your parents know where you are and who with |
| V4 | V4_fmtg | In evenings, how often is there 1 adults at home also |
| | | |
| NEIGHBORHOOD SAFETY | | |
| V6 | V6_ncrm | People get robbed |
| V7 | V7_ncrm | People get in fights and get beat up |
| V5 | V5_ncrm | People get shot or stabbed |
| V6 | V6_ncrm | How much of the time do you feel unsafe in your neighborhood |
| V7 | V7_ncrm | How much of the time do you feel unsafe at school |
| | | |
| PEER GROUP ANTISOCIAL ATTITUDES | | |
| V8 | V8_pblif | Most people my age think it's ok to get drunk once in a while |
| V9 | V9_pblif | Most people my age think it's ok to use drugs |
| V10 | V10_pblif | Most people my age think it's ok to carry gun |
| V8 | V8_pblif | Most people my age think it's ok to use weapon |
| V9 | V9_pblif | Most people my age think it's ok to have sex |
| V10 | V10_pblif | Most people my age think it's ok to get preg in highschool |
| | | |
| **INVOLVEMENT** | | |
| INVOLVEMENT BTWN RESPONDENT AND STU | | |
| V11 | V11_finv | How often do parents ask you what you think before fam decisions |
| V11 | V11_finv | When you misbeh, how often do parents listen to your side |
| V12 | V12_finv | When you disagree w/parents, how often talk things out |
| V12 | V12_finv | How often to you find it easy to discuss problem w/parents |
| | | |
| **REWARDS** | | |
| REWARDS FROM PARENTS | | |
| V13 | V13_frwd | How often paretns praise you do good |
| | | |
| **BONDING** | | |
| Bonding to Family | | |
| V14 | V14_fbon | How often do you share thoughts/feelings w/her |
| V15 | V15_fbon | How often do you want to the kind of person she is |
| V16 | V16_fbon | How often do you feel very close to her |
| V14 | V14_fbon | How often do you enjoy spending time w/her |
| V15 | V15_fbon | How often do you share thoughts/feelings w/him |
| V16 | V16_fbon | How often do you want to the kind of person he is |
| V14 | V14_fbon | How often do you feel very close to him |
| V15 | V15_fbon | How often do you enjoy spending time w/him |

| STUDENTS' ANTISOCIAL BELIEFS | | |
|---|---|---|
| V17 | V17_blif | It's ok for people my age to drink once while |
| V18 | V18_blif | It's ok for people my age to get drunk |
| V19 | V19_blif | It's ok for people my age to use illegal drugs |
| V17 | V17_blif | It's ok for people my age to have sex |
| V18 | V18_blif | It's ok for people my age to have sex w/out condom |
| V19 | V19_blif | It's ok for people my age to get pregnant |
| V17 | V17_blif | It's ok for people my age to carry a gun/knife |

| **Outcomes** | | |
|---|---|---|
| PROBLEM BEHAVIORS | | |
| V20 | V20_prob | In the past mos, how much did you smoke |
| V21 | V21_prob | In the past mos, how often did you drink |
| V22 | V22_prob | In the past mos, how many times did you have 5+ drinks |
| V20 | V20_prob | In past yr, how often did you use pot |
| V21 | V21_prob | In past yr, how often did you sniff |
| V22 | V22_prob | In past yr, how often did you use crack or coc |
| V20 | V20_prob | In past yr, how often did you get drunk or high |
| V21 | V21_prob | In past 3 mos, how many times did you say your were going to beat up |
| V22 | V22_prob | In past 3 mos, how many times were you in phys fight |
| V20 | V20_prob | In past 3 mos, how many times badly hurt in phy fight |
| V21 | V21_prob | In past 3 mos, how often carried a gun |
| V22 | V22_prob | In past yr, did you shoot at someone |
| V20 | V20_prob | In past 3 mos, how often did you carry knife or razor |
| V21 | V21_prob | In past yr, did you cut or stab someone |
| V22 | V22_prob | In past 3 mos, did you tell someone you were going to cut, stab or shoot them |

# Yoonsun Choi

Curriculum Vitae

## *EDUCATION*

**Ph.D. candidate in Social Welfare,** University of Washington
Expected graduation date: 06/2001
Dissertation Title: "Risk and Protective Factors of Problem Behaviors among Ethnic Minority Youth"

**Master of Science in Social Work (M.S.S.W.)**, University of Texas at Austin, 1993

**Bachelor of Arts, English/Education**, Ewha University, Seoul, Korea, 1990

## *AREAS OF INTEREST*

Ethnic minority youth development, including ethnic identity and the prevention of problem behaviors; issues related to immigrant/refugee children & families; research methods and statistics; preventive intervention in social work practice; culturally competent social work practice

## *TEACHING EXPERIENCE*

09/00 - 12/00 **Teaching Assistant**, Univ. of Washington, School of Social Work. Course: Introduction to Social Welfare Research. Foundation course for BASW students. Lectured on "Sampling", and "Data analysis and summarizing results". Responsible for weekly lab classes and advising students regarding class projects and exams. Instructor: Dr. Mary Lou Balassone.

03/99 - 06/99 **Teaching Practicum**, Univ. of Washington, School of Social Work. Course: Introduction to Social Work Practice I. Foundation course for MSW students. Lectured on "Working for clients with limited English proficiency via interpreters", "Conducting assessments using genograms", and "Working with children, using play and sand therapy". Responsible for weekly exercise sessions and advising students regarding class projects and papers. Instructor: Dr. Cheryl A. Richey.

## *RESEARCH EXPERIENCE*

09/00 - current **Research Analyst**. Univ. of Washington, Social Development Research Group. Conduct multivariate analysis of study data, summarize results, and write manuscripts for journal publication.

09/98 - 08/00 **NIMH Predoctoral Prevention Research Trainee**. Univ. of Washington, Social Development Research Group. Conducted analysis of study data, summarized results, and contributed to presentations & manuscripts. Created and maintained longitudinal data sets. Analyses techniques included

Structural Equation Modeling and Hierarchical Linear Modeling. Mentor: Dr. Tracy W. Harachi.

06/98 - 09/98 **Research Assistant**. Catholic Community Services, Foster Care Program, Everett, WA. Assisted in study design, instrument development and literature review. Conducted in-home interviews with foster parents, analyzed qualitative interviews, and summarized findings and prepared reports.

11/95 - 08/96 **Research Assistant**. Catholic Community Services, Foster Care Program, Everett, WA. Assisted in literature review, and preparation of manuscripts.

*PROFESSIONAL EXPERIENCE*

11/95 - 07/97 **Program Coordinator/Clinical Social Worker**. Catholic Community Services, Foster Care Program, Everett, WA. Coordinated the program. Managed foster care homes and placements. Provided psychotherapy for children and their families. Worked as a community liaison.

12/94 - 08/95 **Psychiatric Social Worker I**. Asian Pacific Counseling & Treatment Center, LA, CA. Provided individual and group psychotherapy for chronically mentally ill adult patients as well as individual psychotherapy for the children with severe emotional, mental and behavioral problems. Provided crisis intervention, case management, and community outreach. Designed and facilitated parenting seminars.

09/93 – 7/95 **Language Consultant**. Pacific Asian Language Service Project, LA, CA. Developed language appropriate materials for populations with limited English proficiency. Provided interpretation, translation and case management for AIDS, HIV+ and other at-risk monolingual (limited English speaking) clients.

09/93 - 11/94 **Clinical social worker**, Korean Youth & Community Center, LA, CA. Provided individual and family counseling for emotionally disturbed adolescents, child abuse victims, juvenile delinquents and their families; conducted outreach activities, community education, workshops for parents & teachers.

05/93 - 08/94 **Psychiatric social worker (volunteer)** (9/93-8/94)/**Graduate student intern** (5/93-8/93). Coastal Asian Pacific Mental Health Services, Gardena, CA. Provided psychotherapy for mentally ill children and adult clients. Also delivered case management support, crisis intervention, community outreach, and day rehabilitation program support.

06/92 - 12/92 **Graduate student intern**, Austin Center for Battered Women, Austin, TX. Provided individual and family counseling for domestic violence victims as well as crisis intervention, delivered children's after-school programs,

community outreach and education. Assisted in training agency volunteers. Organized and coordinated the Asian Women Support Group.

***GRANTS***

2000-2001 Principal Investigator. **National Institute of Mental Health Dissertation Research Grant in Mental Health** (1RO3MH62884-01). Title: "Risk and Protective Factors of Problem Behaviors among Ethnic Minority Youth"

***PUBLICATIONS***

Choi, Y., & Harachi, T. W. (in press). The Cross-cultural equivalence of the Suinn-Lew Asian Self-Identity Acculturation scale among Vietnamese and Cambodian Americans. Journal of Social Work Research and Evaluation.

Harachi, T. W., Catalano, R. F., Kim, S., & Choi, Y. (2001). Etiology and prevention of substance abuse among Asian-American Youth. Prevention Science2 (1), 57-65.

***PRESENTATIONS***

Choi, Y., Harachi, T.W., Gillmore, M.R., Catalano, R.F. (June 2001). Examining the Social Development Model: its applicability to explain problem behaviors in urban minority youth. Poster to present at the Society for Prevention Research, Washington D.C.

Choi, Y., Golder, S., Gillmore, M. R., Morrison, D. M., & Lewis, S. (January 2001). Analysis with missing data in social work research. Workshop presented at the Society for Social Work and Research Annual Conference, Atlanta, Georgia.

Harachi, T. W., & Choi, Y. (June 2000). Examining the cross-cultural equivalence of parenting measures among Vietnamese and Cambodian families: Phase II. Paper presented at the Society for Prevention Research Eighth Annual Research Conference, Montreal, Quebec.

Choi, Y. (April 2000). Multiple Group Structural Equation Modeling: applications and procedures. Workshop presented to the Methodology Group at the School of Social Work, Univ. of WA.

Choi, Y., & Harachi, T. W. (June 1999). The cross-cultural equivalence of the Suinn-Lew Asian Self-Identity Acculturation scale. Poster presented at the Society for Prevention Research Seventh Annual Research Conference, New Orleans, Louisiana.

Harachi, T. W., Choi, Y., & Catalano, R. F. (June 1999). Protective factors against substance use among ethnic minority youth. Paper presented at the Society for Prevention Research Seventh Annual Research Conference, New Orleans, Louisiana.

Harachi, T. W., Choi, Y., & Catalano, R. F. (April 1999). Protective factors against substance use: ethnic minority youth in a neighborhood context. Paper presented at the Biennial Meeting Society for Research in Child Development, Albuquerque, NM.

**HONORS & AWARDS**

| | |
|---|---|
| 06/00 | Don Summers Doctoral Student Writing Award, Univ. of Washington |
| 09/98 - 08/20 | NIMH Predoctoral Prevention Research Traineeship, Univ. of Washington |
| 09/97 - 06/98 | Boeing Endowment Fellowship, Univ. of Washington |
| 08/91 - 08/92 | Victor and Myra Ravel Scholarship in Children's Rights, Univ. of Texas at Austin |
| 03/86 - 02/90 | Honor Student Fellowships & Ewha Fellowships, Ewha Univ. |