ABSTRACT

Title of Document	THE FORGOTTEN PEER FOR BLACK ADOLESCENTS
	Zachary Rowan
	Master of Arts 2014
Directed by:	Associate Professor, Jean McGloin, Department of Criminology and Criminal Justice

ABSTRACT

Efforts to understand peer influence among adolescents have established the robust relationship between having deviant peers and future deviant behavior. Nonetheless, research suggests peer influence affects different types of adolescents in different ways. Specifically, Black adolescents may be less susceptible to friends compared to White adolescents and possess stronger family-orientation, suggesting that another peer may assume a heightened salience. Namely, siblings may affect deviance of Black adolescents whereas friends will have a minimal impact. This thesis used data from the National Longitudinal Study of Adolescent Health to evaluate the relative strength of friend and sibling influence on Black and White adolescent deviant behavior. Results indicate that siblings explain Black and White adolescent drinking and smoking; however, the effect of siblings is stronger among Black adolescents. Friends only emerge as a significant predictor of delinquency for White adolescents. Methodological and theoretical implications for future research on peer processes are discussed.

THE FORGOTTEN PEER FOR BLACK ADOLESCENTS

By

Zachary Rowan

Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Master of Arts
2014

Advisory Committee:

Professor Jean McGloin, Chair
Professor Raymond Paternoster
Professor Terence Thornberry

Acknowledgements

I would like to extend my sincerest gratitude to Dr. Jean McGloin for her constant support, guidance, and ability to assuage a crisis. You have been a constant support in all aspects of my life, but most importantly have helped me become a stronger researcher. I also am indebted to her for her instruction on how to appropriately use an apostrophe. I would also like to thank Dr. Ray Paternoster and Dr. Terence Thornberry for their guidance and critical comments throughout this process. I am grateful for the support of Kyle Thomas and Holly Nguyen, as they have been integral to helping me progress as a graduate student. Finally, I would like to thank my family for their unwavering love, support, and celebration of all of my accomplishments.

Chapter 1: Introduction

Over the past several decades, a substantial body of research has established peers as one of the strongest and most robust predictors of adolescent delinquent behavior (Pratt et al., 2010; Warr, 2002). Many scholars argue this finding reflects the importance of friends during adolescence due to identity development, social changes (i.e., transition to middle and high school), and biological processes (Warr, 2002). Nevertheless, the operationalization of 'peers' in empirical work has largely been limited to friends amongst White adolescents and has rarely considered racial differences in the experience of friend or other peer influence processes. This is problematic because the experience of adolescent identity development among Black adolescents appears to contrast with the traditionally discussed experience of White middle class adolescents, which places emphasis on the role of friends (Warr, 2002). For instance, research suggests Black adolescents maintain a family orientation and are less conforming to their friends (Giordano, Cernkovich, & DeMaris, 1993). Of course, Black adolescents are not exempt from exposure to delinquent values and behaviors among peers; rather how Black adolescents are socialized to experience sources of influence may alter the strength of certain types of peers. Through the unique socialization of Black adolescents, less value and intimacy is placed on friends (Giordano et al., 1993). This may enable a particular peer found in the home to wield stronger influence over behavior. Namely, Black siblings may assume a powerful role in explaining the adoption of delinquent values and engagement in delinquent behavior.

Current research on sibling influence on delinquency is mixed, but there is general consensus that sibling interactions serve as one of the first 'training grounds'

for the development of norms and values (e.g., see review in Patterson, 1984). Varying socialization processes and experiences of Black adolescents that result from cultural differences, prejudice, and racial barriers may further reinforce the companionship and bond developed between Black siblings (Brody, Stoneman, Smith, & Gibson, 1999). Approximately 67% of Black households are headed by a single parent, typically the mother (The Annie E. Casey Foundation, 2011). Research also indicates that Black adolescents may be subject to "lock-in" parenting that prevents youth from going out on the street to interact with neighborhood peers (Furstenberg, Cook, Eccles, Elder, & Sameroff, 1999). This behavioral control over Black adolescents often orients them to the home and may help also explain why Black siblings often assume important caretaker responsibilities of younger siblings (Brody, Stoneman, Smith, & Gibson, 1999). Thus, the parenting style and family structure of Black adolescents socializes them to experience friends in a different way and to potentially heighten the importance of ones' sibling (Giordano et al., 1993; Headen, Bauman, Deane, & Koch, 1991; Landrine, Richardson, Klonoff, & Flay, 1994;).

Research has not yet examined whether Black adolescents' reduced susceptibility to friends is specific to that kind of peer and whether this reduced susceptibility does not generalize to other peers (i.e., siblings) that assume significant weight during Black adolescence. Further, by pooling Black and White adolescents together, previous research may have missed the differential impact of sibling influence and friend influence on adolescent deviant behavior. This thesis seeks to understand how siblings and friends matter for Black and White adolescents. Specifically it proposes the following hypotheses:

1. For Black adolescents, siblings will have a stronger influence on delinquent behavior than friends have on delinquent behavior.
2. For White adolescents, friends will have stronger influence on delinquent behavior than siblings have on delinquent behavior.
3. Black adolescents siblings will have a stronger influence on delinquent behavior than the influence of White adolescents' siblings.
4. White adolescents' friends will have a stronger influence on delinquent behavior than the influence of Black adolescents' friends.

In order to answer this question, this thesis used the AddHealth data, which has information on both peers and siblings. Specifically, it used cross-classified hierarchical models and logistic regression models to evaluate the hypotheses and to account for the interdependence among siblings and within schools. Additionally, both sets of analyses tested whether the relationship between sibling influence and delinquent behavior was conditioned by certain sibling characteristics (i.e., birth order, gender composition, age-spacing). In doing so, this thesis reinforces the fact that peers may matter differently for different adolescents.

Chapter 2: Literature Review

Differential Socialization of Black Adolescents

Black adolescents are situated within the historical context of racial discrimination and the competing domains of their own culture and the world of the majority (Coll & Patcher, 2002; McAdoo, 2002). As such, the structure of Black families and the experience of Black adolescence contribute to the development of a unique black-adolescent identity (McAdoo, 2002; Peters, 2007; Steinberg, Lamborn, Dornbusch, & Darling, 1992). A consequence of this experience is that Black adolescents are differentially socialized to interact with various peers that contribute to the formulation of values, behaviors, and norms (see Giordano et al., 1993). This leads to the conclusion that the unique experience of Black childhood and adolescence affects the nature of peer influence processes, which contrasts with White adolescents.

The existence of structural differences between White and Black family experiences in the United States can be traced back to before the 19th century (Ruggles, 1994). Specifically, there has been a fairly consistent growth in the number of single parent Black households and the number of Black children living without both parents (Annie E. Casey Foundation, 2011). Although single parenthood is found in White families, Black families are more likely than White families to be headed by single parents (Ruggles, 1994). This difference is not without consequence. Research has demonstrated how single parent and extended family households often coincide with more negative psychosocial and economic outcomes (Coley, 1998; McLoyd, 1990; Mandara & Murray, 2000; Vereen, 2007). Additionally, these structural differences

were used to explain why Black adolescents were initially assumed to be significantly more friend-oriented than White adolescents (Silverstein & Krate, 1975; Taylor, 1989).

For instance, Silverstein & Krate (1975) argued that Black adolescents failed to receive the necessary support from their parents and therefore turned to peers to fulfill that void. Part of this orientation towards peers supposedly is driven by the need to possess status during adolescence (Anderson, 1999). Acquiring status in an economically disadvantaged area where Black families often reside becomes an even more difficult task. Opportunities and resources to be successful, according to the broader society, are scant or are impeded by structural barriers that prevent Black youth from measuring up to such standards (Short, 1961). Despite the potential of peers to provide status, Silverstein & Krate's (1975) assessment of Black adolescent reliance on peers was based on frequency of interaction with friends, as opposed to measurement of the dynamics of the relationship between an adolescent and their friendship group. Additional empirical research has challenged such assumptions. For example, Giordano et al. (1993) conducted a series of interviews with Black and White adolescents, and found that Black adolescents rated their peer relationships as less intimate and felt less of a need to conform to their peers' behavior. Giordano et al. (1993) suggested that these empirical findings were rooted in the uniquely different family dynamics of Black and White adolescents, particularly in the way that each was socialized to experience peers.

Much of the literature on minority family dynamics urges for the adoption of a culture variant perspective (Allen, 1978; Vereeen, 2007). This perspective requires that scholars abandon using a White majority reference category to compare to other racial

minorities (Allen, 1978). Thus, the 'broken home' descriptor of single parent or no-parent households needs be replaced with an accurate understanding of then unique nature of Black family life. Ultimately, this perspective has implications for extending our understanding of the Black family system, particularly in how the sibling relationship may serve as an important context for adolescent development.

Qualitative research has attempted to detail the unique experience of black family life. For example, as part of the Philadelphia Family Management Study Furstenberg, Cook, Eccles, Elder, and Sameroff (1999) conducted an ethnographic study of a small subsample of the total number of families. Furstenberg et al. (1999) determined that a majority of Black families resided in the poorest areas with the least positive social climate. In these neighborhoods, families were faced with limited neighborhood-based resources that minimized the cohesion of the community and forced parents to engage in "lock-in" parenting to protect their children from negative influences on the street. In contrast, less impoverished areas that were primarily White residents relied on neighborhood and community resources to provide services to their children (Furstenberg et al., 1999). No study to date has examined the extent of 'lock-in' parenting in Black communities; however, if this type of parental monitoring is characteristic of Black families, this parenting strategy could contribute to the family orientation attributed to Black adolescents. Once oriented towards the home, siblings may be the primary similarly aged and situated 'peers' for adolescents to interact with, reinforcing their role during key developmental stages.

The example of "lock-in" parenting can be seen as an extreme parenting strategy used only in low socio-economic status areas; however, this type of parenting

seems to be characteristic of many Black families that inevitably are also confronted by racial discrimination and prejudice that occurs outside of the home (Pattillo-McCoy, 1999). In fact, research suggests that Black families exhibit a wide range of parenting styles that are the result of adaption to the surrounding environment. Ethnographic work on single Black mothers details the means by which they protect their children from the many hazards of the street, such as delinquent peers and opportunities to get into trouble (Mason, Cauce, Gonzales, & Hiraga, 1996; Murry, Bynum, Brody, Wilbert, & Stephens, 2001). The primary aim of what Brody et al. (1999) calls "no nonsense parenting" is to minimize the likelihood of involvement in high-risk behaviors and activities that more often coincided with Black living situations. Similarly, in Anderson's *Code of the Streets* (1999) 'decent' families attempt to inform their children of mainstream values, but also educate their children on the necessary dangers in their social environment. Further, these decent parents often are vigilant over any 'loose' behavior that coincides with peers on the street (Anderson, 1999). Thus, literature suggests that Black families have both a historical and current need to engage in a more restrictive parenting style.

Several other studies have found that Black parents engage in high levels of control as part of their efforts to attenuate the dangers of the street. Dixon, Graber, Brooks-Gunn (2008) evaluated a group of adolescent girls and their mothers to assess parent-child conflict across different cultures. Black adolescent girls scored higher on the level of respect for their parents compared to Latina and European American girls. Additionally, Dixon et al. (2008) found that Black mothers engaged in a higher level of restrictive disciplinary behavior as a protective strategy. Some debate has been raised

over the optimal level of control needed to actually protect adolescents and reduce delinquent behavior. Mason et al. (1996) concluded that a curvilinear relationship between control and peer problem behavior is optimal. Regardless, it appears as though Black parents restrictive behavioral control over their children seeks to inhibit their child's proclivity towards engaging in deviant acts (Lamborn, Dornbusch, & Steinberg, 1996; Mason et al., 1996; Smetana, Crean, & Daddis, 2002). Although these parenting practices may not be found in all Black households, research has consistently highlighted underlying differences between Black and White parenting that needs to be considered if we are to more fully understand the nature of adolescent development across races.

Theoretical Perspectives of Peer Influence

During adolescence, the connections with peers and parents often undergo significant change. Adolescents seek to develop an identity separate from their parents at roughly the same time that much of their daily routines and activities coincide similarly aged peers. This exposure to peers contributes to their importance in explaining the adoption of values and engagement in a variety of behaviors (War, 2002). The discussion of how peers affect deviant behavior primarily focuses on normative social influence, which includes differential association, social learning, and symbolic interactionism. Normative influence focuses on the process of individuals conforming to the norms of their group or intimate contacts; however, empirical research on normative influence has predominantly focused on an adolescent's network of friends to the exclusion of other types of peers. This thesis will extend the

understanding of peer influence by evaluating the relative strength of friends and siblings to shape the norms and behaviors of adolescents of different races.

Sutherland's differential association theory suggests that through interactions individuals are exposed to favorable or unfavorable definitions towards delinquent or criminal behavior (Sutherland, 1947). Weighted by frequency, priority, duration, and intensity, these definitions become part of the process that establishes whether a person will engage in delinquent or non-delinquent behavior (Sutherland, 1947). Thus, the extent to which an individual's peers transmit pro-delinquent values increases the likelihood that an adolescent engages in delinquent behavior (Matsueda, 1982; Sutherland, 1947). Differential association has generally received empirical support from a range of studies (see, e.g., Alarid, Burton, & Cullen, 2000; Matsueda, 1982; Orcutt, 1987; Short, 1957; Tittle, Burke, & Jackson, 1986). For example, utilizing data from the Richmond Youth Project, Matsueda (1982) concluded that differential association, measured as the number of delinquent friends and definitions favorable to delinquent behavior, mediated the effect of several variables on delinquency, including age, peer processes, and socioeconomic status on delinquency beyond the support of control theory.

Burgess and Akers (1966) revised the principles of differential association to include components of operant conditioning to more fully specify the mechanisms that would lead to the acquisition of deviance from peers. Akers (1998) posited that within one's primary social contexts, behaviors and definitions are learned through both differential association and reinforcement contingencies. Akers (1998) contended that there are four main dimensions of social learning theory: differential association,

definitions, reinforcement, and imitation. Thus, association with peers that positively reinforce or model delinquent behavior and definitions should increase the likelihood that an individual acquires delinquent values and engages in delinquent behavior (Akers & Lee, 1996; Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Brauer, 2009). Ultimately, social learning theory argues that peers have the capacity to modify the anticipated rewards and punishments associated with delinquent behavior and thereby can exert a strong normative influence on individuals to engage in delinquent behavior (Akers, 1998). Several studies have found that social learning theory is a strong explanation for explaining delinquent behavior (e.g., see Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Brauer, 2009; Matsueda & Anderson, 1998; Warr, 2002). In a meta-analysis of the empirical status of social learning theory, Pratt et al. (2010) concluded that the tenants of social learning theory have as much empirical standing as other criminological perspectives such as self-control; however, differential association appears to have larger effect sizes than differential reinforcement.

The importance of peers may also be driven by their contribution to adolescent identity-formation. Symbolic interactionism suggests that through interactions individuals develop shared meanings, reflected appraisals, and behavioral expectations that produce the self-concept (Matsueda, 1992; Mead, 1934). As adolescents become more dependent on their peers for emotional and mental support, peers stand to serve as a critical reference group for adolescent identity-formation. When exposed to delinquent sources of influence, the reinforcement of actual and reflected appraisals may lead to the development of a self-concept that derives meaning from delinquent norms (Matsueda, 1992). Symbolic interactionism has garnered empirical support

across a wide range of behaviors including murder (Luckenbill, 1977), family violence (Denzin, 1984), and gang membership (Katz, 1988). Specifically related to delinquency, Matsueda (1992) found that the conception of the self as delinquent acquired through reflected appraisals and role taking had a large effect on delinquent behavior. By identifying the importance of derived meaning from interactions, this theory illustrates the process by which antisocial behavior becomes incorporated into an individual's identity through interactions with other closely connected actors.

Currently, most research on peer influence measures a peer as an adolescent's 'friend'; however, the abovementioned theories do not dictate this limited operationalization. More recently, "peer" has been extended in empirical work to include co-workers, romantic partners, indirect friends (i.e., friends of friends), and co-offenders (e.g., Haynie, Giordano, Manning & Longmore, 2005; McCarthy, Felmlee, & Hagan, 2004; Payne & Cornwell, 2007; Wright, Cullen, & Williams, 2002). Though the processes of normative influence are assumed to generalize across people, the primary sources of this influence – that is, the more powerful "peer" – may vary in meaningful ways across characteristics, such as race and gender (Matsueda and Heimer, 1987; Sutherland, 1947). Given the structural and social forces that seem to increase the orientation that Black adolescents have towards their family, perhaps a peer found within the home (i.e., sibling) has a stronger capacity to affect Black adolescent behavior. As siblings may be one of the first similarly aged individuals that adolescents are exposed to, it seems likely that siblings serve to establish many of the first definitions and values that that contribute to the production of delinquent behavior. Siblings may equally have the capacity to engage in an exchange of self-appraisals that

are favorable to a non-delinquent or delinquent self-image during early to late adolescence. Ultimately, siblings should be considered as a type of peer that occupies a unique role in explaining influence processes during adolescence, particularly for Black adolescents.

Why would friends matter less for Black adolescents?

Although differential association, social learning, and symbolic interactionism provide a framework to explain how peer influence operates, not everyone experiences normative influence in the same ways. For example, gender conditions how adolescents perceive and experience delinquent and prosocial behavior. Girls are socialized very differently than boys and internalize gendered norms, scripts, and other behavioral expectations that affect their exposure to peers (McCarthy, Felmlee, & Hagan, 2006). Additionally, as girls are generally exposed to higher levels of parental control, they likely bring that control into their friendships and as a result, are less approving of delinquent behavior. Thus, female adolescents and female friendships likely produce a differential experience of peer influence that differs from male adolescents (Mears, Ploeger, & Warr, 1998). In a similar manner research has concluded that race, as a structural anchor, can differentially affect the level of exposure to values and the context within which values and behaviors are learned (e.g., Matsueda & Heimer, 1987).

Despite findings that significant and meaningful differences can exist across individuals' experience of normative influence, research on peer influence among adolescents continues to use predominantly White samples (Headen et al., 1991). Additionally, most studies that contain a diverse sample only control for race in

statistical analyses (see, e.g. Wright & Cullen, 2004). Thus, robust conclusions drawn from the majority of peer research can only generalize to white adolescents and fails to consider whether racial differences similarly alter the experience of peers.

Early research on the influence of peers on Black adolescents operated under a deficit framework to suggest that Black adolescents were more oriented towards their friends. Specifically, research argued that due to the prevalence of family and individual deficits, Black adolescents failed to strong form attachments to adults that led to a heightened need for peer support (Silverstein & Krate, 1975; Taylor, 1989). Silverstein and Krate (1975) conducted ethnographic work of Central Harlem children during their role as teachers in the inner city schools. This work largely characterized the experience of these poor urban children as extremely difficult and unstable. Due to the numerous hardships faced by these Black families, the line between adults and children was blurred. This led to an increase in adult responsibilities and concern for meeting basic survival needs among the children (Silverstein & Krate, 1975). A series of pushes (e.g., harsh punishment, parental inconsistency) and pulls (e.g., lure of the street) facilitated Black adolescent migration to the streets of Harlem (Silverstein & Krate, 1975).

On the streets children utilized peer groups to fulfill many of the unmet needs of their home lives. Silverstein and Krate (1975) found due to the strained relationships with parents and the general overcrowded living conditions of many Black youth, there was an increase in the opportunity for children to interact with peers on the street. Through frequent interactions on the street and the attainment of attachment and sense of belongingness from peers, Silverstein and Krate (1975) concluded that Black

adolescent youth were more peer oriented. Although Silverstein and Krate (1975) found evidence of restrictive parenting among Black adolescents, they did not actually measure peer influence. Rather, they observed adolescents in the community frequently hanging out and engaging in activities outside of the home and from that, assumed influence. This early work highlights the assumptions made about the nature of Black adolescent life; however, is limited by the lack of empirical evaluations of peer influence processes. These early studies were primarily observational in nature and failed to statistically evaluate the hypotheses made about Black adolescent peer processes. These studies also operated under the deficit perspective of Black families and did not consider the utility of Black parenting and socialization of their children. A range of more work has actually offered evidence to suggest that Black adolescents may not be more peer-oriented.

In one of the few studies on the saliency of peer influence across race, Giordano, Cernkovich, and DeMaris (1993) conducted 942 interviews with Black and White adolescents to understand their relations with family and friends. Giordano et al. (1993) offered two major conclusions: 1) Black adolescents experience higher levels of parental control and family intimacy, and 2) Black adolescents perceived their friendships to be less intimate and felt a lesser need for approval from peers compared to White adolescents. By concurrently assessing the role of family and peer relations, these findings aid in understanding the context in which siblings may assume the hypothesized level of importance for Black adolescents. The socialization and rearing of Black adolescents at a minimum seems to lead to weaker attraction towards friends, and at most develops a reservation towards these 'traditional' peers. Indeed, Giordano

et al. (1993) argued that Black adolescents view their families as a 'safe haven' and as source of support that is not readily detached from during adolescence. This distinction highlights the traditional focus placed on vertical relationships (e.g., parent and child) and the relative oversight of horizontal relations (e.g., siblings) in evaluations of family influence on development (Irish, 1964). The parent-child dyad in this 'safe haven' is important for adolescent development; however, the child-child relationship is an equally important and independent source of influence in the family system that has been neglected in the peer literature.

Other research has assessed the extent to which peers influence Black adolescents across a wide range of behaviors. One of the earliest studies that assessed Black-White differences in susceptibility to peer influence was an experimental study conducted by Iscoe, Williams, and Harvey (1964). This study found that Black youths were significantly less likely to respond to peer pressure when asked to count a metronome than White subjects. Billy and Udry (1985) evaluated sexual intercourse behavior among Black and White adolescents and found that Blacks were significantly less likely to select friends or terminate friends based on the similar nature of sexual behavior; whereas, there was a strong relationship between White adolescent intercourse behavior and their friends' behavior.

Similarly, several studies have evaluated the extent to which peer processes affect substance use (Barnes, Farrell, & Banerjee, 1994; Farrell & Danish, 1993; Griesler & Kandel, 1998; Headen et al., 1991). Each of these studies generally concluded that Blacks have less substance using friends and that their own substance use is less influenced by their friends. A more recent analysis of susceptibility to peer

influence by Steinberg and Monahan (2007) used a new self-report measure, *Resistance to Peer Influence* (RPI), to assess age, gender, and racial differences in resistance to peer influence. This new peer susceptibility instrument addresses previous limitations of peer research by overcoming the exclusive use of antisocial scenarios and the use of specific situations that may only pertain to certain age groups. Steinberg and Monahan (2007) conclude that Blacks are characterized by a higher resistance to peer influence compared to individuals from other races or ethnicities. Thus, it would appear that the differential influence of "traditional" peers on Black adolescents is not limited to a single deviant behavior; rather, the weaker influence of "traditional" peers extends across deviant and pro-social behaviors providing further support for the need to broaden the search for other sources of influence. In other words, current research does not preclude Black adolescents from being susceptible to peers other than friends and actually calls for additional research to address this void in understanding peer processes for Black adolescents.

The Role of Siblings

There is limited literature on whether sibling relationship qualities vary by race; however, limited research does suggest the importance of siblings within family systems (McHale, Whiteman, Kim, & Crouter, 2007). Sibling relationships are generally characterized by high reciprocity, emotional intensity, strong attachment, and an overlap of shared and non-shared experiences (Azmitia & Hesser, 1993; Cicirelli, 1995; Dunn, 1983; Volling, 2003). This bond between siblings is reinforced by the extensive amount of time spent together, as siblings spend more time with each other

than their parents during early to middle childhood. Further, sibling relationships are often one of the longest lasting relationships of an individual's life (Cicirelli, 1995; Dunn & Kendrick, 1982; McHale & Crouter, 1996). Thus, siblings assume a variety of important roles throughout the life course that shape individual developmental processes and life experiences. In regards to anti-social behavior, the saliency of siblings as sources of influence is likely to peak during adolescence consistent with the literature on 'traditional' peers (i.e., friends) (Cicirelli, 1995; Warr, 2002).

Sibling research indicates that there is a high degree of shared experiences between siblings (Cicirelli, 1995; McHale & Crouter, 1996). Given the *a pirori* nature of sibling interactions, the content and nature of these interactions assume added developmental importance for learning processes that occur before interaction with school-based friends (Sutherland, 1947). These processes are also reinforced by the prevalence of imitation among siblings. Several studies that focused on younger children and their older sibling consistently found evidence of imitative interactions that persisted in follow-up studies (Pepler, Corter, & Abramovtich, 1981; Dunn & Kendrick 1982). These early imitative behaviors are believed to introduce younger siblings to certain behaviors, reinforce the reproduction of these behaviors, and solidify the close relationship between siblings (Dunn, 1983). Older siblings also benefit from these interactions by developing social skills inherent in dealing with younger siblings responses to both pro-social and aggressive behaviors (Tetti, 1992).

The imitative nature of sibling behavior contributes to the process of identification between siblings that leads to the recognition of key similarities and differences. This identification process has been found to be more prevalent in same-

sex siblings; however, this process underscores the fundamental connection that is established between siblings prior to adolescent's exposure to peers in schools and the neighborhood (Dunn, 1983). Research has also indicated that ethnic and minority groups experience a process of ethnic identification that leads towards an internalization of group norms and membership, particularly when exposed to other cultural backgrounds (Phinney, 1996). This process largely begins during early childhood and is driven by reinforcement from the immediate family and surrounding minority community (Phinney, 1996). Concurrently with the process of identification between siblings, Black siblings likely develop a sense of racial identification between one another that bolsters the deep bond of the sibling relationship especially when confronted with cultural contrasts outside of the home.

A realistic depiction of the content of this close sibling bond should be described as one that contains both pro-social and antagonistic behavior (Dunn, 1983). Sibling interactions are some of the first contexts to evaluate social behavior, experience reinforcement of behavior, and engage in social comparison to another individual (Tesser, 1980). Several studies have sought to evaluate the extent to which positive sibling relationship qualities (i.e., pro-social behavior, warmth, less conflict, etc.) and negative sibling relationship qualities (i.e., delinquent behavior, conflict, aggression) differentially predict future behavioral and psychological outcomes (Amato, 1989; Kim, McHale, Crouter, & Osgood, 2007; Slomkowski, Rende, Conger, Simons, & Conger, 2001). For example, in a sample of Australian families, Amato (1989) found that net of parental support, adolescents with good sibling relationships

scored significantly higher in self-esteem, self-control, social competence, independence, and life skills.

Conversely, Patterson (1984) and Bank, Patterson, and Reid (1996) indicated that sibling relationships characterized by either direct coercive behavior or observed coercive family interactions may lead to the development of a coercive behavioral orientation. This has been attributed with negative consequences for forming relationships with particular friends (Bank, Patterson, & Reid, 1996). Specifically, this type of sibling relationship may facilitate the selection of certain delinquent or aggressive peers as friends, and further make these siblings susceptible to the reinforcements of coercive behavior. These early heterogeneous sibling interactions have important consequences for future interactions with all peers. Adolescents can draw from the experience of these interactions in order to successfully form friendships and other relationships with peers outside of the household (Brody, 1998; Dunn, 1983). In the case of Black siblings, these early interactions are likely to be formative in their uniquely structured path towards adolescent identity-formation that has been characterized as one less dependent on traditional peers.

Siblings may be positioned to assume an important role during key developmental stages of childhood and adolescence; however there is likely variability in the strength of that role due to sibling status characteristics (i.e., sibling gender composition, age-spacing, birth order) (see review in Dunn, 1983). Almost all of the early focus on sibling influence evaluated the importance of the structural features of the 'sibling constellation' (see review in Dunn, 1983). Most research attempted to assess how birth order, gender composition, and age spacing affected intellectual and

academic achievement. Recent research that has evaluated the impact of these sibling characteristics has highlighted their capacity to condition the strength of sibling influence. For example, the relationship between same sex sibling pairs and non-same sex sibling pairs may affect the type and quality of the interaction between siblings (Rowe & Chester, 1991). In an evaluation of sibling pairs in the Arizona Sibling Study, Rowe and Gulley (1992) concluded that same-sex siblings exhibited more similarity in substance use. This is likely due to the fact that same-sex siblings were more likely to report a higher frequency of interaction and higher levels of closeness and warmth (Rowe et al., 1992). It is also the case that siblings closer in age, spend more time together and experience more intimate relationships (Cicirelli, 1974; Fallon & Bowles, 1997; Pepler, 1974). Researchers have suggested that the birth order of siblings may also condition the relationship between sibling influence and future behavior (Cicirelli, 1972). Older siblings are generally found to be more effective teachers and serve to facilitate cognitive development among younger siblings in structured tasks (Cicirelli, 1972). Additionally, older siblings have been found to assume a 'teacher' role that fosters the development of both siblings understanding of social norms, responsibilities, and discipline (Bossard & Boll, 1955). Thus, older siblings may have an amplified effect on (deviant) behavior.

There has been some effort to assess the extent to which sibling influence directly contributes to adolescent delinquent behavior. This literature has been largely characterized by mixed findings with primarily White samples. Some research has found that sibling behavior was a strong positive predictor of respondents' behavior (Reiss & Farrington, 1991; Greneir & Roundtree, 1987; Lauritsen, 1993; Rowe &

Gulley, 1992). Rowe & Gulley (1992) found that siblings that got along well with one another and/or associated with mutual friends exhibited a positive influence on each other's delinquent behavior. Additionally, Lauritsen (1993) evaluated friend and sibling influence utilizing the National Youth Survey (NYS) and concluded that sibling influence was positively related to adolescent delinquent behavior net of friend influence.

Other research has indicated that siblings have virtually no effect on adolescent behavior when friend influence is accounted for. For example, Sampson and Laub (1993) assessed the joint and unique effects of friend and sibling delinquency and concluded that sibling delinquency is not associated with the male respondents' delinquency. However, a common criticism of sibling research is that it is has largely failed to fully specify the genetic and environmental factors that may explain previous findings (Haynie & McHugh, 2003). By accounting for the heritability of behavior, the sibling's friends, and for the effect of the adolescent's friends, a more thorough assessment of sibling and friend influence can be achieved. Although the primary intent of this thesis is not to distinguish the effects of genetic and environmental factors, it is informative to consider how these criticisms have added to the discussion of how sibling and friend influences matter differently for some adolescents.

Haynie et al. (2003) conducted an analysis of sibling effects in the AddHealth data and concluded that once heritability of siblings' behavior is accounted for, the effect of sibling deviance becomes non-significant. Thus, they argued that previous work that found positive relationships between sibling influence and adolescent behavior may be an overestimation of sibling influence. Nonetheless, Haynie et al.

(2003) posit that siblings may still be able to facilitate the development of adolescent social competence and susceptibility to delinquent friends. Importantly, Haynie et al. (2003) did not separate the analyses of the predominantly White sample by race. This may result in: 1) an overestimation of the effect of friends and 2) an underestimation of the effect of siblings.

This thesis will provide a richer depiction of the nature and reality of peer influence processes that have been ignored in previous analyses. Research and theory both suggest that an individual's network of 'peers' are not limited to school-based friends. By extending the consideration of a peer to include both friends and siblings, we can better understand how adolescents are socialized to experience various sources of influence. Ultimately, this thesis intends to evaluate how Black and White adolescents differentially experience sibling and friend influence by testing following hypotheses:

1. For Black adolescents, siblings will have a stronger influence on delinquent behavior than friends have on delinquent behavior.
2. For White adolescents, friends will have stronger influence on delinquent behavior than siblings have on delinquent behavior.
3. Black adolescents siblings will have a stronger influence on delinquent behavior than the influence of White adolescents' siblings.
4. White adolescents' friends will have a stronger influence on delinquent behavior than the influence of Black adolescents' friends.

This thesis will also determine whether sibling effects are conditioned by characteristics of the sibling relationship (i.e., gender composition, birth order, age-spacing, genetic relatedness).

Chapter 3: Data and Methods

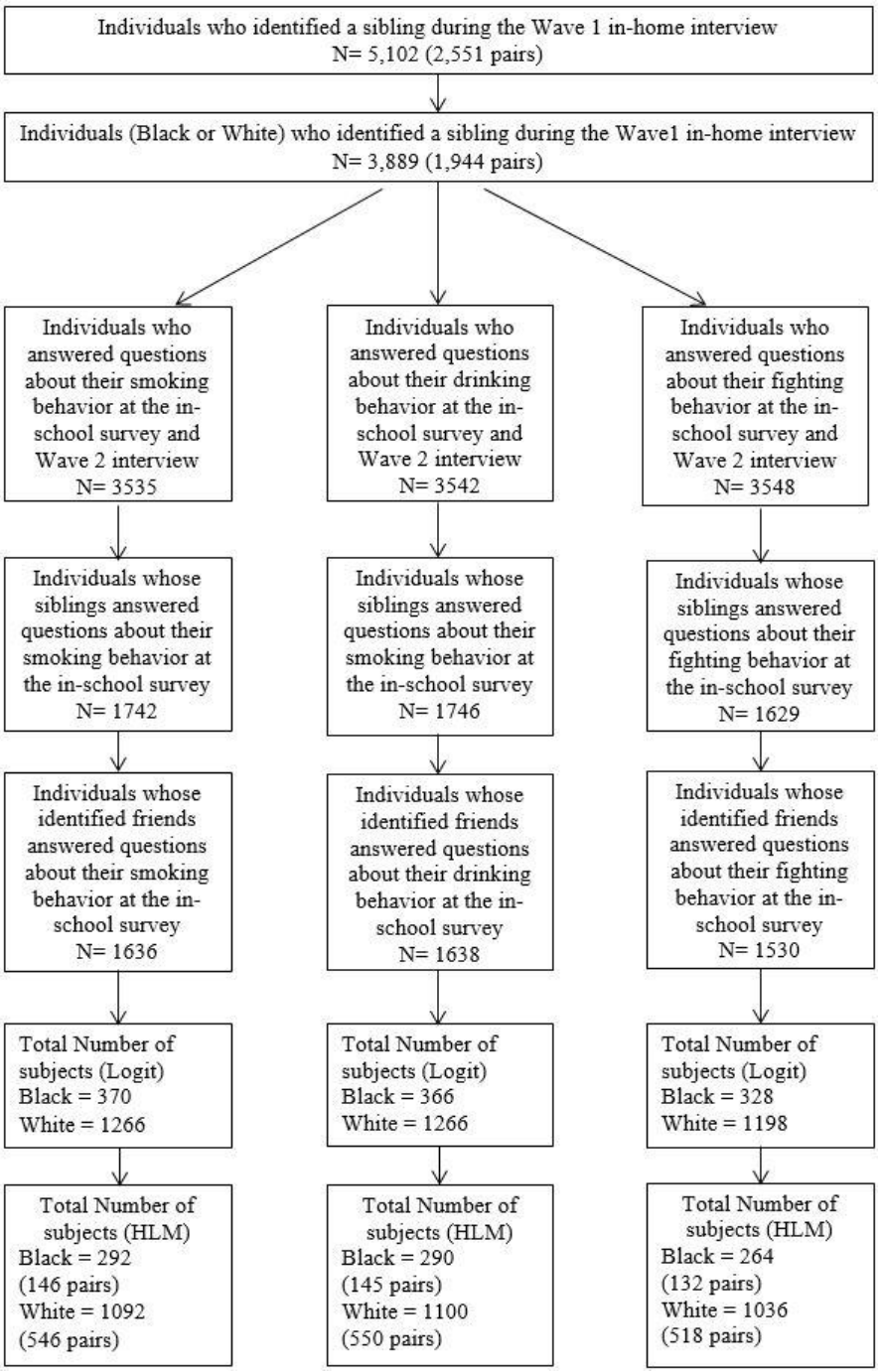
This thesis uses data from the National Longitudinal Survey of Adolescent Health (AddHealth). One of the main benefits of the AddHealth data for researchers is the rich set of measures directly reported by subjects, their siblings, and their friends. This allows for a unique assessment of multiple sources of influence on deviant behavior. Participants were clustered within 132 randomly selected schools that were stratified by region, urbanicity, school size and type. All of the students from selected schools (grades 7 – 12) were able to complete an in-school questionnaire during the 1994-1995 school year. Data from approximately 90,000 students were collected during the in-school survey. In this survey, adolescents were asked to nominate up to 10 in-school friends, who also participated in the study (if they were present on the day of data collection and took part in the study). A much smaller sub-section of these students were given an in-home interview in 1995 (Wave I) and then again in 1996 (Wave II).

Supplemental samples of adolescent pairs were drawn based on responses to questions on the in-school survey. Various types of pairs were included in the adolescent pair dataset including twins, full siblings, half-siblings, and non-related adolescents (step siblings, adopted siblings, boyfriend/girlfriends, etc.). All non-related adolescents, except for adopted siblings, were excluded from the current analyses. I argue that the shared environment of siblings, particularly among Black adolescents, is what contributes to the socialization processes that affect the strength of sibling influence. Thus, this exclusion was done to ensure that included pairs in the sample were likely reared together for an extended period of time and shared the same

environment from childhood to adolescence. Further, this minimizes the possibility that adolescent pairs may have entered the same household at different points in time or were raised in completely different households.

As a result, there are 5,107 subjects; however, 4,266 are Black and White siblings (2,133 pairs), which represents the first data exclusion (see Figure 1 for a detailed description of the data loss). Approximately 800 adolescents have siblings that are missing valid in-school measures of deviant behavior and a further 500 adolescents are missing valid data for at least one of the three outcomes of interest (i.e., smoking, drinking, and fighting and Wave 2). Additionally, nearly 100 adolescents have missing data on peer group measures of the delinquent behaviors. This leaves a sample of N=1636 for smoking, N=1632 for drinking, and the N=1526 for fighting. This sample size is tied to the logistic regression models, however, which use the individual as the unit of analysis. The analyses also rely on dyadic modeling techniques, which shifts the unit of analysis to the dyad. In order to accommodate the specifications of a hierarchical linear model (HLM - to be discussed below), siblings must also only appear in one sibling dyad (that is, a subject cannot be nested in two different dyads). If a subject belonged to more than one sibling pair that had complete data, a sibling pair was chosen at random to remain and the additional pair(s) was dropped from the sample. The final sample size for the HLM smoking model is N=146 Black dyads, 546 White dyads (~ 1,384 individuals); the drinking model is N=145 Black dyads, 550 White dyads (~ 1,390 individuals); and the fighting model is N=132 Black dyads, 518 White dyads ~ 1,300 individuals).

Figure 1: Description of Sample Attrition



Dependent Variables

The AddHealth study captures a series of deviant behaviors during the in-school survey, questions to which subjects, siblings and friends responded. By using these in-school measures, I am able to compare consistent behaviors across both types of peers under study. The majority of behaviors included in the in-school survey were minor behaviors (i.e., lying to parents, skipping school) and do not reflect more serious behaviors often associated with delinquency. The only behaviors that could truly be considered delinquent at Wave 1 and have analogous outcome behaviors at Wave 2 are smoking, drinking and fighting. Thus, the analysis focuses on these three behaviors.

Smoking: Each respondent was asked during the Wave 2 in-home survey the following question about their behavior in the past year: "have you tried cigarette smoking, even just one or two puffs?" Subjects were able to respond either "yes" or "no". A value of 1 indicates that the respondent engaged in the behavior during the past year. Approximately 26.0% of Black adolescents and 50.6% of White adolescents indicated that they engaged in smoking.

Drinking: Each respondent was asked during the Wave 2 in-home survey the following question about their behavior in the past year: "have you had a drink of beer, wine, or liquor – not just a sip or taste of someone else's drink – more than two or three times?" Subjects were able to respond either "yes" or no". A value of 1 indicates that the respondent engaged in the behavior during the past year. Approximately 35.0% of Black adolescents and 52.9% of White adolescents indicated that they had engaged in drinking more than two or three times in the past year at Wave 2.

Fighting: Each respondent was asked during the Wave 2 in-home survey the following question about their behavior in the past year: "how often did you get into a serious

physical fight?" Subjects were able to respond with "never", "1 or 2 times", "3 or 4 times", or "5 or more times". This response was dichotomized into a binary response, indicating if the subject ever got into a serious fight or did not ever get into a serious fight. A value of 1 indicates that the respondent engaged in the behavior during the past year. Approximately 18% of Black adolescents and 17% of White adolescents engaged in serious fighting in the past year at Wave 2.

Independent Variables

Sibling Deviance: Each sibling was asked questions about their involvement in the following deviant acts over the past year: smoke cigarettes, drink alcohol, and get into a physical fight. Responses to how often a subject smoked cigarettes or drank included: "never", "once or twice", "once a month or less", "2 or 3 days a month", "once or twice a week", "3 to 5 days a week", and "nearly everyday". The question regarding how often the subject got into a physical fight included the following responses: "never", "1 or 2 times", "3 to 5 times", "6 or 7 times", and "more than 7 times". Higher values indicate that the subject had a sibling who engaged in more serious levels of smoking, drinking, or fighting.

Friend Network Deviance: During the in-school interview, subjects were asked to nominate up to 5 female and 5 male in-school friends. These individuals were also administered the in-school survey; therefore, in-school friends report their own smoking, drinking, and fighting behaviors. If a subject identified their sibling as a friend, they were removed from the network. These measures are composed of the average responses by the subjects' network of friends. For Black adolescents, the friendship networks report an average .599 (S.D. = 675) response for smoking, 1.04 (S.D. = .828) response for drinking, and .703 (S.D. =. 530) For White adolescents, the friendship networks report an average 1.30 (S.D. = 1.29) response for smoking, 1.21 (S.D. = .826) response for drinking, and .734 (S.D. = .541) response for fighting.

Control Variables

Self-Control: One of the main criticisms of peer influence is the possibility that some underlying characteristic explains why certain individuals are more likely to engage in risky and deviant behavior and why they have friends that do the same (i.e., selection). Namely, Gottfredson and Hirschi (1990) posited that low self-control completely explained an individual's propensity to engage in delinquent behaviors and the deviance of their peers, therefore any peer effect was spurious. Therefore, low self-control will be controlled for to prevent an overestimation of any peer effect (e.g., see Pratt & Cullen, 2000). Impulsivity, one of the main components of self-control, will be used as a control variable for the measure of self-control (see also Paternoster & Pogarsky, 2009, which has used the same measure). Respondents were asked the following statements about themselves: "When making decisions, you tend to think over the options carefully rather than go with your gut." Responses to this item included

"Not at all true of myself", "Slightly true of myself", "About halfway true of myself", "Mostly true of myself", and "True of myself". Therefore, higher values on this measure indicate higher levels of self-control. This measure captures a subject's inability to fully consider the consequences of one's actions, which reflects the general tenor of the concept of self-control and has been used by previous research to account for self-control (e.g., Paternoster & Pogarsky, 2009). Table 1 indicates mean scores of 3.08 (S.D. = 1.10) for Whites and 2.94 (S.D. = 1.13) for Blacks with respect to levels of self-control.

Parental Attachment: Research on adolescents has found that individuals who had strong ties to their parents were less likely to engage in deviant behavior (e.g., Cernkovich & Giordano, 1987; Rankin & Kern, 1994; Rankin & Wells, 1990). Therefore, parental attachment will be controlled for. Respondents were asked about how much they believed their parents cared about them with higher values indicating a stronger attachment. Descriptive statistics indicate that the mean score on this scale for Blacks is 4.83 (S.D. = .520) and Whites is 4.81 (S.D. = .517), suggesting similar levels of attachment.

Parental Supervision: Respondents were asked two questions about how often their mom is at home when they leave for school and how often their mom is home when they return from school. Responses to these questions (1= always, to 5= never) were averaged together for each individual. Some literature has suggested that youth who indicated that their parents engaged in a lower amount of supervision more often engaged in problem behaviors (Hawkins, Catalano, & Miller, 1992; Loeber & Stouthamer-Loeber, 1986; Warr, 2005). Table 1 indicates that Black adolescents

reported an average level of supervision of 2.27 (S.D. = 1.11) and that White adolescents reported an average level of supervision of 2.24 (S.D. = 1.06)

Sibling Network Delinquency: It is possible that any influence from siblings may in fact be driven by the 'indirect' impact of a siblings' group of friends. Research has demonstrated that indirect ties can indeed directly and indirectly affect any deviant influence than more proximate ties have on a subject's behavior (Haynie et al., 2003; Payne & Cornwell, 2007). Therefore, the average delinquency of a sibling's peer group will be controlled for in the analyses. (See Table 1 for descriptive statistics).

Demographic Characteristics: Consistent with previous peer research, a series of demographic characteristics will be accounted for that might also affect peer selection and underlying processes related to deviant behavior (e.g., Sewell, Archibald, & Portes, 1969; Warr, 1993). Age, biological sex, family structure, and measures of socioeconomic status will be included. Age is a continuous variable from Wave 1 of the survey and ranges from 13-19. Biological sex is measured as a binary variable that indicates whether the subject is female or male (2 = female, 1 = male). Family structure will be measured by a binary variable that indicates whether each subject lived with two married parents (1 = yes, 0 = no). Finally, socioeconomic status will be measured by whether the mother received public welfare assistance during the past year (1 = yes, 0 = no).

Interaction Variables & Level-two Variables: Several characteristics of the sibling relationship may condition the relationship between sibling's influence and adolescent delinquent behavior (i.e., gender composition, birth order, age gap, genetic relatedness). The hierarchical cross-nested models consider each of these variables as

level-two characteristics of the dyad, except for birth order, which is a level-one interaction. For the logit models, separate analyses that interact the sibling effect with each of the identified variables are also included.

The gender composition of the sibling pair (i.e., brothers, sisters, mixed-six) may impact sibling behavioral resemblance (e.g., Rowe et al., 1992). Additionally, the birth order of the siblings will be considered, as research has shown that often the younger sibling is more influenced by an elder sibling (Dunn, 1984). A separate analysis for age-spacing will be conducted to determine whether the gap between siblings conditions the effect of sibling influence. This will be measured as a categorical variable indicating whether the siblings are 0-2 years apart, 3-4 years a part, or 5 or more years a part. Lastly, consistent with research by Haynie et al. (2003), the genetic similarity between siblings may explain sibling resemblance on delinquent behavior. Therefore, a genetic coefficient that specifies the degree to which siblings are genetically related will be interacted with the sibling effect (0 = adopted siblings, .25 = half siblings, .50 = dizygotic/full siblings, 1 = monozygotic siblings).

Table 1. Descriptive Statistics for Variables Used in Analysis

	White		*Black*			
Variable	*Mean*	*S.D.*	*Mean*	*S.D.*	*Min*	*Max*
Age	14.9	1.62	15.0	1.6	11	19
Female	1.50	.500	1.57	.496	1	2
Self-Control	3.08	1.10	2.94	1.13	1	5
Mom Welfare	.070	.260	.211	.400	0	1
Parental Attachment	4.81	.517	4.83	.520	1	5
Family Structure	.841	.365	.600	.490	0	1
Parental Supervision	2.24	1.06	2.27	1.11	1	5
Birth Order	.346	.476	.310	.464	0	1
Age Gap	1.26	.485	1.23	.477	1	3
Same Sex	.632	.482	.660	.470	0	1
Genetic Relatedness	.524	.183	.526	.211	0	1
Sibling Smoke	1.34	2.13	.503	1.18	0	6
Sibling Drink	1.23	1.55	.902	1.30	0	6

Sibling Fight	.821	1.17	.723	.938	0	4
Sibling Network Smoke	1.28	1.27	.587	.439	0	6
Sibling Network Drink	1.21	.892	1.01	.813	0	6
Sibling Network Fight	.734	.541	.683	.530	0	4
Subject Smoke (W2)	.506	.500	.260	.439	0	1
Subject Drink (W2)	.529	.499	.350	.477	0	1
Subject Fight (W2)	.165	.372	.180	.385	0	1
Subject Network Smoke	1.30	1.29	.599	.675	0	6
Subject Network Drink	1.21	.896	1.04	.828	0	6
Subject Network Fight	.734	.541	.703	.530	0	4

Analytic Plan

One of the major premises of this thesis is that Black and White adolescents are socialized differently to experience various peers. This is argued to be the result of differences in parenting styles that can be attributed to cultural perspectives on raising children. This thesis first investigates whether parenting practices actually differ between Black and White parents. Specifically, I assess whether there are differences between Black and White parental control using t-tests. This basic analysis will consider subjects' answers to the following questions: "Do your parents let you make your own decisions about the time you must be home on weekend nights?" ; "Do your parents let you make your own decisions about the people you hang around with?"; "Do your parents let you make your own decisions about what you wear?" ; and, "Do your parents let you make your own decisions about what time you go to bed on weeknights?"

This thesis then employs two analytic approaches (i.e., actor-partner interdependence models in HLM and logistic regression models) to address the relative strength of sibling influence compared to the friendship group influence. Each method has its unique benefits and limitations; by considering both approaches, I will have a more complete sense of the relationships under study. The dyadic models were implemented with the use of hierarchical linear models, consistent in part with Kreager and Haynie's (2011) study on romantic partners. The use of dyads as the unit of analysis seeks to simultaneously assess the impact of subjects' attributes on their sibling's outcome and the effects of siblings' attributes on the subject's own outcomes. As each individual sibling is nested within sibling dyads, ignoring the violation of independence between dyad members could result in biased standard errors and inefficient coefficient estimates (Kreager & Haynie, 2011). The Actor-Partner Interdependence Model has been used to evaluate the simultaneous actor-partner effects that are desired for this particular study of siblings. This model presents a multi-level structure that consists of level-one data for individual members of the dyad and level-two data that indicates the dyad unit and accounts for between-dyad attributes.

There is a noteworthy complication in the nature of the data, as subjects in the AddHealth are also nested within schools. This would imply the use of a three-level hierarchical model to account for interdependencies within schools; however, not all sibling attended the same school. This fact challenges the use of traditional hierarchical linear models that require rigid structural nesting within each level. Thus, a more flexible framework will be required in order to account for the simultaneous membership in different sibling pair and school settings. A cross-nested or cross-

classified model offers one potential solution to address the structure of the data (Johnson, 2012). Specifically, a cross-nested model allows for the simultaneous nesting of primary units in multiple level-2 units. For example, Johnson (2012) evaluated case processing outcomes for individuals who simultaneously belonged to terrorist groups and were tried in various U.S. federal district courts. As not all terrorist groups were tried in the same federal district court, Johnson (2012) utilized a cross-nested model to determine the whether case outcomes varied among both 'levels' of interest (i.e., terrorist group & district court). The use of this model still requires that each sibling only belong to a single dyad; therefore one major consequence of this analysis is the loss of a fairly large number of individual subjects.

In order to address the previously mentioned limitation of hierarchical models, a series of logit models were also conducted. These models allow for individual subjects to not be dropped as a result of belonging to more than one sibling dyad. Clustering within dyads and schools were still accounted for by utilizing a multiple cluster option in Stata v.13 (Petersen, 2009). In doing so, I was able to retain a larger number of the subjects in the sample that increased statistical power. Each coefficient in this case is interpreted as the rate of change in log odds of 'success' (i.e., drinking, smoking, & fighting at Wave 2).

For each approach, the first model will consider the direct sibling and friend effects on deviance, net of controls. Subsequent models will incorporate interaction terms to evaluate whether the sibling effect is conditioned by sibling pair characteristics. In the HLM models, these interactions will be in the form of cross-level interactions except for birth order. Since birth order is not consistent across the sibling

pair, it will be included as a level-one interaction. Genetic relatedness, age-gap, and the sex composition of the siblings will be included as level two-factors that interact with the level-one sibling effect. The same factors will be included in the logistic regression models; however, because these models are not hierarchical, all interactions will be treated as standard interactions in a regression. Lastly, in order to determine whether the strength of the effect for siblings and friends on deviance is significantly different between independent samples of White and Black adolescents, I will rely on the equality of coefficients test (Paternoster, Brame, Mazerolle, & Piquero 1998).

Finally, both sets of analyses use data that relied on multiple imputation to account for missing information on the control variables. I estimated models using multiple imputation with Stata's Imputation with Chained Equation command (StataCorp, College Station, TX) (Allison, 2002; Royston, 2004; Schafer and Graham, 2002)

Chapter 3: Results

Parental Control

In order to assess whether Black and White adolescents experienced differential levels of parental control, t-tests were conducted and are presented in Table 2. Results indicate that the mean level of parental control over decisions on (1) who to hang out with ($p < .01$) and (2) clothing choices ($p < .01$) are significantly different for White and Black adolescents. Specifically, White adolescents report higher levels of parental control on these two factors. The remaining two factors demonstrated no difference in the means between Black and White adolescents. These results suggest that White adolescents experience more or the same level of parental control, at least as measured by these factors.

Table 2. T-tests. Parental control differences between Black and White adolescents

Variable	*White Mean*	*Black Mean*	*Difference*
Hanging out with friends	.887	.800	-.087**
Time home on weekend	.306	.273	-.033
Time to bed on weeknight	.650	.678	-.002
Clothing choice	.919	.863	-.055**

**$p < .01$, *$p < .05$

Table 3a and Table 3b present the results from the models that predict Black and White adolescent drinking behavior, respectively. For Black adolescents (Table 3a), friends' drinking was not a predictor of later drinking – it consistently failed to achieve statistical significance. Black siblings have a small positive effect on predicting drinking behavior. Specifically, for every unit increase in sibling drinking leads to a log-odds increase of .201 that the subject will drink. The fact that sibling drinking at Wave 1 has a positive impact on subject drinking at Wave 2 while the impact of friends' drinking is statistically indistinguishable from zero provides support for Hypothesis 1.

Models 2-6 demonstrate that only birth order conditions the effect of sibling's drinking on subject drinking. Specifically, if the sibling is older, this amplifies the effect of sibling drinking. This finding is consistent with research that indicates the importance that an older sibling can play in modeling behavior and nourishing key values (Dunn, 1984).

The findings for White adolescents (Table 3b) indicate that both siblings and friends significantly increase the log-odds of whether an adolescent will engage in later drinking. A one unit increase in White adolescent friends' drinking leads to a log-odds increase of .698 that a subject will drink. For White adolescents, a one unit increase in a siblings drinking by one unit leads to a .144 log-odds increase in future drinking. Because the sibling and friend influence are (generally) measured on the same metric, this gives some sense of the relative magnitude of these effects; the coefficient for White friends is roughly five times larger than that of sibling, which provides support for Hypothesis 2. Models 2-6 provide little evidence of any conditioning effects on sibling influence, although birth order does emerge as a marginally significant factor. Again, if the sibling is older the effect of sibling drinking is amplified.

In comparing the effect of siblings between Black and White adolescents (Models 1 in Table 3a and 3b), an equality of coefficients test indicates there is no statistically significant difference (Table 9), which does not provide support for Hypothesis 3. As predicted by Hypothesis 4, however, the equality of coefficients test suggests that friends for White adolescents have a statistically significant different and larger effect on predicting adolescent drinking than do friends for Black adolescents (Table 9).

Table 3a. Cross-Classified HLM. Effect of siblings and friends for Black adolescent drinking

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.208* (.110)**	**.201* (.111)**	**.192* (.112)**	**.220* (.113)**	**.201* (.113)**	**.386** (.138)**
Friend Influence	**.172 (.173)**	**.180 (.174)**	**.173 (.175)**	**.198 (.175)**	**.172 (.173)**	**.213 (.174)**
Female	-.203 (.270)	-.211 (.272)	-.189 (.275)	-.207 (.273)	-.141 (.273)	-.239 (.270)
Age	.109 (.092)	.122 (.095)	.128 (.096)	.118 (.096)	.115 (.095)	.127 (.095)
Birth Order	.292 (.311)	.253 (.333)	.256 (.333)	.258 (.333)	.310 (.332)	.667* (.374)
Self-Control	-.097 (.115)	-.109 (.116)	-.111 (.117)	-.112 (.116)	-.087 (.116)	-.116 (.116)
Parental Attachment	-.160 (.261)	-.166 (.261)	-.167 (.262)	-.163 (.261)	-.142 (.262)	-.163 (.178)
SES	-.330 (.356)	-.309 (.357)	-.292 (.360)	-.349 (.360)	-.341 (.355)	-.299 (.352)
Parental Supervision	.053 (.128)	.056 (.129)	.061 (.130)	.044 (.130)	.038 (.129)	.033 (.129)
Family Structure	-.123 (.284)	-.161 (.287)	-.145 (.289)	-.182 (.289)	-.140 (.286)	-.195 (.285)
Friends of Sibling Influence	**-.156 (.178)**	**-.149 (.178)**	**-.159 (.180)**	**-.134 (.178)**	**-.160 (.177)**	**-.163 (.178)**
Birth Order*Sibling Influence						**-.485** (.220)**
Level 2 Variables						
Age Gap		**.235 (.301)**	**.200 (.313)**	**.274 (.300)**	**.266 (.300)**	**.210 (.296)**
Genetic Relatedness		**.269 (.685)**	**.274 (.687)**	**.247 (.696)**	**.273 (.681)**	**.284 (.683)**
Same-Sex		**-.142 (.320)**	**-.140 (.323)**	**-.139 (.320)**	**-.107 (.318)**	**-.210 (.316)**
Cross Level Interactions						
Age Gap * Sib. Influence			**.110 (.195)**			
Genetic * Sib Influence				**.585 (.485)**		
Same-Sex *Sib Influence					**.456* (.251)**	

Table 3b. Cross-Classified HLM. Effect of siblings and peers for White adolescent drinking

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.144** (.051)**	**.144** (.051)**	**.144** (.051)**	**.150** (.051)**	**.156** (.052)**	**.206** (.061)**
Friend Influence	**.692** (.100)**	**.698** (.100)**	**.700** (.100)**	**.693** (.100)**	**.687** (.100)**	**.704** (.100)**
Female	-.136 (.137)	-.141 (.137)	-.147 (.138)	-.130 (.138)	-.100 (.139)	-.131 (.138)
Age	.030 (.056)	.030 (.057)	.033 (.057)	.028 (.057)	.030 (.057)	.026 (.057)
Birth Order	.315 (.175)	.306* (.185)	.310* (.185)	.302 (.186)	.297 (.186)	.515 (.216)
Self-Control	-.014 (.063)	-.013 .063	-.014 (.063)	-.011 (.063)	-.008 (.063)	-.010 (.063)
Parental Attachment	.052 (.138)	.051 (.139)	.050 (.139)	.060 (.139)	.047 (.139)	.058 (.139)
SES	-.163 (.292)	-.164 (.290)	-.164 (.291)	-.150 (.291)	-.133 (.292)	-.171 (.292)
Parental Supervision	.073 (.066)	.071 (.066)	.071 (.066)	.063 (.067)	.064 (.066)	.067 (.067)
Family Structure	.186 (.195)	.177 (.196)	.175 (.196)	.186 (.196)	.170 (.196)	.182 (.196)
Friends of Sibling Influence	**.322** (.096)**	**.326** (.096)**	**.324** (.097)**	**.328** (.097)**	**.331** (.097)**	**.329** (.097)**
Birth Order*Sibling Influence						**-.183* (.065)**
Level 2 Variables						
Age Gap		**.097 (.149)**	**.097 (.150)**	**.098 (.149)**	**.011 (.149)**	**.068 (.150)**
Genetic Relatedness		**.024 (.409)**	**.023 (.409)**	**.103 (.421)**	**.011 (.412)**	**.062 (.412)**
Same-Sex		**.108 (.149)**	**.110 (.149)**	**.102 (.149)**	**.114 (.148)**	**.115 (.149)**
Cross Level Interactions						
Age Gap * Sib. Influence			**.058 (.096)**			
Genetic * Sib Influence				**.372 (.277)**		
Same-Sex *Sib Influence					**.218 (.096)**	

Table 4a and 4b provide the results for the effects of siblings and peers on adolescent fighting for Black and White subjects, respectively. For Black adolescents (Table 4a), both friends and siblings had no statistically significant effect on predicting a subject's future engagement in fighting, net of controls. This provides no support for Hypothesis 1, largely because siblings have no influence. Considering Models 2-6, the only interaction that reaches statistical significance is birth order, again indicating that the older sibling has a stronger influence on the younger sibling's fighting behavior. Thus, there is no direct effect of sibling behavior on fighting, but it does appear that older siblings in particular may hold sway over adolescent fighting behavior.

Among White adolescents (Table 4b), sibling fighting was a statistically significant and positive predictor of fighting. As model 1 indicates, a one-unit increase in sibling fighting led to a .152 increase in the log-odds of engaging in fighting. White friends reached a .10 level of statistical significance and can be interpreted as a one unit increase in the average friendship network measure of fighting leads to a .284 log-odds increase in later adolescent fighting. Given the marginal significance of friends, yet the slightly larger magnitude of the effect, the status of Hypothesis 2 for fighting is unclear. Models 2-6 suggest that the age-gap conditioned the sibling effect. Specifically, as the age-gap between siblings increased the influence of sibling fighting on the subject's later fighting also increased. All other interactions were non-significant. Turning to Hypotheses 3 and 4, the equality of coefficients tests indicate that there are no differences in effects; therefore, there is no support for Hypotheses 3 and 4 for this outcome (Table 9).

Table 4a. Cross-Classified HLM. Effect of siblings and peers for Black adolescent fighting

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.089 (.186)**	**.075 (.189)**	**.073 (.189)**	**.093 (.189)**	**.030 (.202)**	**.374* (.222)**
Friend Influence	**.449 (.321)**	**.433 (.326)**	**.431 (.327)**	**.449 (.328)**	**.431 (.328)**	**.444 (.328)**
Female	.078 (.357)	.042 (.364)	.045 (.364)	.041 (.364)	.102 (.368)	.017 (.374)
Age	-.020 (.115)	-.050 (.119)	-.053 (.121)	-.045 (.120)	-.054 (.120)	-.052 (.124)
Birth Order	-.101 (.413)	-.061 (.438)	-.058 (.439)	-.052 (.439)	-.027 (.440)	.928 (.571)
Self-Control	-.316** (.148)	-.301** (.150)	-.302** (.151)	-.306** (.151)	-.308** (.151)	-.325** (.154)
Parental Attachment	.089 (.390)	.122 (.399)	.126 (.400)	.102 (.403)	.145 (.402)	.229 (.414)
SES	-.219 (.473)	-.173 (.475)	-.170 (.475)	-.159 (.477)	-.141 (.477)	-.256 (.371)
Parental Supervision	-.177 (.171)	-.208 (.175)	-.208 (.175)	-.213 (.176)	-.214 (.177)	-.220 (.180)
Family Structure	-.409 (.353)	-.397 (.357)	-.393 (.358)	-.381 (.359)	-.328 (.364)	-.256 (371)
Friends of Sibling Influence	**.261 (.319)**	**.234 (.326)**	**.236 (.327)**	**.230 (.328)**	**.260 (.335)**	**.124 (.338)**
Birth Order*Sibling Influence						**-1.356** (.576)**
Level 2 Variables						
Age Gap		**-.267 (.446)**	**-.275 (.451)**	**-.256 (.449)**	**-.245 (.443)**	**-.334 (.470)**
Genetic Relatedness		**-.554 (.926)**	**-.554 (.926)**	**-.558 (.932)**	**-.470 (.932)**	**-.721 (.962)**
Same-Sex		**.597 (.446)**	**.600 (.447)**	**.609 (.445)**	**.623 (.458)**	**.591 (.463)**
Cross Level Interactions						
Age Gap * Sib. Influence			**.052 (.388)**			
Genetic * Sib Influence				**.575 (.926)**		
Same-Sex *Sib Influence					**.595 (.522)**	

Table 4b. Cross-Classified HLM. Effect of siblings and peers for White adolescent fighting

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.162** (.075)**	**.152** (.076)**	**.158** (.076)**	**.147* (.076)**	**.135* (.079)**	**.270** (.099)**
Friend Influence	**.284* (.168)**	**.276 (.169)**	**.267 (.170)**	**.268 (.170)**	**.275 (.169)**	**.248 (.170)**
Female	-1.05** (.192)	-1.09** (.195)	-1.09** (.195)	-1.07** (.195)	-1.03** (.200)	-1.10** (.195)
Age	-.223** (.071)	-.222** (.072)	-.219** (.072)	-.220** (.072)	-.222** (.072)	-.227** (.072)
Birth Order	.357 (.233)	.366 (.248)	.364 (.249)	.372 (.249)	.377 (.245)	.639** (.288)
Self-Control	-.275** (.083)	-.277** (.083)	-.278** (.083)	-.276** (.083)	-.280** (.083)	-.277 (.083)
Parental Attachment	.193 (.193)	.196 (.194)	.189 (.194)	.192 (.193)	.200 (.194)	.173 (.193)
SES	.522 (.333)	.560* (.334)	.563* (.334)	.570* (.334)	.587* (.335)	.570* (.334)
Parental Supervision	.040 (.088)	.040 (.089)	.037 (.089)	.038 (.089)	.034 (.089)	.036 (.089)
Family Structure	.079 (.261)	.041 (.262)	.045 (.263)	.047 (.263)	.037 (.262)	.057 (.263)
Friends of Sibling Influence	**.019 (.178)**	**.028 (.177)**	**.026 (.177)**	**.028 (.177)**	**.028 (.177)**	**.013 (.178)**
Birth Order*Sibling Influence						**-.272 (.151)**
Level 2 Variables						
Age Gap		**.357* (.186)**	**.386** (.189)**	**.354* (.186)**	**.368** (.186)**	**.368** (.185)**
Genetic Relatedness		**.472 (.554)**	**.481 (.555)**	**.366 (.572)**	**.487 (.555)**	**.432 (.557)**
Same-Sex		**.201 (.197)**	**.192 (.197)**	**.204 (.197)**	**.189 (.197)**	**.193 (.197)**
Cross Level Interactions						
Age Gap * Sib. Influence			**-.119 (.142)**			
Genetic * Sib Influence				**.380 (.395)**		
Same-Sex *Sib Influence					**.215 (.171)**	

Tables 5a and 5b present the results for the effects of sibling and friend smoking behavior on an adolescent's own smoking. For Blacks (Table 5a), siblings demonstrated a strong positive effect on predicting future smoking. In Model 1 a one-unit increase in the frequency that a sibling smoked in the previous year at Wave 1 led to an increase in the log-odds that the subject would smoke by .596 ($p < .001$). Consistent across all of the models, the effect of friends on smoking remained non-significant in each of the models; therefore, there is support for Hypothesis 1 with the smoking outcome. The cross-level interaction of genetic relatedness and sibling influence achieved statistical significance, indicating that the effect of Black siblings is stronger for those siblings who are more genetically related. All other interactions were non-significant.

For White adolescents (Table 5b), both siblings and friends significantly predict future engagement in smoking at Wave 2. A one unit increase in White sibling's smoking leads to a .176 log-odds increase in adolescent smoking whereas a one unit increase in the average friendship network measure of smoking leads to a .490 log-odds increase in smoking. The coefficient for White friends is almost three times the size of the sibling effect, therefore providing support for Hypothesis 2. A cross-level interaction sibling sex was significant, indicating that the effect of sibling smoking was stronger for those siblings who were of the same sex. No other interaction effects were statistically significant.

An equality of coefficients test indicates that the effect of Black siblings on smoking was significantly larger than the effect of White siblings, providing support for Hypothesis 3 (Table 9). The difference between the effect of White adolescents'

friends and Black adolescents' friends on adolescent smoking did not reach statistical significance (z= -1.51), even though the magnitude of the effect for friends of White adolescents is approximately 4.5 times larger than the coefficient for friends of Black adolescents; therefore, there is no support for Hypothesis 4.

With regard to the control variables across models, a few findings are worth mentioning. Self-control acts as an inhibitory factor of later adolescent fighting and smoking for both Black and White adolescents. Friends of siblings were included in the models in order to provide the most conservative estimate of sibling influence; however, they were only significant for predicting White adolescent drinking. For White adolescents, males and younger adolescents were also more likely to engage in later fighting.

Table 5a. Cross-Classified HLM. Effect of siblings and peers for Black adolescent smoking

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.604** **(.149)**	**.596** **(.148)**	**.560** **(.166)**	**.848** **(.206)**	**.683** **(.170)**	**.638** **(.193)**
Friend Influence	**.111 (.242)**	**.109 (.243)**	**.081 (.243)**	**.045 (.245)**	**.046 (.245)**	**.108 (.242)**
Female	-.286 (.299)	-.291 (.302)	-.261 (.303)	-.310 (.305)	-.193 (.306)	-.300 (.302)
Age	-.182* (.108)	-.185 (.112)	-.173 (.112)	-.169 (.113)	-.175 (.112)	-.188* (.113)
Birth Order	-.374 (.367)	-.410 (.383)	-.384 (.385)	-.285 (.385)	-.326 (.387)	-.345 (.422)
Self-Control	-.228* (.131)	-.223* (.131)	-.229* (.131)	-.197 (.132)	-.204 (.132)	-.224* (.131)
Parental Attachment	-.021 (.324)	-.038 (.322)	-.033 (.322)	.014 (.327)	-.003 (.325)	-.043 (.322)
SES	.286 (.394)	.264 (.396)	.252 (.397)	.254 (.394)	.270 (.397)	.257 (.396)
Parental Supervision	.137 (.147)	.133 (.149)	.136 (.149)	.122 (.149)	.123 (.149)	.132 (.149)
Family Structure	.531 (.329)	.545 (.333)	.554 (.333)	.556* (.333)	.640* (.336)	.557* (.335)
Friends of Sibling Influence	**.008 (.237)**	**.047 (.237)**	**.047 (.237)**	**.106 (.237)**	**.062 (.237)**	**.016 (.237)**
Birth Order*Sibling Influence						**-.100 (.288)**
Level 2 Variables						
Age Gap		**-.024 (.344)**	**-.145 (.358)**	**-.072 (.340)**	**.010 (.339)**	**-.025 (.342)**
Genetic Relatedness		**-.535 (.767)**	**-.483 (.771)**	**-.124 (.849)**	**-.541 (.780)**	**-.545 (.769)**
Same-Sex		**.122 (.358)**	**.032 (.360)**	**-.002 (.354)**	**.118 (.351)**	**.115 (.357)**
Cross Level Interactions						
Age Gap * Sib. Influence			**-.577 (.450)**			
Genetic * Sib Influence				**2.66** **(1.13)**		
Same-Sex *Sib Influence					**.685 (.314)**	

Table 5b. Cross-Classified HLM. Effect of siblings and peers for White adolescent smoking

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.180** (.039)**	**.176** (.039)**	**.174** (.039)**	**.177** (.039)**	**.188** (.040)**	**.210** (.047)**
Friend Influence	**.485** (.069)**	**.490** (.070)**	**.491** (.070)**	**.487** (.070)**	**.480** (.070)**	**.486** (.069)**
Female	.187 (.140)	.179 (.141)	.175 (.141)	.183 (.141)	.189 (.141)	.189 (.141)
Age	-.045 (.055)	-.020 (.056)	-.016 (.057)	-.023 (.057)	-.025 (.057)	-.020 (.056)
Birth Order	.013 (.175)	-.121 (.184)	-.116 (.184)	-.116 (.184)	-.121 (.184)	-.002 (.204)
Self-Control	-.236** (.064)	-.231** (.065)	-.232** (.065)	-.232** (.065)	-.226** (.065)	-.231** (.065)
Parental Attachment	.001 (.139)	-.006 (.139)	-.007 (.139)	-.007 (.139)	-.008 (.140)	-.002 (.139)
SES	-.741** (.303)	-.751** (.306)	-.758** (.307)	-.740** (.306)	-.735** (.305)	-.755 (.306)
Parental Supervision	.106 (.069)	.124* (.069)	.122* (.069)	.122* (.069)	.127* (.069)	.122* (.069)
Family Structure	.064 (.201)	.064 (.202)	.062 (.202)	.071 (.202)	.071 (.202)	.060 (.202)
Friends of Sibling Influence	**-.069 (.068)**	**-.072 (.068)**	**-.070 (.068)**	**-.072 (.068)**	**-.066 (.068)**	**-.072 (.068)**
Birth Order*Sibling Influence						**-.097 (.072)**
Level 2 Variables						
Age Gap		**-.053 (.155)**	**.059 (.156)**	**.053 (.155)**	**-.056 (.154)**	**.031 (.156)**
Genetic Relatedness		**-.996** (.432)**	**-.996** (.432)**	**-.961** (.438)**	**-1.01 (.435)**	**-.991** (.433)**
Same-Sex		**-.042 (.154)**	**-.039 (.154)**	**-.047 (.153)**	**-.032 (.153)**	**-.041 (.153)**
Cross Level Interactions						
Age Gap * Sib. Influence			**.052 (.075)**			
Genetic * Sib Influence				**.139 (.202)**		
Same-Sex *Sib Influence					**.147** (.070)**	

Logit Models

The remaining tables present the results from the logistic regression models that seek to supplement the previous hierarchical models. Again, these models include all siblings present in each household and are not limited to a single dyad per household. Tables 6a and 6b detail the results from an evaluation of the effect of siblings and friends on Black and White drinking. For Black adolescents (Table 6a), Model 1 demonstrates that siblings are strong positive predictors of adolescent drinking. Specifically, a one unit increase in sibling drinking leads to a .200 log-odds increase in the likelihood that an adolescent engages in smoking. Consistent with the cross-nested models, friends do not reach significance across any of the models. Thus, support for Hypothesis 1 is found. Models 2-6 indicate that the effect of siblings on predicting a subjects' drinking is also significantly conditioned by whether the subject is the youngest of the sibling pair and if the siblings are of the same sex.

Table 6a indicates that for White adolescents, siblings and friends significantly predict future drinking; however, the effect of friends is larger in magnitude. The estimate for sibling influence is .167 ($p<.001$), whereas the estimate for the friendship group is .710 ($p<.001$). As the magnitude of the effect of friends is approximately four times larger than that of siblings, which supports Hypothesis 2. Models 2-6 indicates that only sex compositions and birth order condition the sibling influence. Specifically, siblings who were of the same sex or the eldest sibling strengthened the sibling effect on future drinking.

In comparing the effects of siblings and friends across races, equality of coefficients test indicate that difference between the effect of Black siblings and White

siblings did not reach statistical significance; therefore there is no support found for Hypothesis 3. The difference between the effect of Black friends and White friends did reach statistical significance, providing support for Hypothesis 4 (Table 9).

Table 6a. Logistic Regression. Effect of siblings and peers for Black adolescent drinking

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.199** (.082)**	**.327** (.103)**	**.013 (.182)**	**-.133 (.258)**	**-.089 (.154)**
Friend Influence	**.162 (.162)**	**.174 (.163)**	**.158 (.165)**	**.184 (.165)**	**.154 (.157)**
Female	-.066 (.268)	-.099 (.283)	-.042 (.275)	-.078 (.270)	-.003 (.278)
Age	.072 (.081)	.084 (.082)	.077 (.082)	.069 (.080)	.076 (.084)
Birth Order	.426 (.270)	.750** (.321)	.436* (.265)	.426 (.269)	.480 (.283)
Self-Control	-.072 (.154)	-.073 (.153)	-.074 (.154)	-.075 (.152)	-.052 (.151)
Parental Attachment	-.333 (.246)	-.345 (.251)	-.333 (.243)	-.338 (.244)	-.326 (.246)
SES	-.397 (.356)	-.399 (.356)	-.372 (.358)	-.428 (.359)	-.378 (.368)
Parental Supervision	-.076 (.150)	-.100 (.154)	-.067 (.151)	-.088 (.154)	-.084 (.147)
Family Structure	.028 (.300)	-.000 (.309)	.047 (.299)	.023 (.294)	.030 (.293)
Age Gap	**.228 (.225)**	**.209 (.222)**	**.050 (.287)**	**.261 (.229)**	**.246 (.225)**
Genetic Relatedness	**.467 (.641)**	**.490 (.648)**	**.472 (.635)**	**-.133 (.732)**	**.518 (.639)**
Same Sex	**.053 (.260)**	**.001 (.261)**	**.053 (.265)**	**.062 (.258)**	**-.346 (.350)**
Friends of Sibling Influence	**-.218* (.132)**	**-.224* (.136)**	**-.229* (.131)**	**-.202 (.132)**	**-.211 (.131)**
Birth Order*Sibling Influence		**-.346** (.147)**			
Age Gap * Sib. Influence			**.148 (.118)**		
Genetic * Sib Influence				**.661 (.493)**	
Same-Sex *Sib Influence					**.433** (.205)**

Table 6b. Logistic Regression. Effect of siblings and peers for White drinking

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.167** (.051)**	**.243** (.062)**	**.078 (.119)**	**.051 (.144)**	**.043 (.071)**
Friend Influence	**.710** (.090)**	**.712 (.091)**	**.712** (.090)**	**.707** (.091)**	**.701** (.092)**
Female	-.063 (.162)	-.051 (.162)	-.069 (.161)	-.054 (.165)	-.020 (.159)
Age	-.003 (.055)	-.004 (.056)	.001 (.054)	-.006 (.055)	-.003 (.056)
Birth Order	.306* (.161)	.552** (.186)	.310* (.161)	.303* (.161)	.296* (.159)
Self-Control	-.026 (.055)	-.024 (.055)	-.027 (.055)	-.024 (.055)	-.021 (.055)
Parental Attachment	.059 (.131)	.067 (.130)	.055 (.132)	.062 (.132)	.051 (.131)
SES	-.043 (.234)	-.041 (.237)	-.040 (.232)	-.039 (.231)	-.045 (.231)
Parental Supervision	.095 (.059)	.091 (.059)	.094 (.059)	.093 (.059)	.091 (.059)
Family Structure	.390** (.170)	.393** (.173)	.388** (.170)	.393** (.171)	.380** (.173)
Age Gap	**.046 (.122)**	**.013 (.125)**	**-.039 (.157)**	**.049 (.122)**	**.046 (.121)**
Genetic Relatedness	**-.129 (.354)**	**-.090 (.359)**	**-.127 (.354)**	**-.362 (.428)**	**-.136 (.357)**
Same Sex	**.110 (.125)**	**.119 (.126)**	**.110 (.125)**	**.107 (.124)**	**-.138 (.159)**
Friends of Sibling Influence	**.309** (.083)**	**.307** (.084)**	**.306** (.082)**	**.310** (.084)**	**.315** (.085)**
Birth Order*Sibling Influence		**-.218** (.078)**			
Age Gap * Sib. Influence			**.071 (.082)**		
Genetic * Sib Influence				**.228 (.231)**	
Same-Sex *Sib Influence					**.211** (.076)**

Table 7a and 7b present the results for the effect of friends and siblings fighting on an adolescent's own fighting. For Blacks (Table 7a), both friends and siblings fail to reach statistical significance in explaining adolescent fighting. This provides no support for Hypothesis 1. Models 2-5 suggest that only birth order conditions the sibling effect, indicating that the sibling effect is stronger among subjects with an older sibling.

For White adolescent fighting (Table 7b), both siblings and friends emerge as marginally significant at a level of significance of $\alpha = .10$; however, the effect of friends (.235) still remains about twice as large as the effect of siblings (.140). Therefore, support for Hypothesis 2 is found. Models 2-5 demonstrate that only sex-composition and genetic relatedness marginally condition the sibling effect. Namely, siblings who are of the same-sex who are more genetically related are likely to strengthen the sibling effect on adolescent fighting. An equality of coefficients test indicates that there is no difference in the effect of siblings or of friends across Black and White adolescents (Table 9). Therefore, there is no support for Hypotheses 3 and 4.

Table 7a. Logistic Regression. Effect of siblings and peers for Black adolescent fighting

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.089 (.146)**	**.302* (.181)**	**.032 (.390)**	**-.164 (.327)**	**-.145 (.294)**
Friend Influence	**.231 (.282)**	**.257 (.279)**	**.229 (.282)**	**.244 (.286)**	**.234 (.281)**
Female	-.249 (.325)	-.267 (.303)	-.249 (.324)	-.247 (.327)	-.210 (.340)
Age	-.066 (.080)	-.061 (.081)	-.068 (.081)	-.063 (.081)	-.064 (.079)
Birth Order	-.199 (.350)	.462 (.442)	-.199 (.351)	-.188 (.343)	-.183 (.345)
Self-Control	-.290** (.133)	-.304* (.130)	-.290** (.134)	-.292** (.133)	-.283** (.132)
Parental Attachment	-.128 (.232)	-.060 (.234)	-.125 (.236)	-.145 (.238)	-.118 (.229)
SES	-.343 (.430)	-.371 (.459)	-.339 (.433)	-.333 (.432)	-.326 (.427)
Parental Supervision	-.310* (.159)	-.321* (.165)	-.309* (.160)	-.312** (.158)	-.318* (.163)
Family Structure	-.288 (.308)	-.193 (.325)	-.288 (.307)	-.279 (.312)	-.259 (.306)
Age Gap	**.003 (.328)**	**.011 (.315)**	**-.037 (.398)**	**.004 (.332)**	**.022 (.324)**
Genetic Relatedness	**-.595 (.923)**	**-.661 (.979)**	**-.598 (.927)**	**-.948 (1.23)**	**-.552 (.912)**
Same Sex	**.542* (.328)**	**.518 (.345)**	**.547 (.336)**	**.547* (.328)**	**.311 (.315)**
Friends of Sibling Influence	**.452 (.292)**	**.382 (.309)**	**.454 (.293)**	**.448 (.290)**	**.460 (.296)**
Birth Order*Sibling Influence		**-.851* (.445)**			
Age Gap * Sib. Influence			**.047 (.280)**		
Genetic * Sib Influence				**.513 (.590)**	
Same-Sex *Sib Influence					**.319 (.316)**

Table 7b. Logistic Regression. Effect of siblings and peers for White fighting

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.140* (.073)**	**.209** (.083)**	**.225 (.208)**	**-.127 (.163)**	**.004 (.123)**
Friend Influence	**.234* (.139)**	**.222 (.139)**	**.229* (.139)**	**.225* (.136)**	**.234* (.140)**
Female	-.961** (.203)	-.967** (.203)	-.961** (.204)	-.941** (.206)	-.911** (.216)
Age	-.239** (.067)	-.240** (.067)	-.237** (.067)	-.236** (.067)	-.238** (.067)
Birth Order	.305 (.222)	.480 (.280)	.303 (.223)	.303 (.222)	.311 (.223)
Self-Control	-.267** (.082)	-.268** (.082)	-.268** (.081)	-.268** (.082)	-.269** (.081)
Parental Attachment	.094 (.183)	.087 (.179)	.094 (.182)	.092 (.184)	.093 (.183)
SES	.648** (.267)	.652** (.265)	.649** (.267)	.666** (.267)	.681** (.267)
Parental Supervision	.023 (.085)	.022 (.086)	.023 (.088)	.022 (.085)	.017 (.084)
Family Structure	.104 (.251)	.115 (.254)	.110 (.249)	.120 (.252)	.04 (.250)
Age Gap	**.271 (.193)**	**.279 (.191)**	**.341 (.262)**	**.267 (.193)**	**.276 (.192)**
Genetic Relatedness	**.231 (.568)**	**.231 (.570)**	**.238 (.572)**	**-.346 (.613)**	**.256 (.572)**
Same Sex	**.306* (.178)**	**.300* (.179)**	**.302* (.177)**	**.313* (.177)**	**.140 (.243)**
Friends of Sibling Influence	**.044 (.177)**	**.040 (.177)**	**.043 (.177)**	**.041 (.176)**	**.057 (.180)**
Birth Order*Sibling Influence		**-.165 (.145)**			
Age Gap * Sib. Influence			**-.064 (.144)**		
Genetic * Sib Influence				**.512* (.275)**	
Same-Sex *Sib Influence					**.188 (.174)**

In Tables 8a and 8b, the effect of sibling and friend smoking on adolescent smoking are presented. For Black adolescents (Table 8a), siblings positively and significantly predict later adolescent smoking. Specifically, a one unit increase in sibling reports of smoking lead to a .479 log-odds increase in Black adolescent smoking. Black friends fail to have any relationship with a subjects smoking at Wave 2; therefore, support for Hypothesis 1 is found. Among Models 2-5, sibling influence is only conditioned by age gap. Specifically, those siblings who are closer in age are likely to amplify the sibling effect on adolescent smoking.

For White adolescents (Table 8b), as a subject's sibling and friendship group increase their reported frequency of smoking, the likelihood a subject smokes at Wave 2 is significantly increased. The magnitude of the effect of friends (.471) is nearly twice the size that of siblings (.219). Thus, support for Hypothesis 2 is found. Models 2-5 provide no indication of any conditioning effect on sibling influence. Equality of coefficients test indicates that the effect of siblings for Black adolescents is statistically different and larger than their effect on White adolescents, providing support for Hypothesis 3 (Table 9). Lastly, an equality of coefficients tests also indicates that the effect of White friends on smoking is marginally significant and larger than the effect of Black friends on smoking (Table 9). This provides tentative support for Hypothesis 4.

Table 8a. Logistic Regression. Effect of siblings and peers for Black adolescent smoking

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.479** **(.096)**	**.509** **(.137)**	**1.14** **(.351)**	**-.090** **(.337)**	**.083** **(.183)**
Friend Influence	**.178** **(.157)**	**.176** **(.155)**	**.143** **(.150)**	**.138** **(.157)**	**.091** **(.156)**
Female	-.337 (.274)	-.343 (.279)	-.361 (.271)	-.325 (.286)	-.221 (.263)
Age	-.142 (.095)	-.143 (.095)	-.140 (.090)	-.148 (.095)	-.137 (.093)
Birth Order	-.260 (.267)	-.210 (.314)	-.259 (.276)	-.198 (.276)	-.169 (.264)
Self-Control	-.207 (.131)	-.207 (.130)	-.194 (.132)	-.207 (.130)	-.170 (.261)
Parental Attachment	.007 (.306)	.003 (.302)	.006 (.309)	.009 (.308)	.007 (.301)
SES	-.075 (.341)	-.077 (.343)	-.088 (.341)	-.073 (.349)	.090 (.324)
Parental Supervision	-.061 (.133)	-.062 (.134)	-.066 (.133)	-.077 (.139)	-.036 (.137)
Family Structure	.452 (.323)	.467 (.347)	.478 (.329)	.477 (.333)	.598* (.343)
Age Gap	**.022** **(.247)**	**.021** **(.247)**	**.258** **(.264)**	**-.012** **(.242)**	**.064** **(.242)**
Genetic Relatedness	**-.554** **(.608)**	**-.565** **(.603)**	**-.504** **(.627)**	**-1.10** **(.701)**	**-.580** **(.672)**
Same Sex	**.152** **(.397)**	**.145** **(.404)**	**.112** **(.395)**	**.131** **(.393)**	**-.276** **(.443)**
Friends of Sibling Influence	**-.063** **(.200)**	**-.057** **(.190)**	**-.008** **(.200)**	**-.030** **(.187)**	**.013** **(.191)**
Birth Order*Sibling Influence		**-.075** **(.250)**			
Age Gap * Sib. Influence			**-.536** **(.257)**		
Genetic * Sib Influence				**1.13** **(.693)**	
Same-Sex *Sib Influence					**.791** **(.286)**

Table 8b. Logistic Regression. Effect of siblings and peers for White adolescent smoking

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Level 1 Variables	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Sibling Influence	**.219** (.041)**	**.253** (.052)**	**.188* (.106)**	**.183* (.098)**	**.147** (.067)**
Friend Influence	**.471** (.063)**	**.468** (.063)**	**.472** (.063)**	**.470** (.063)**	**.464** (.064)**
Female	.151 (.143)	.161 (.141)	.149 (.145)	.153 (.143)	.161 (.143)
Age	-.036 (.049)	-.036 (.049)	-.035 (.048)	-.038 (.048)	-.039 (.048)
Birth Order	-.084 (.162)	.031 (.189)	-.080 (.164)	-.081 (.161)	-.083 (.160)
Self-Control	-.198** (.059)	-.198** (.059)	-.198** (.058)	-.198** (.058)	-.194** (.058)
Parental Attachment	-.067 (.125)	-.063 (.123)	-.068 (.125)	-.068 (.125)	-.073 (.127)
SES	-.432 (.265)	-.435* (.265)	-.432 (.265)	-.429 (.267)	-.443* (.267)
Parental Supervision	.100* (.060)	.099* (.060)	.100* (.060)	.100 (.061)	.101* (.061)
Family Structure	.091 (.201)	.086 (.201)	.091 (.200)	.092 (.201)	.084 (.204)
Age Gap	**.169 (.140)**	**.146 (.138)**	**.141 (.152)**	**.169 (.140)**	**.172 (.140)**
Genetic Relatedness	**-.985** (.361)**	**-.975** (.367)**	**-.982** (.363)**	**-1.06** (.417)**	**-1.00** (.366)**
Same Sex	**.057 (.113)**	**.059 (.113)**	**.058 (.113)**	**.056 (.113)**	**-.093 (.157)**
Friends of Sibling Influence	**-.088 (.055)**	**-.088 (.055)**	**-.086 (.055)**	**-.087 (.055)**	**-.082 (.056)**
Birth Order*Sibling Influence		**-.094 (.069)**			
Age Gap * Sib. Influence			**.025 (.086)**		
Genetic * Sib Influence				**.070 (.190)**	
Same-Sex *Sib Influence					**.128* (.076)**

In general, the control variables in the logistic regression operate similarly as in the HLM models. For White and Black adolescents high in self-control, they were less likely to engage in fighting. This was also the case for White adolescents with respect to future smoking. Interestingly, friends of siblings for White adolescents were positive and significant predictors of engagement in drinking; whereas, Black adolescent siblings' friends negatively predicted later adolescent drinking. For White adolescents, males and younger adolescents were also less likely to engage in fighting.

Thus, overall the logistic regression results are consistent with those identified in the actor-partner interdependence models specified in HLM. In order to synthesize the findings from both the HLM and logistic regression models, Table 9 presents the equality of coefficients tests and Table 10 summarizes the findings by indicating whether support for each of my proposed hypotheses was found.

Table 9. Equality of Coefficients Test

Variable	*Z-Statistic for Cross Classified Model*			*Z-Statistic for Logistic Regression*		
	Drinking	Fighting	Smoking	Drinking	Fighting	Smoking
Sibling Influence	.463	-.794	2.74**	.338	-.310	2.49**
Friend Influence	-2.58**	.838	-1.51	-2.93**	-.011	-1.73*

**p <.05, *p <.10

Table 10. Summary of Support for Hypotheses

	Drinking				*Fighting*				*Smoking*			
Models	Hyp. 1	Hyp. 2	Hyp. 3	Hyp. 4	Hyp. 1	Hyp. 2	Hyp. 3	Hyp 4	Hyp. 1	Hyp. 2	Hyp 3.	Hyp. 4
HLM	Yes	Yes	No	Yes	No	Weak Support	No	No	Yes	Yes	Yes	Weak Support
Logit	Yes	Yes	No	Yes	No	Weak Support	No	No	Yes	Yes	Yes	Weak Support

Chapter 5: Discussion

Delinquent peers have consistently been referred to as one of the strongest predictors of anti-social behavior, if not the most important cause (Pratt et al., 2010; Warr, 2002). Nonetheless, with few notable exceptions, the robustness of the peer effect has largely focused on friends among White adolescents, with little attention to potential race differences and other types of peers. This limited operationalization of 'peers' restricts the scope of peer influence findings and also assumes that peer influence is invariant across adolescents. In the face of the reality that different types of peers may differentially influence adolescents, this thesis intended to move the status of peer research forward by exploring peer processes for Black and White adolescents.

This thesis posited that due to varying levels of parental control and cultural values, Black and White adolescents would be socialized to experience 'peers' differently. Specifically, due to previous findings that Black parents engaged in a much more restrictive parenting style and experienced a host of structural barriers, Black parents would instill a sense of reservation in their children to peers (i.e., friends) found outside the home (Furstenberg et al., 1999; Giordano et al., 1993). In turn, Black adolescents report greater intimacy within the family that may lead to salience of Black siblings as sources of influence. Analyses on the differences between the levels of parental control provide conflicting evidence to prior research on Black-White parenting styles. Particularly, White adolescents reported significantly higher or equivalent levels of control on the measures that attempted to tap into restrictive parenting. These results could indicate that there is a factor other than parental control that is affecting differential socialization to peers. It is also a distinct possibility that

parental control may mean very different things for Black and White adolescents. Recall, Dixon et al. (2008) found that Black mothers engaged in significantly more restrictive discipline. The measures of parental control in the AddHealth reflect an adolescent's response to questions about parental expectations of behavior and conduct (e.g., expected time to be home on the weekend). Thus, Black adolescents might experience restrictive control from parents in different ways from White adolescents that should be considered in future research.

Both the cross-classified HLM models and the logistic regression models generally converge upon the same set of results. The consistency of the findings provides more conclusive evidence that the processes of friend and sibling influence are not the product of model specifications (i.e., dyad v. non-dyad), but are indicative of the different nature of Black and White peer relations. These analyses provide strong support for the fact that the relationship between delinquency and friendship groups for Black adolescents is significantly different than that of White adolescents. In fact, all of the results indicate that there is no relationship between Black delinquent friends and later adolescent delinquency, whereas there was a consistent relationship (albeit weaker for fighting) between White delinquent friends and later adolescent delinquency. This suggests that the normative developmental processes that lead adolescents to become heavily influenced by their friends may not apply to Black adolescents (Giordano et al., 1993; Youniss & Smollar, 1985). As such, explanations that suggest offending peaks during adolescence because of the heightened salience of peers should be reevaluated to account for Black-White differences in exposure to anti-social behavior, as the

results of this thesis suggest Black adolescents are not susceptible to their delinquent friends (Elliott & Menard, 1996; Warr, 2002).

As expected, siblings emerge as important predictors of Black adolescent smoking and drinking. Equality of coefficients test demonstrated that this effect was significantly different and larger than any effect of White siblings; however, it is still worth stating that siblings were also found to be predictors of White adolescent smoking and drinking. This reflects the important role that siblings continue to play beyond childhood in explaining adolescent behavior, particularly among Black adolescents; therefore, siblings should at a minimum be incorporated into the operationalization of 'peers', as both White and Black adolescent smoking and drinking are affected by their siblings.

The fact that both siblings and friends are involved to some extent in explaining delinquent behavior reaffirms the fact that theories that describe normative influence processes never restricted friends as the only peer worth studying. Rather, these theories of normative influence include all peers who have the capacity to transmit values, reinforce behaviors, or alter one's self-image (Akers, 1998; Mead, 1934; Sutherland, 1947). Although some peers might be more important than others, siblings have been demonstrated to be critical to psychosocial development, learning of behaviors, and the exposure to values (Dunn, 1983). Siblings assume an ideal position to influence adolescent behavior. Indeed, the findings of this thesis find strong support for sibling influence and suggest the importance of understanding the nuanced role siblings possess. This by no means suggests that friends are not important peers, but rather different peers carry unique meaning and significance for understand peer

processes. Ultimately, this notion is in line with Giordano's (1995) effort to consider an adolescents' "wider circle of friends", which has forwarded the notion that adolescents have a variety of peer interactions beyond just close friends. I argue that in order to truly understand adolescent development, this circle needs to be expanded to move beyond even friends and incorporate other sets of peers including siblings.

One notable exception pertains to the conclusions drawn above. When examining violent behavior, results presented mixed results for the effects of sibling and friend influence. Specifically, for Black adolescents, friends and sibling fighting do not predict later adolescent engagement in fighting. For White adolescents the HLM models indicate that sibling fighting is a significant predictor of adolescent fighting and in the logistic regression models siblings and friends emerge as marginally significant predictors ($p < .10$). Thus, it appears that there is a substantive difference in the influence of 'peers' generally on explaining fighting as operationalized in this thesis.

Perhaps, the measure of fighting is not the best indicator of violence (i.e., engagement in serious physical fight in the past year). It is also possible that the significant effect of white sibling fighting on later adolescent fighting may reflect sibling physical conflict. Fighting or violence generally may also be less 'normative' of a behavior when compared to smoking and drinking. Both of the latter behaviors are generally social in nature, whereas violence may more likely be the result of situational inducements and low self-control evidenced by self-control emerging as a significant predictor of fighting for both White and Black adolescents (Gottfredson & Hirschi, 1990). Future research should consider other forms of violence (e.g., serious person crime, gang membership). To be fair, it may also be that substance use is the unique

outcome. For instance, research has found that Black adolescents experience substance use problems at a higher rate; however, engage in substance use at comparable if not lower rates than white adolescents (Bachman, Wallace, O'Malley, Johnston Kurth, & Neighbors, 1991; Lowman, Harford, & Kaelber, 1983). Ultimately, there was some support for the effect of peers for status offense-substance use but none for traditional delinquency (fighting).

It is also worth mentioning that the measures of delinquency used (e.g., smoking, drinking, fighting) were single-item measures and the reliability of these measures typically is unable to be assessed. This underscores the need to consider a wider range of outcomes in future research to bolster support for the notion that peers differentially matter for adolescents across an even wider range of behavior. The AddHealth did not permit a wide behavioral scope, as there were a limited set of consistently reported behaviors from subjects, siblings, and the friendship groups.

This thesis compared the relative effects of siblings with an adolescent's friendship group. Although both were measured on the same metric, perhaps a more appropriate comparison would be the relative effects of a sibling and an adolescent's best friend. Previous research has found that the best friend is an important predictor of delinquency, sometimes above and beyond that of the surrounding peer group or clique (Hussong, 2002; Weerman & Smeenk, 2005). By comparing two individuals (i.e., a sibling and a best friend), perhaps a more appropriate comparison of the strength of influence exerted by both would be achieved. It may also be the case that siblings, best friends, and remaining peer groups serve to constitute a more nuanced context that empirical analyses need to consider when understanding the balance of social influence

from each source of influence (McGloin, 2009; Rees & Pogarsky, 2011). Ultimately, group processes may be somewhat different than individual or dyadic influence.

Lastly, the notion that Black adolescents are socialized to experience friends differently due to a history of cultural and structural barriers may also apply to other minority groups. For instance, Hispanic adolescents – particularly first generation immigrants – have been found to be protected against deviant youth as a result of parental control and obligation to family (e.g., see Myers, Chou, Sussman, Baezconde-Garbanti, Pachon, & Valente, 2009)[1]. Given the similarity in cultural and structural obstacles that Hispanic and Black families face, siblings may similarly emerge as important sources of influence among these family-oriented minority groups. This clearly requires the need to expand how we measure control and dynamics in the family system, as results did not find differences in measured levels of parental control of White and Black adolescents.

Ultimately, this thesis has forwarded our understanding of peer processes across Black and White adolescents. Assuming that peer influence processes were largely invariant across these two racial groups has lead to a naive understanding of the reality of Black and White adolescent life. Similarly, this assumed uniform process has led to a restricted focus on friends as the predominant source of peer influence. This thesis highlights the nuanced developmental pathways of Black and White adolescents and the fact that peers matter differently for different people. In doing so, 'peers' still are found to be significant predictors of adolescent delinquent behavior; however, a

[1] DiPietro & McGloin (2012) find results counter to the alleged protective effect of Hispanic adolescents against delinquent peers

detailed and clearer depiction of the role that various types of peers play in affecting such behavior emerges.

REFERENCES

Akers, R. (1998). *Social learning social structure: A general theory of crime and deviance.* New Brunswick, NJ: Transaction Publishers.

Akers, R., & Lee, G. (1996). A longitudinal test of social learning theory: Adolescent smoking. *Journal of Drug Issues, 26*(2), 317-343.

Akers, R., Krohn, M., Lanza-Kaduce, L., & Radosevich, M. (1979). Social learning and deviant behavior: A specific test of a general theory. *American Sociological Review, 44*, 636-655.

Alarid, L., Burton, V., & Cullen, F. (2000). Gender and crime among felony offenders: Assessing the generality of social control and differential association theories. *Journal of Research in Crime and Delinquency, 37,* 171-199.

Allen, W. (1978). The search for applicable theories of black family life. *Journal of Marriage and the Family, 40*, 117-130.

Allison, P. (2002). *Missing data*. Thousand Oaks, CA: Sage Publications, Inc.

Amato, P. (1989). Family processes and the competence of adolescents and primary school children. *Journal of Youth and Adolescence, 18,* 39-53.

Azmitia, M., & Hessor, J. (1993). Why siblings are important agents of cognitive development: A comparison of siblings and peers. *Child Development, 64,* 430-444.

Bachman, J., Wallace, J., Kurth, C. , Johnston, L., O'Malley, P., & Neighbors, H. W. (1991). Racial/ethnic differences in smoking, drinking, and illicit drug use among American high school seniors, 1976–1989. *American Journal of Public Health*, 81, 371–377.

Bank, L., Patterson, G. R., & Reid, J. B. (1996). Negative sibling interaction patterns as predictors of later adjustment problems in adolescent and young adult males. In G. H. Brody (Ed.), Advances in applied developmental psychology: Sibling relationships (pp. 197-229). Norwood, NJ: Ablex.

Barnes, G., Farrell, M., & Banerjee, S. (1994). Family influences on alcohol abuse and other problem behaviors among black and white adolescents in a general population sample. *Journal of Research on Adolescence, 4*(2), 183-201.

Billy, J., & Udry, J. (1985). Patterns of adolescent friendship and effects on sexual behavior. *Social Psychology Quarterly, 48*, 27-31.

Bossard, J. H., & Boll, E. S. (1955). Personality roles in the large family. *Child Development*, 71-78.

Brauer, J. (2009). Testing social learning theory using reinforcement's residue: A multilevel analysis of self-reported theft and marijuana use in the National Youth Survey. *Criminology, 47*, 929-970.

Brody, G. (1998). Sibling relationship quality: Its causes and consequences. *Annual Review of Psychology, 49*, 1-24.

Brody, G., Stoneman, Z., Smith, T., Gibson, N. (1999). Sibling relationships in rural African American families. *Journal of Marriage and the Family, 61*, 1046-1057.

Burgess, R., & Akers, R. (1966). A differential association-reinforcement theory of criminal behavior. *Social Problems, 14,* 128-147.

Cernkovich, S., & Giordano, P. (1987). Family relationships and delinquency. *Criminology, 25*(2), 295-319.

Cicirelli, V. G. (1972). Concept learning of young children as a function of sibling relationships to the teacher. *Child Development, 43,* 282-287.

Cicirelli, V. G. (1995). *Sibling relationships across the life span*. New York: Plenum Press.

Coley, R. (1998). Children's socialization experiences and functioning in single-mother households: The importance of fathers and other men. *Child Development, 69,* 219-230.

Denzin, N. (1984). Toward a phenomenology of domestic, family violence. *American Journal of Sociology, 90*(3), 483-513.

DiPietro, S. M., & McGloin, J. (2012). Differential susceptibility? Immigrant youth and peer influence. *Criminology*, *50*(3), 711-742.

Dixon, S., Graber, J., Brooks-Gunn, J. (2008). The roles for parental authority and parenting practices in parent-child conflict among African American, Latino, and European American families. *Journal of Family Psychology, 22*(1), 1-10.

Dunn, J, & Kendrick, C. (1982). *Siblings: Love, envy, and understanding.* Cambridge, MA: Harvard University Press.

Dunn, J. (1983). Sibling relationships in early childhood. *Child Development, 54,* 787-811.

Fallon, B. & Bowles, T. (1997). The effect of family structure and family funciotning on adolescents' perceptions of intimate time spent with parents, siblings, and peers. *Journal of Youth and Adolescence, 26,* 25-43.

Farrell, A., & Danish, S. (1993). Peer drug associations and emotional restrain: Causes or consequences of adolescents' drug use? *Journal of Consulting and Clinical*

Psychology, 61(2), 327-334.

Furstenberg, F. F., T. D. Cook, J. Eccles, G. H. Elder, Jr., & A. Sameroff. (1999). *Managing to make it: Urban families and adolescent success*. Chicago: University of Chicago Press.

Coll, G., & Pachter, L. M. (2002). Ethnic and minority parenting. *Handbook of parenting*, *4*, 1-20.

Giordano, P. C. (1995). The wider circle of friends in adolescence. *American Journal of Sociology*, 661-697.

Giordano, P., Cernkovich, S., & DeMaris, A. (1993). The family and peer relations of black adolescents. *Journal of Marriage and Family, 55*, 277-287.

Gottfredson, M., & Hirschi, T. (1990). *A general theory of crime.* Palo Alto, California: Stanford University Press.

Greneir, C., & Roundtree, G. (1987). Predicting recidivism among adjudicated delinquents: A model to identify high risk offenders. *Journal of Offender Counseling Services and Rehabilitations, 12,* 101-112.

Griesler, P., & Kandel D. (1998). Ethnic differences in correlates of adolescent cigarette smoking. *Journal of Adolescent Health, 23,* 167-180.

Hawkins, J., Catalano, R., & Miller, J. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin, 112*(1), 64-105.

Haynie, D., & McHugh, S. (2003). Sibling deviance: In the shadows of mutual and unique friendship effects. *Criminology, 41*(2), 355-392.

Haynie, D., & Osgood, W. (2005). Reconsidering peers and delinquency: How do peers

matter? *Social Forces, 84*(2), 1109-1130.

Haynie, D., Giordano, P. C., Manning, W. D., & Longmore, M. A. (2005). Adolescent romantic relationships and delinquency involvement. Criminology, 43, 177-210

Headen, S., Bauman, K., Deane, G., & Koch, G. (1991). Are the correlates of cigarette smoking initiation different for black and white adolescents? *American Journal of Public Health, 81*(7), 854-858.

Hussong, A. M. (2002). Differentiating peer contexts and risk for adolescent substance use. *Journal of youth and adolescence*, *31*(3),207-220.

Irish, D. (1964). Sibling interaction: A neglected aspect in family life research. *Social Forces, 42*(3), 279.

Iscoe, I., Williams, M., & Harvey, J. (1964). Age, intelligence, and sex as variables in the conformity behavior of negro and white children. *Child Development, 35*(2), 451 460.

Johnson, B. (2012). Cross-classified multilevel models: An application to the criminal case processing of indicted terrorists. *Journal of Quantitative Criminology, 28*(1), 163-189.

Katz, J. (1988). *Seductions of crime: Moral and sensual attractions in doing evil.* New York: Basic Books.

Kim, J., McHale, S., Crouter, A., & Osgood, W. (2007). Longitudinal linkages between sibling relationships and adjustment from middle childhood through adolescence. *Developmental Psychology, 43,* 960-973.

Kreager, D., & Haynie, D. (2011). Dangerous liaisons? Dating and drinking diffusion

in adolescent peer networks. *American Sociological Review, 76*(5), 737-763.

Landrine, H., Richardson, J., Klonoff, E., & Flay, B. (1994). Cultural diversity in the predictors of adolescent cigarette smoking: The relative influence of peers. *Journal of Behavioral Medicine, 17*(3), 331-346.

Lauritsen, J. (1993). Sibling resemblance in juvenile delinquency: Findings from the National Youth Survey. *Criminology, 31*(3), 387-409.

Loeber, R., & Stouthamer-Loeber, M. (1986). Family factors as correlates and predictors of juvenile conduct problems and delinquency. In M. H. Tonry & N. Morris (Eds.), *Crime and justice: An annual review of research*, Vol. 7 (pp. 29–149). Chicago: University of Chicago Press.

Lowman, C., Harford, T. C., & Kaelber, C. (1983). Alcohol use among Black senior high school students. *Alcohol Health and Research World, 7*(3), 37-46.

Luckenbill, D. (1977). Criminal homicide as a situated transaction. *Social Problems, 25*(2), 176-186.

Mandara, J., & Murray, C. (2000). The effects of parental marital status, family income, and family functioning on African American adolescent self-esteem. *Journal of Family Psychology, 14*, 475-490.

Mason, C., Cauce, A., Gonzales, N., & Hiraga, Y. (1994). Adolescent problem behavior: The effect of peers and the moderating role of rather absence and the mother-child relationship. *American Journal of Community Psychology, 22*(6), 723-743.

Matsueda, R., & Anderson, K. (1998). The dynamics of delinquent peers and delinquent behavior. *Criminology, 36*, 269-308.

Matsueda, R., & Heimer, K. (1987). Race, family structure, and delinquency: A test of differential association and social control theories. *American Sociological Review, 52*, 826-840.

Matsueda, R. (1982). Testing control theory and differential association: A causal modeling approach. *American Sociological Review, 47,* 489-504.

Matuseda, R. (1992). Reflected appraisals, parental labeling, and delinquency: Specifying a symbolic interactionist theory. *American Journal of Sociology, 97*, 1577-1611.

McAdoo, H. P. (Ed.). (2002). *Black children: Social, educational, and parental environments*. Thousand Oaks, California: Sage Publications, Inc.

McCarthy, B., Felmlee, D., & Hagan, J. (2006). Girl friends are better: gender, friends, and crime among school and street youth. *Criminology, 42*(4), 805-836.

McGloin, J. (2009). Delinquency balance: revisiting peer influence. *Criminology*, 47, 439-477.

McHale, S., & Crouter, A. (1996). The family contexts of children's sibling relationships. In G. H. Brody (Ed.), *Sibling relationships: Their causes and consequences* (pp. 173-196). Norwood, NJ: Ablex.

McHale, S., Whiteman, S., Kim, J., & Crouter, A. (2007). Characteristics and correlates of sibling relationships in two-parent African American families. *Journal of Family Psychology, 21*(2), 227-235.

McLoyd, V. C. (1990). The impact of economic hardship on black families and children: Psychological distress, parenting, and socioemotional development. *Child Development,* 61, 311-346.

Mead, G. (1934). *Mind, self and society.* Chicago: University of Chicago Press.

Mears, D., Ploeger, M., & Warr, M. (1998). Explaining the gender gap in delinquency: Peer influence and moral evaluations of behavior. *Journal of Research in Crime and Delinquency, 35*, 251-266.

Murray V. M., Bynum, M. S., Brody, G. E., Wilbert, A., & Stephens, D. (2001). African American single mothers and children in context: A review of studies on risk and resilience. *Clinical Child and Family Psychology Review*, *4*(2)*, 133-155*.

Myers, R., Chou, C. P., Sussman, S., Baezconde-Garbanati, L., Pachon, H., & Valente, T. W. (2009). Acculturation and substance use: Social influence as a mediator among Hispanic alternative high school youth. *Journal of health and social behavior*, *50*(2), 164-179.

Orcutt, J. (1987). Differential association and marijuana use: A closer look at Sutherland (with a little help from Becker). *Criminology, 25*(2), 341-358.

Paternoster, R., Brame, R., Mazerolle, P., Piquero, A. (1998). Using the correct statistical test for the equality of regression coefficients. *Criminology, 4,* 859-866.

Paternoster, R., & Pogarsky, G. (2009). Rational choice, agency, and thoughtfully reflective decision making: The short and long term consequences of making good choices. *Journal of Quantitative Criminology, 25,* 103-127

Patterson, G. R. (1984). Siblings: Fellow travelers in coercive family processes. In R. J. Blanchard & D. C. Blanchard (Eds.), Advances in the study of aggression (Vol. 1) (pp. 235-264). New York: McGraw-Hill.

Pattillo-McCoy, M. (1999). *Black picket fences: Privilege and peril among the black middle class.* Chicago: The University of Chicago Press.

Payne, D. C. & Cornwell, B. (2007). Reconsidering peer influences on delinquency: Do less proximate contacts matter? *Journal of Quantitative Criminology, 23*, 127-49.

Paternoster, R., & Pogarsky, G. (2009). Rational choice, agency and thoughtfully reflective decision making: the short and long-term consequences of making good choices. *Journal of Quantitative Criminology*, *25*(2), 103-127.

Pepler, D., Abramovitch, R., & Corter, C. (1981). Sibling interaction in the home: A longitudinal study. *Child Development, 52*, 1344-1347.

Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of financial studies*, *22*(1), 435-480.

Phinney, J. (1996). Understanding ethnic diversity: The role of ethnic identity. *American Behavioral Scientist, 40*(2),143-152.

Pratt, T., Cullen, F., Sellers, C., Winfree Jr., T., Madensen, T., Daigle, L., Fearn, N., & Gau, J. (2010). The empirical status of social learning theory: A meta-analysis. *Justice Quarterly, 27,* 765-802.

Rankin, J., & Kern, R. (1994). Parental attachments and delinquency. *Criminology, 32*(4), 495-515.

Rankin, J., & Wells, L. (1990). The effect of parental attachments and direct controls on delinquency. *Journal of Research in Crime and Delinquency, 27,* 140-165.

Rees, C., & Pogarsky, G. (2011). One bad apple may not spoil the whole bunch: Best

friends and adolescent delinquency. *Journal of Quantitative Criminology*, *27*(2), 197-223.

Reiss, A. J. & Farrington, D. P. (1991) Advancing knowledge about co-offending: Results from a prospective longitudinal survey of London males. Journal of Criminal Law and Criminology, 82, 360-395.

Royston, P. (2004). Multiple imputation of missing values. *Stata Journal*, 4, 227—241.

Rowe, David C. and Chester L. Britt, III. 1991. "Developmental Explanations of Delinquent Behavior Among Siblings: Common Factor vs. Transmission Mechanisms." *Journal of Quantitative Criminology* 7:315-332.

Rowe, D. & Gulley, B. (1992). Sibling effects on substance use and delinquency. *Criminology, 30*(2), 217-233.

Ruggles, S. (1994). The origins of African-American family structure. *American Sociological Review, 59,* 136-151.

Sampson, R., & Laub, J. (1993). *Crime in the making: Pathways and turning points through life.* Cambridge, MA: Harvard University Press.

Schafer. J. L. & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, 7(2), 147-177.

Sewell, W., Haller, A., & Portes, A. (1969). The educational and early occupational attainment process. *American Sociological Review, 34,* 82-92.

Short, J. (1957). Differential association and delinquency. *Social Problems, 4*, 233-239.

Silverstein, B., & Krate, R. (1975). *Children of the dark ghetto: A developmental psychology.* New York: Praeger.

Slomkowski, C., Rende, R., Conger, K., Simons, R., & Conger, R. (2001). Sisters, brothers, and delinquency: Evaluating social influence during early and middle adolescence. *Child Development, 72*(1), 271-283.

Smetana, J. G., Crean, H. F., & Daddis, C. (2002). Family processes and problem behaviors in middle- class African American adolescents. *Journal of Research on Adolescence*, *12*(2), 275-304.

Steinberg, L., & Monahan, K. (2007). Age differences in resistance to peer influence. *Developmental Psychology, 43*(6), 1531-1543.

Sutherland, E H. (1947). *Principles of Criminology*. Philadelphia: Lippincott.

Taylor, R. L. (1989). Black youth, role models, and social construction of identity. In R.L. Jones (Ed). *Black Adolescents* (pp. 155-174). Berkeley, CA: Cobb and Henry.

Teti, D. M. (1992). Sibling interaction. In V. B. Van Hasselt & M. Herson (Eds.), *Handbook of social development: A lifespan perspective*. New York: Plenum Press.

Tesser, A. (1980). Self-esteem maintenance in family dynamics. *Journal of Personality and Social Psychology, 39*, 77-91.

The Annie E. Casey Foundation. (2011). *Children in single-parent families by race.* Retrieved from http://datacenter.kidscount.org/data/acrossstates/Rankings.aspx?ind=107.

Tittle, C., Burke, M., & Jackson, E. (1986). Modeling Sutherland's theory of differential association: Toward an empirical clarification. *Social Forces,* 65, 405-32.

Vereen, L. (2007). African American family structure: A review of the literature. *The Family Journal, 15,* 282-285.

Volling, B. (2003). Sibling relationships. In M. H. Bornstein, L. Davidson, C.L. M. Keyes, & K. A. Moore (Eds.), *Well-being: Positive development across the life course* (pp. 205-220). Mahwah, NJ: Erlbaum.

Warr, M. (1993). Age, peers, and delinquency. *Criminology, 31*(1), 17-40.

Warr, M. (2002). *Companions in Crime.* New York: Cambridge University Press.

Warr, M. (2005). Making delinquent friends: Adult supervision and children's affiliations. *Criminology, 43,* 77-106.

Weerman, F. M., & Smeenk, W. H. (2005). Peer similarity in delinquency for different types of friends: A comparison using two measurement methods. *Criminology*, *43*(2), 499-524

Wright, J.P., & Cullen, F.T. (2004). Employment, peers, and life-course transitions. *Justice Quarterly, 31*, 183-205.

Wright, J., Cullen, F., & Williams, N. (2002). The embeddedness of adolescent employment participation in delinquency: A life course perspective. *Western Criminology Review, 4*(1), 1-19.

Youniss, J., & Smollar, J. (1985). *Adolescent relations with mothers, fathers, and friends.* Chicago: University of Chicago Press.