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Examining the Effect of Changes in the Peer Group on Attitudes: A Longitudinal Study

Dena C. Carson
University of Missouri-St. Louis, dcc6pd@mail.umsl.edu

Examining the Effect of Changes in the Peer Group on Attitudes: A Longitudinal Study

Dena C. Carson
M.A., Criminology, University of South Florida, 2007
B.S., Chemistry, Pittsburg State University, 2003

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Advisory Committee

Finn-Aage Esbensen, Ph.D.
Chairperson

Lee Ann Slocum, Ph.D.
Janet Lauritsen, Ph.D.
Jean Marie McGloin, Ph.D.

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ABSTRACT

Peer interactions are an important part of adolescence and have been the focus of much research in both psychology and criminology. During adolescence there is an increase in the interaction with, as well as the time spent with, one's peers, which can lead to an increase in the conformity to these peers in terms of both prosocial and antisocial attitudes and behaviors. While peer groups can vary in their norms and values, research has also shown that the effects of peer pressure are strongest for nonconforming behaviors. Therefore, the majority of research has focused on the relationship between antisocial peers and deviant attitudes and behaviors. The relationship between peer behavior and a youth's own behavior has been demonstrated multiple times in prior research. Little is known, however, about how peer behavior may affect individual attitudes. This is surprising given that many prevention programs, particularly skills building programs, focus on changing and shaping individual attitudes to change/prevent behavior. This dissertation partially addressed this gap by focusing on the relationship between peer behavior and individual attitudes.

This dissertation accomplishes three main goals through the use of three waves of data from a multi-site sample of 3,820 middle school youth. First, this dissertation assessed the causal ordering surrounding the relationship between peer behavior and individual attitudes. Prior studies had only examined these mechanisms in relation to behavior. This research typically used attitudes as a mediator and thereby fails to explore the causal mechanisms of the relationship between peers and attitudes. Findings

indicated a causal relationship between individual attitudes and associations with peers. However, the effect of peer behavior on individual attitudes was found to be spurious.

Second, prior research has shown that peer groups hold both antisocial and prosocial values and norms, which can affect individual attitudes in both conforming and nonconforming ways. Therefore, this dissertation examined the relative effect of prosocial and antisocial peers as well as the effect of the ratio of prosocial to antisocial peers on attitudes. The results point to the fact that, over time, the protective effect of prosocial peer behavior on both antisocial and prosocial attitudes is stronger than the negative effect of antisocial peer behavior. In addition, the findings of this dissertation indicate that the ratio of prosocial to antisocial peers has both contemporaneous and lagged effects on prosocial and antisocial attitudes.

Finally, this study examined how attitudes change in relation to changes in the peer group. Research has shown that youth do not maintain the same peer group throughout their adolescence and that movement from different types of peer groups (e.g., prosocial and delinquent) across time affects behaviors. This study expanded this research by examining how change in the peer group predicted a change in attitudes (and vice versa). Findings indicated that youth who experienced an increase in the proportion of antisocial peers also experienced an increase in antisocial attitudes. Similar findings were demonstrated for prosocial youth. In addition to this, changes in attitudes were also correlated to changes in associations with peers.

CHAPTER ONE: INTRODUCTION

The formation of peer groups and interaction with one's peers is an important part of adolescence and has been the focus of much prior research in both psychology and criminology. When moving from childhood to adolescence youth move from a dependence on parents to a closer affinity with their immediate peer group (Akers and Lee, 1996; Brown, 1990; Erickson, Crosnoe, and Dornbusch, 2000; Ryan, 2001; Steinberg and Silverberg, 1986). In other words, the peer group becomes an alternative to family by providing social and emotional support during this transitional time (Warr, 2002). As well as an increase in the intensity of peer interactions there is also an increase in the amount of time spent with the peer group and much of this time may be unsupervised (Berndt, 1979; Haynie, 2002; Haynie and Osgood, 2005; Warr, 1993b). Overall, adolescence is the time when the influence of the peer group is at its peak

The increase in the intensity of peer interactions as well as exposure can also lead to an increase in the conformity to the attitudes and behaviors of these peers (Berndt, 1979). Prior research has discussed possible reasons why conformity occurs within the peer group. Warr (2002) argues that youth conform for three reasons: 1) fear of ridicule, 2) desire to be loyal/receive loyalty, and 3) desire for status. First, the peer group as well as acceptance by peers is especially important to adolescents; therefore, it is expected that fear of ridicule by one's peers would produce a need to conform to both the attitudes and behaviors of one's peers. Kelman (1974) offers a similar argument stating that youth accept the influence of their peers in order to achieve a favorable reaction from their group. Other researchers disagree, however, stating that youth can escape ridicule simply by changing peer groups (Berndt and Keefe, 1996; Keisler and Keisler, 1970). Second,

loyalty within the peer group is an important part of friendship in general. Warr (2002) argues, however, that criminal behavior raises the level of loyalty and forces youth to conform to the behavior of their group. He states that disloyalty within a delinquent peer group (e.g., snitching) can affect the freedom and even the lives of individuals in the group. Youth may participate in behaviors or hold attitudes similar to those of their peers in order to maintain or establish a relationship or to prove loyalty to that group (Kelman, 1974; Schwartz, Gorman, Nakamoto, and McKay, 2006). Furthermore, popularity within the group often requires conformity (Schwartz et al., 2006). Finally, youth will often conform to the attitudes and behavior of the group in order to maintain or receive status within that group (Anderson, 1999; Short and Strodbeck, 1965; Wolfgang and Ferracuti, 1967). Anderson (1999), for instance, argues that youth living in distressed neighborhoods are likely to adhere to a "street code" to gain status or respect within the neighborhood. Despite his focus on black youth in disadvantaged areas of Philadelphia, the street code thesis has been shown to apply across other races and contexts (Taylor, Esbensen, Brick, and Freng, 2010).

The relationship between peer behavior and a youth's own behavior has been well documented in prior research (Agnew, 1991a; Akers, 1998; Brown, Clasen, and Eicher, 1986; Cohen, 1977; Pratt et al., 2010; Warr, 2002). Criminological research generally shows that as the number of delinquent peers increases so to does a youth's level of delinquency (Agnew, 1991a; Akers, 1998; Matsueda and Anderson, 1998; Pratt et al., 2010). In addition, a youth's own attitudes have been shown to be correlated with his/her behavior (Paternoster, 1988; Pratt et al., 2010; Warr and Stafford, 1991). In a meta-analysis of social learning constructs, Pratt and associates (2010) found that the effect

size of antisocial attitudes on delinquency averages about 0.202. While not as large as the mean effect size of peer behavior on delinquency (Mz = 0.270), both effects are sufficiently robust predictors of delinquent behavior (Pratt et al., 2010). Given the effect of individual attitudes on their behaviors, it can be inferred that peers' attitudes also correspond to peers' behavior. However, little is known about the relationship between the behaviors of a youth's peer group and the youth's own attitudes. Is peer behavior associated with/able to predict a youth's own attitudes? A focus on attitudes is rather unconventional in criminological research; however, social psychologists have been examining what shapes and predicts attitudes for years. The research typically finds that attitudes can predict the nature of relationships, influence decisions, and shape individual outcomes. In addition, social psychological research has examined both what predicts attitudes and changes in attitudes as well as the consequences of these changes for a range of variables such as: racism, substance use, importance of school, etc. Criminological theory and research, however, generally examine attitudes in the context of the peer group, but only as a mediating variable in the relationship between peer delinquency and individual behavior (Akers, 1998; Matsueda and Heimer, 1987; Paternoster, 1988; Thornberry, Lizotte, Krohn, Farnsworth, and Jang, 1994; Warr and Stafford, 1991).[1]

The prior research on attitudes has two main limitations: 1) they examine the relationship between peer behavior and attitudes using cross-sectional data (Matsueda and Heimer, 1987; Warr and Stafford, 1991), or 2) they use attitudes as a mediator in the

[1] It is important to note that subcultural theories also speak to the transmission of attitudes and norms (Anderson, 1999; Wolfgang and Ferracuti, 1967), but these theories and learning theories both involve influence of peers and have been placed under the heading of cultural deviance theories in prior research (Kornhauser, 1978).

relationship between peer behavior and individual attitudes (Akers, 1998; Paternoster, 1988; Thornberry et al., 1994). First, the use of cross-sectional data to does not allow for an examination of the temporal ordering between two variables. Therefore, studies that examine the relationship between associations with peers and individual attitudes using cross-sectional data are not able to assess the causal mechanisms surrounding this relationship. This dissertation will attempt to fill this gap by examining temporal ordering in the relationship between peer behavior and individual attitudes. Second, the reliance on attitudes as a mediator is a limitation in criminological research because it fails to examine the ability of peer behavior to influence a youth's own attitudes while controlling for the effect of delinquent involvement on attitudes. This is an important limitation given research on the correlation between attitudes and behaviors in prior research (Paternoster, 1988; Pratt et al., 2010; Warr and Stafford, 1991). This dissertation addresses this by examining the relationship between associations with peers and individual attitudes, while controlling for delinquent involvement.

Above and beyond a lack of focus in prior research, however, a further understanding of what predicts attitudes is important because of their relationship with behavior. Heimer and Matsueda (1994) argued that attitudes are "predispositions or plans to act" and that stable attitudes toward delinquency increase the likelihood that an individual will use antisocial resolutions. If attitudes are the precursor to actions, then assessing the causes and correlates of attitudes (whether prosocial or antisocial) may allow researchers and practitioners to change deviant behavior and promote prosocial behavior. As Warr (2002:124) states "…stopping crime *before* it happens by understanding and altering its causes is surely the most defensible and profitable course

of action." For example, prevention programs, particularly skills building programs, often focus on the effect that the behavior of peers can have on youth in terms of peer pressure and other outcomes. While the goal of these programs is usually to change/prevent behavior, this is typically done via a change in attitudes. Skills building programs, for instance, focus on teaching youth the reasons to not use drugs or to get good grades in order to help prevent antisocial behavior and enhance prosocial behavior. Therefore, it is important to have an understanding of what predicts and changes attitudes in order to better inform policy on behavior prevention. By assessing the relationship between associations with peers and individual attitudes, this dissertation hopes to better inform policy on the effects of this relationship.

As mentioned above, youth often conform to their peers in terms of attitudes and behaviors and prior research shows that homophily within a peer group is common in youth (Cohen, 1977; Kandel, 1978a). The mechanisms through which homophily occurs, however, are subject to some debate. Typically these discussions are focused on the relationship between peer behavior and individual behavior and focus on three mechanisms. First, peer behavior influences youth to participate in a certain behavior (e.g., socialization). Second, youth who are already participating in a given behavior seek out similar friends (e.g., selection). Third, youth select into similar peer groups, but these groups also influence them as well (e.g., reciprocal or processual relationship). While much of the debate surrounds behavior, this dissertation argues that these same mechanisms can be applied to the relationship between peer behavior and individual attitudes.

Despite the mechanisms surrounding homophily within the peer group, youth conform to the attitudes and behaviors of their peers in both prosocial and antisocial ways. The attitudes and behaviors of the peer group will affect the attitudes and behaviors for other youth in that group regardless of whether they are prosocial or delinquent (Sutherland, 1947). In addition, research has found that prosocial peers are correlated with both prosocial and antisocial attitudes and behaviors (Fredricks and Eccles, 2005). In other words, homophily can occur in both prosocial *and* antisocial ways within the same peer group. Furthermore, attitudes and behaviors vary within peer groups and it is likely that not all peer groups are completely prosocial or completely antisocial (Brown, 1990; Elliott and Menard, 1996; Ellis and Zarbatany, 2007; Haynie, 2002; Ryan, 2001; Steinberg and Monahan, 2007). In fact, studies find that many youth face peer pressure to act in entirely prosocial ways (e.g., avoid drugs or remain a virgin) and that a youth's peers are able to influence them in positive ways (e.g., to do well in school) (Berndt, 1979; Brown, Clasen, and Eicher, 1986; Conger, 1976; Mounts and Steinberg, 1995; Ryan, 2001; Steinberg and Monahan, 2007; Vitaro, Brendgen, and Tremblay, 2000). Furthermore, the mechanisms surrounding why youth conform to the behaviors of their peers (discussed above) could be applied to both prosocial and antisocial conformity. For example, a youth may also fear ridicule from peers for receiving a lower grade on an exam or assignment than others in the group.

Research has also shown that the presence of prosocial youth in an otherwise antisocial peer group can decrease a youth's antisocial attitudes and behaviors (Haynie, 2002; McGloin, 2009; Short, 1960). Haynie (2002: 100) argues that peer groups that contain both prosocial and antisocial youth are "less effective in providing clear

behavioral guidelines, cohesive norms, and consistent values regarding behavior expectations." Given this, it is arguable that taking into account prosocial peers is especially important when focusing on attitudes. When a group contains both prosocial and antisocial youth, which behaviors and attitudes (prosocial or antisocial) will the youth develop? This dissertation will partially address this issue by examining the effects of both the prosocial and antisocial behavior of a youth's peers on the attitudes of youth (both prosocial and antisocial). Specifically, this study will focus on the proportion of both prosocial peer behavior and antisocial peer behavior as well as a ratio of prosocial to antisocial peers. In terms of attitudes, research shows that a youth's peer group can have a particularly strong effect on school related variables (e.g., getting good grades) (Berndt, 1979; Brown, Clasen, and Eicher, 1986; Conger, 1976; Mounts and Steinberg, 1995; Ryan, 2001; Steinberg and Monahan, 2007; Vitaro, Brendgen, and Tremblay, 2000); therefore, this study examines school commitment as a measure of prosocial attitudes. Furthermore, much of the extant literature on prosocial attitudes and behaviors discussed throughout the dissertation will focus on school related variables.

In addition to research that shows that peer groups contain both prosocial and antisocial youth, other studies have shown that youth do not maintain the same peer group throughout their adolescence (Cairns, Leung, Buchanan, and Cairns, 1995; Elliott and Menard, 1996; Haynie, 2002; Warr, 1993b). In other words, the number of prosocial/antisocial youth in a group is not stable over time. This has led researchers to examine movement from different types of peer groups (e.g., prosocial and delinquent) across time as well as the effects of changes in the antisocial versus prosocial nature of the peer group (Brendgen, Vitaro, and Bukowski, 2000; Haynie, 2002; Warr, 1993b).

This literature, however, has mainly focused on the relationship between these changes and delinquency, but, as discussed above, the relationship between peer behavior and youth's attitudes is an important avenue of research for delinquency prevention. This dissertation seeks to expand research on peer behavior by examining how changes in the prosocial and antisocial natures of the peer group affect attitudinal changes. This will be accomplished by examining the changes in youths' proportion of prosocial peer behavior, antisocial peer behavior, as well as changes in the ratio of prosocial to antisocial youth that make up the youth's peers. Furthermore, while research has found that youth do not typically remain in the same peer groups over time (Cairns, Leung, Buchanan, and Cairns, 1995; Elliott and Menard, 1996; Haynie, 2002; Warr, 1993b), few studies have examined the correlates to peer group instability. This dissertation will attempt to fill some of this gap by focusing on the reverse relationship as well. In other words, do youth who experience a change in attitudes also experience a change in associations with peers? This is the mechanism that would be predicted by selection perspective as well.

Drawing on both social learning theory (Akers, 1998) and cognitive dissonance theory (Festinger, 1957), this dissertation will explore the relationship between the behavior of a youth's peers and his/her own attitudes in three main ways: 1) assess the causal mechanisms surrounding the relationship, 2) examine the effects of both prosocial and antisocial peer behavior, and 3) examine how change in the peer group predicts a change in attitudes (and vice versa). Social learning theory focuses on the peers' ability to influence youth in terms of attitudes and behaviors, but is not able to make predictions regarding changes in these variables. The use of cognitive dissonance theory fills the gap by proposing mechanisms for change in peer groups and attitudes.

The dissertation proceeds in Chapter Two by discussing theory and literature that is relevant to the study of peer behavior and attitudes as well as change in these variables. Chapter Two will also draw on prior research in both criminology and psychology to facilitate the formation of the central research questions. Chapter Three, then, will provide a discussion of the sample and methods used to answer these research questions. Specifically, this will include information on the data, variables and measures as well as the statistical techniques. Chapter Four will first provide a descriptive look at all the variables used in the analyses as well as provide a correlation matrix. The multivariate results will also be presented in Chapter Four. In Chapter Five, the results will be discussed in terms of implications for theory and policy. In addition, the final chapter will discuss the limitations to the dissertation as well as suggestions for future research.

CHAPTER TWO: THEORETICAL BACKGROUND AND RELEVANT LITERATURE

This chapter covers the background, theoretical context, and literature relevant to the dissertation. First, this chapter provides a discussion of the causal mechanisms surrounding the relationship between peer behavior and attitudes as well as prior research surrounding these mechanisms. Second, the central constructs and extant research for social learning theory will be discussed in this section. This will include an examination of social learning theory as well as prior research on this theory as it relates directly to attitudes. Next, this chapter discusses the empirical literature surrounding the effects of associations with both prosocial and antisocial peers as well as instability in the peer group. From there, this chapter moves to a focus on change. First, the central constructs and extant research on cognitive dissonance theory will be examined. Specifically, cognitive dissonance theory will be discussed in terms of how it is related to the group nature of attitude change. Next, this chapter will cover relevant literature in both criminology and psychology to examine changes in attitudes. The final section will draw on the presented theories and research to discuss the research questions that this dissertation seeks to address as well as the implications of the questions for theory. It is important to note that the majority of prior research discussed in this section will focus on attitudes as an outcome variable, but will draw on behavioral research when necessary.

Theoretical Context and the Causal Mechanisms Surrounding the Relationship between Peer Behavior and Attitudes

The idea that youth who are similar in terms of attitudes, goals, and behaviors will associate together is referred to as homophily (Lazarsfeld and Merton, 1954). In other words, "contact between similar people occurs at a higher rate than among dissimilar

people" (McPherson, Smith-Lovin, and Cook, 2001:416). Prior research has debated three main reasons why homophily in the peer group occurs: 1) socialization, 2) selection, and 3) a reciprocal relationships. Much of this research, particularly in criminology, has focused on the relationship between homophily in behavior (e.g., delinquency) (Matsueda, 1982, 1988; Thornberry et al., 1994; Warr, 1996; Warr and Stafford, 1991). This section will apply these arguments and theories to the relationship between peer behavior and attitudes.

Socialization Perspective

The socialization perspective argues that homophily within the peer group is due to the influence that the behavior of a youth's peers can have on his/her attitudes and behavior. Here youth will conform to the attitudes and behaviors of their peer group and will tend not to display attitudes and behaviors that are discouraged by the group (Haynie and Osgood, 2005; Ryan, 2001). In other words, peer behavior will have a direct, causal effect on attitudes. This perspective is consistent with theories that focus on how attitudes and behaviors are learned from peers or other contexts (e.g., parents, siblings, media, etc).

For decades, theoretical perspectives have been developed to try to predict how individuals learn attitudes and behaviors. Perhaps the most frequently cited theories of peer influence are normative and comparative reference group theory (Festinger, 1954; Kelley, 1966; Kemper, 1968), role theory (Linton, 1945; Thomas, 1957), and social identity theory (Tajfel, 1982). These theories typically focus, at least in part, on the role reinforcement plays in the learning process and the idea that peers are responsible for defining attitudes and behaviors (Hallinan and Williams, 1990; Wagner, 1969). Here

peers' behavior and attitudes provide cues in the form of rewards and punishers as to what behaviors and attitudes are expected within the group. An account of the multitudes of learning theories in psychology is beyond the scope for this dissertation; therefore, discussion is limited to learning theories of attitude change due to the focus of change in this dissertation.

Hovland and associates (1953) proposed a learning theory of attitude change in which they argued that groups could have a strong influence on attitudes. They argue that youth will be influenced by attitudes that are both accepted by and expressed by group members. Influence is dependent upon the level of trust, attraction, and commitment the youth has with the group as well as the reinforcements that can be provided by the group (Hovland, Janis, and Kelley, 1953). Hovland and associates (1953) emphasize fear of ridicule as one of the central influences of attitude change within the group. They discuss "threat appeal" as being one of the main forms of persuasions. As mentioned in the introduction, fear of ridicule can have an effect on both prosocial and antisocial outcomes. Criminological theory has largely ignored attitude change and typically uses attitudes as a mediator. However, two criminological theories are able to provide insight on the socialization process.

The most prominent criminological learning theories include differential association theory (Sutherland, 1947) and social learning theory (Akers, 1998). Sutherland (1947) argues that definitions favorable to crime are learned through interaction with delinquent peers, which, in turn, leads to delinquent behavior. According to differential association theory, delinquent attitudes act as an intervening mechanism between delinquent peers and delinquency; therefore, there is a direct relationship

between peer behavior and an individual's own attitudes (Sutherland, 1947). Akers (1998) expanded on Sutherland's theory by discussing the mechanisms for how associations with peers affect attitudes and behaviors. He proposes four central constructs: differential associations with peers, definitions favorable to crime, differential reinforcement of definitions and behaviors, and modeling of behaviors. He argues that it is through differential associations with peers that youth learn prosocial or antisocial attitudes, where reinforcement for these attitudes and behaviors occurs, and where behavior is modeled. In other words, differential associations with peers influence youth to hold certain attitudes or participate in certain behavior.

Selection Perspective

This perspective focuses on how individuals select into peer groups. There are two separate arguments attached to this perspective. First, youth who identify with certain attitudes and behaviors (rather prosocial or antisocial) will self-select into peer groups that subscribe to similar attitudes and behaviors. This argument is generally referred to as homophilic selection (Cohen, 1977) or as "birds of a feather flock together" (Glueck and Glueck, 1950). The idea that individuals select into groups who are similar to them is congruent with theories of interpersonal attraction in social psychology (Homans, 1974; Newcomb, 1961). These theories posit that individuals will be more attracted to other individuals who are similar to themselves in terms of both demographics and attitudinal and behavioral variables. The second argument proposed by selection perspective states that an underlying factor causes attitudes and behavior as well as selection into a peer group. In other words, the relationship between peer behavior and individual attitudes is spurious based on this underlying factor.

Hirschi's (1969) social bond theory is consistent with the selection perspective's argument regarding the relationship between delinquent peers and delinquency. Hirschi (1969) argues that individuals participate in delinquent acts when their bonds to society are weak or broken. He identifies four elements of the social bond: attachment to conventional others and institutions, commitment to conformity, involvement in conventional activities, and belief in conventional norms and values[2]. When speaking about peers, Hirschi (1969) states that youth who are attached to prosocial peers will participate in less delinquency and have fewer antisocial attitudes. In terms of temporal ordering, Hirschi (1969) argued that behavior will have a direct relationship on selection into a peer group. Youth who participate in delinquency will not be able to form strong bonds with prosocial peers, thus, becoming part of antisocial peer groups. While Hirschi does not apply this assumption directly to attitudes he does state that it is "difficult to imagine how the boy could subscribe to the belief without having engaged in the delinquent acts" (Hirschi, 1969:208). Therefore, according to Hirschi (1969) attitudes would also precede joining a peer group. This idea is echoed in self-perception theory (Bem, 1967). According to self-perception, a youth would only come to know that at s/he holds this attitude through reflection on behaviors. Bem (1967) argues that individuals will use recent behavior, rather than prior attitudes, to infer current attitudes. Therefore, peer influence does not factor into the attitude formation and change process.

[2]Hirschi (1969) uses the term "belief in conventional norms and values." However, he does not make inferences into how these are different, if at all, from prosocial or delinquent attitudes. Criminological research often uses these concepts interchangeably (Agnew, 1985; Agnew, 1991b; Elliott, Huizinga, and Ageton, 1985; Matsueda and Heimer, 1987). Social psychologists, however, argued that there is no need for a clear distinction between beliefs and attitudes because a change in belief has not been shown to lead to different consequences than a change in attitudes (Fishbien and Azjen, 1975).

Self-perception theory deemphasizes peer influence by arguing that it is an individual's own behavior, not peers' behavior, which determines attitudes (Bem, 1967).

The selection perspective also argues that a youth's behavior and that of his/her peers are simply two indicators of an underlying predisposition toward prosocial or antisocial behaviors. This is classified as population heterogeneity, where individual differences established early in the life-course cause individuals to participate in a certain behavior (Lacourse, Nagin, Tremblay, Vitaro, and Claes, 2003). In this instance, the relationship between peer behavior and a youth's own behavior is, in fact, spurious (Elliott and Menard, 1996). The most prominent theoretical example of this is self-control theory (Gottfredson and Hirschi, 1990). This theory posits that an individual's underlying criminal propensity (i.e., low self-control) affects participation in deviant acts. Individuals with low self-control are typically characterized by impulsivity, preference for simple tasks, risk-seeking, preference for physical activities, self-centeredness, and high levels of anger (Gottfredson and Hirschi, 1990; Grasmick, Tittle, Bursik, and Arneklev, 1993). Gottfredson and Hirschi (1990) argue that association with delinquent peers is a social consequence of low self-control and that it is a major factor for selection into a delinquent peer group. They state that because low self-control is responsible for both deviant behavior and associations with delinquent peers, then the relationship between these variables is spurious (Gottfredson and Hirschi, 1990). Since Gottfredson and Hirschi (1990) argue that individuals with low self-control participate in a range of deviant acts (e.g., public urination, excessive drinking, etc), it is arguable that they would believe that these individuals also hold attitudes that support these behaviors as well. Therefore, the development of deviant attitudes is also dependent on an individual's own

level of self-control. Furthermore, if both deviant attitudes and associations with deviant peers are consequences of low self-control, then self-control theory would argue that the relationship between peer behavior and a youth's attitudes is spurious as well. That is, association with delinquent peers and delinquent attitudes are both caused by the underlying propensity to commit crime that they refer to as low self-control. Gottfredson and Hirschi (1990) do not make many inferences regarding associations with prosocial peers and prosocial attitudes; however, it is likely that they would attribute prosocial characteristics to individuals with high levels of self-control. For example, a youth with high self-control may have a stronger focus on his/her future and understand the importance of school in accomplishing his/her goals. In addition, this youth would also want to associate with other youths who understand this goal.

Reciprocal Relationship

Research that argues for a reciprocal relationship between peer behavior and a youth's attitudes posits that both socialization and selection effects are at work in this relationship. In other words, youth will select into peer groups with similar attitudes and behaviors, but the group will, in turn, influence the attitudes and actions of the individual. For example, Lacourse and associates (2003) argue that a prosocial peer group may reject antisocial youth, causing them to associate with other antisocial youth, which, in turn, would make antisocial youth more likely to become involved in delinquent behaviors and be exposed to delinquent attitudes. In addition, there is also a dynamic nature to the relationship between peer behavior and a youth's own attitudes. In other words, the socialization and selection processes are ongoing (Ryan, 2000). Peer groups change throughout adolescence and youth are continually influencing and being influenced by

the behavior and attitudes of their peers and choosing new peers based on similarity. This ongoing process has an effect on reinforcement as well as changes in attitudes. Cohen (1983) argues youth with similar attitudes to their peer group will be pressured to maintain the same attitudes. However, if youth hold differing attitudes from their peer group, the pressure will be for change to occur so that similarity may be achieved.

In general, theories in social psychology, including those mentioned above, do not ignore the processual nature of the relationship between peer behavior and a youth's own attitudes. Most leave room for the dynamic nature of the relationship, thus admitting that both processes are at work. In terms of attitude change, consistency theories are most synonymous with the dynamic nature of the peer behavior/individual attitude relationship. Overall, these theories assume that individuals like consistency and will change attitudes and behavior in order to achieve it (Wagner, 1969). The most popular of these theories are arguably balance theory (Heider, 1946) and cognitive dissonance theory (Festinger, 1957). Balance theory argues when peers hold disparate attitudes about an object (e.g., another peer, a behavior, etc) an imbalance occurs. This imbalance causes a state of discomfort in the individual, which leads to a change in attitudes (Heider, 1946). Similarly, cognitive dissonance theory also discusses the effects of inconsistency. Festinger (1957) states that inconsistency between attitudes and behaviors within in an individual cause a state of dissonance. Once the dissonance occurs an individual will attempt to alleviate the dissonance via attitude change. Festinger (1957) made statements regarding the magnitude or size of the inconsistency, which set his theory apart from other consistency theories of that time (Cooper, 2007). He argues that the magnitude of the dissonance depends on the level of discrepancy between the two

cognitions (Festinger, 1957). For example, it is likely that the amount of dissonance created by a youth who believes drug use is wrong and then smokes marijuana is arguably less than if that same youth had participated in hard drug use.

In criminology, interactional theory (Thornberry, 1987) is best known for integrating theoretical approaches proposed by the socialization and selection perspectives to explain the dynamic nature of these relationships. In this theory, Thornberry (1987) combines both theoretical arguments discussed above to examine the processual nature of the relationship between peer behavior, attitudes, and behaviors. This theory argues that deviant behavior is the result of weakened bonds to conventional society and from a social environment where deviant behaviors are learned. The behaviors can, in turn, affect further weakening of social bonds and further development of a delinquent peer group. Through this assertion, Thornberry (1987) suggests that the relationship between delinquent peers and delinquent behavior is an ongoing process.

To summarize, the socialization perspective applies the most importance to the influence of peer behavior on a youth's attitudes. The selection perspective reverses the ordering by arguing that youth self-select into peer groups with similar attitudes and behaviors as themselves. The final mechanism argues for a processual relationship among these variables, in which youth self-select into a peer group, but also conform to their peers in terms of behaviors and attitudes. In addition, theoretical perspectives in both social psychology and criminology have been developed in support of these mechanisms. It is now important to devote attention to the empirical literature assessing these mechanisms.

Empirical Literature on these Mechanisms

Empirical literature on these mechanisms dates back to the 1950s and earlier; however, as technology has evolved so too have the data and analytic methods used to examine these relationships. Numerous researchers have made inferences about these mechanisms through the use of cross-sectional data; however, studies that use data taken at only one time point are not able to make inferences into the temporal ordering between peer behavior and individual behavior and attitudes. Therefore, this review focuses only on studies that utilize longitudinal data to examine the mechanisms surrounding the relationship between peer behavior and individual behaviors as well as attitudes. It is important to note that this review will broadly discuss research that examines the relationship between peer behavior and individual behavior, but will specifically focus more attention on the few studies that are able to speak to the causal relationship between peer behavior and individual attitudes.

Some prior literature has found evidence of a stronger effect of peer behavior on individual's own behavior than the reverse (e.g., support for the socialization perspective) (Elliott and Menard, 1996; Matsueda, 1982; Menard and Elliott, 1994; Paternoster, 1988; Warr and Stafford, 1991; Weerman, 2011). For example, using three waves of data from the National Youth Survey, Menard and Elliott (1994) found that delinquent peers have a slightly stronger effect on later offending than the reverse. While these studies focused on the relationship between *peer behavior and individual behavior,* research on the relationship between *peer behavior and individual attitudes* is more pertinent to the current study. This research has also been supportive of the socialization perspective (Chang and Le, 2005; Fuligini, Ecceles, Barber, and Clements, 2001; Kandel, 1987;

Matsueda and Heimer, 1987; Weerman, 2011). For example, Menard and Elliott (1994) found that delinquent bonding (e.g., association with delinquent peers) had a slightly stronger effect on later delinquent attitudes than the reverse. Focusing on school commitment as an attitudinal measure, youth who socialize with other youth that are highly involved in school have been found to have high academic achievement (Chang and Le, 2005; Mounts and Steinberg, 1995; Ryan, 2001). For example, Chang and Le (2005) found a negative direct relationship between perceptions of peer delinquency and attitudes toward school.

As expected, studies also find some support for the temporal ordering argued by the selection perspective. For example, Matsueda and Anderson (1998) as well as Agnew (1991b) found that the effect of delinquency on delinquent peers is about twice as large as the effect of peer delinquency on a youth's own delinquency. Support for the selection perspective has also been found when examining the effect of *individual attitudes* on association with prosocial or antisocial peers. Agnew (1991b) found that effect of peer delinquency on a youth's attitudes is slightly smaller than the reverse, indicating that adolescents are somewhat more likely to select into peer relationships than be socialized by them. Similarly, other studies have found that youths' attitudes are able to predict initial peer group selection as well as change in the proportion of antisocial peers (Brendgen, Vitaro, and Bukowski, 2000; Jussim and Osgood, 1989; Kandel, 1978a). In terms of academic achievement, prior research is often consistent with the selection perspective (Berndt and Keefe, 1995; Chen, Chang, and He, 2003; Dishion, Patterson, Stoolmiller, and Skinner, 1991; Schwartz, 1981). For instance, Chen and associates (2003) found that youth self-select into academically oriented peer groups

based on their own school performance. The selection perspective has also been supported when examining peer behavior and religious beliefs. Burkett and Warren (1987) found that a youth's religious beliefs have a stronger relationship with perceptions of peer behavior than the reverse.

In terms of the argument for a spurious relationship, McGloin and Shermer (2009) found that the presence of deviant peers influenced future delinquency regardless of the underlying criminal propensity of low self-control. In addition, Elliott and Menard (1996) ruled out the spurious hypothesis by finding a direct relationship between exposure to delinquent peers and delinquency. These studies focused on the relationship between peer behavior and individual behavior and are not able to examine a spurious relationship between peer behavior and individual attitudes. Overall, it is possible that youth may not have as much control over choosing their friends as selection perspectives suggest and some research shows that several additional factors are associated with homophily in the peer group (Haynie, 2002; McPherson, Smith-Lovin, and Cook, 2001).

The studies discussed above examining the relationship between *peer behavior and individual attitudes* employ differing measurements of peer behavior as well as multiple data sets and are not able to find evidence of one perspective over the other. Support for the socialization perspective was found when examining both youths' perceptions of their peers' behavior (Chang and Le, 2005; Menard and Elliott, 1994) and actual reports of peer behavior via network analysis or best friend nominations (Mounts and Steinberg, 1995; Ryan, 2001). Similarly, both youth's perceptions of peer behavior (Dishion et al., 1991; Jussium and Osgood, 1989) and direct reports (Agnew, 1991b; Berndt and Keefe, 1995; Brendgen, Vitaro, and Bukowski, 2000; Burkett and Warren,

1987; Chen, Chang, and He, 2003; Kandel, 1978a) demonstrated support for the selection perspective as well. Given that both direct and indirect measures of peer behavior have been found to be supportive of both the socialization and selection perspective when examining both prosocial and delinquent attitudes, it is unlikely that how peer behavior is measured plays a role in one perspective over the other. In terms of attitudes, Pratt and associations (2010) found that the way attitudes are measured has an effect on their relationship with delinquency. Attitudes had a stronger correlation with delinquency when measured as an index of basic definitions (i.e., no focus on antisocial or prosocial) than when measured as delinquent beliefs (Pratt et al., 2010).

The studies discussed above made use of a range of data, typically focusing on juvenile samples (e.g., 10 to 17 years of age). However, none systematically showed support for socialization or selection. Furthermore, analysis of the same data set (e.g., National Youth Survey) demonstrated support for both socialization (Menard and Elliott, 1994) and selection perspectives (Agnew, 1991b). This could be due to the fact that Menard and Elliott (1994) used Waves Three, Four, and Five and examined only delinquent bonding, beliefs, and minor and index offending. No additional control variables were examined. Agnew (1991b), on the other hand, used the first two waves of data and examined delinquent peers, beliefs, and several types of offending. However, Agnew (1991b) controlled for both parent and school attachment, which are argued by social control theory to have an effect on offending. It could be possible that Agnew (1991b) provided a more accurate test of selection due to multiple control variables.

While the above studies are able to provide insight into the causal mechanisms surrounding the relationship between peer behavior and individual attitudes, this

dissertation is able to improve upon this research. First, many of these studies, particularly those focused on delinquent youth, examine attitudes as a mediator in the relationship between delinquent peer behavior and delinquency. As mentioned above, studies that use attitudes as a mediator variable are not able to accurately examine the relationship between peer behavior and attitudes because they do not always control for the effect of individual behavior on attitudes. This dissertation will address this issue by focusing on attitudes as a primary dependent variable and controlling for the effect of behavior. In addition, this dissertation will control for behavior when examining the effect of individual attitudes on associations with prosocial or antisocial peers. This dissertation will also improve upon past research examining socialization versus selection by utilizing a technique to examine temporal ordering proposed by Osgood (2010). This technique involves examining the contemporaneous, lagged, and forward lag relationship between peer behavior and individual attitudes (as well as the reverse).

Overall, the studies that have been able to provide insight into socialization versus selection perspectives, whether in terms of individual attitudes or behavior, typically are not able to identify strong support for one over the other regardless of the employed techniques (Agnew, 1991b; Cohen, 1977; Kandel, 1978a; Menard and Elliott, 1994; Menard and Huizinga, 1994). This could be due to the possibility that the relationship between peer behavior and attitudes/behavior is dynamic in nature, with both socialization and selection working together to form homophily within the peer group.

This is especially possible given the large amount of empirical support associated with the processual relationship between peer behavior and a youth's own behaviors and attitudes (Agnew, 1991b; Berndt and Keefe, 1996; Cohen, 1977, 1983; Elliott and

Menard, 1996; Ginsberg and Greenley, 1978; Hallinan, 1983; Kandel, 1978b; Matsueda and Anderson, 1998; Menard and Elliott, 1994; Paternoster, 1988). Kandel (1978b) argued that similar youth are likely to associate with each other and, in turn, influence each other as a result. Her research on college aspirations found that both selection and socialization processes influenced youth. Research testing interactional theory has been supportive of this type of relationship as well (Thornberry, Lizotte, Krohn, Farnsworth, and Jang, 1991; Thornberry et al., 1994). Furthermore, Krohn and associates (1996) identified processual relationships between peer behavior and drug use as well as between individual attitudes and drug use in a test of interactional theory.

Also in terms of attitudes, Thornberry and associates (1994) found the presence of delinquent attitudes increased delinquent peer association, but there was an effect of peer behavior on attitudes as well. Importantly, they found that peer behavior had a "substantially larger impact on the formation of delinquent beliefs than does [one's own] delinquent behavior" (Thornberry et al., 1994:74). In addition, Krohn and associates (1996) found evidence of a reciprocal relationship between peer's drug use and individual attitudes regarding drug use. Similar results have also been found in studies on the processual influences of school performance (Berndt and Keefe, 1996; Hallinan 1983). Youth who do well in school will select into academically achieving peer groups, but the peer group in turn increases the pro-school related attitudes and motivations of the youth.

In addition to the literature discussed above, studies examining the effect of gang involvement on offending can provide further insight into the relationship between peer behavior and delinquency. These studies typically argue for three main models of gang membership: selection, facilitation, and enhancement (Thornberry, Krohn, Lizotte, and

Chard-Wierschem, 1993). In terms of gang membership, the selection model predicts that gangs attract already delinquent youth. Conversely, the facilitation model predicts gang joiners were no more delinquent than any other youth prior to joining the gang. Finally, the enhancement model argues that youth who join gangs are already highly delinquent, but participating in the gang leads to even higher levels of offending. Thornberry and associates (1993) found that individual's level of delinquency before, during, and after gang membership were most consistent with the facilitation model. While youth had increased levels of delinquency while in the gang, their pre- and post-gang levels of delinquency were not significantly different from youth who were never in a gang. This indicates that being in the presence of delinquent peers has a direct causal impact on delinquency. Further, Thornberry and colleagues (1993) were not able to identify any evidence of a selection effect. Additionally, Zhang and associates (1999) found strong evidence for the facilitation model; however, they did find some support for a selection effect as well. Evidence for the enhancement model has also been found in prior research (Battin, Hill, Abbott, Catalano, and Hawkins, 1998; Esbensen and Huizinga, 1993; Gatti, Tremblay, Vitaro, McDuff, 2005; Gordon et al., 2004). For example, Esbensen and Huizinga (1993) found that youth who would become gang joiners had higher levels of offending prior to gang involvement. In addition, Gordon and associates (2004) found that the increase in delinquent peers when joining a gang accounts for a portion of the increase in offending. Overall, it appears that the enhancement model is the most frequently supported and that there is only limited evidence of a pure facilitation model. While research has not applied these models to the relationship between gang membership and attitudes toward delinquency, this research

provides additional support for a processual relationship between peer behavior and individual behavior.

Overall, the preponderance of longitudinal research suggests a processual relationship between peer behavior and a youth's own attitudes. This dissertation, however, will examine the relationship between peer behavior and individual attitudes using both the socialization and selection perspectives. In addition, it will examine the processual relationship or the effect of peer behavior on individual attitudes and the subsequent effect of these attitudes on associations with peers. The relationship between peer behavior and individual attitudes will be examined in the context of both social learning and cognitive dissonance theories. While social learning theory was discussed in this section in terms of the socialization perspective, Akers (1998) does argue that the relationship between the behavior and attitudes of a youth's peers and the youth's own attitudes and behaviors is actually a process with a youth's own attitudes and behaviors affecting associations with peers as well. Akers (1998) does not discuss how peers may influence a change in attitudes, however. In order to make predictions regarding attitude change, this dissertation will draw on cognitive dissonance theory.

Social Learning Theory and Related Research

This section will first discuss the development of social learning theory via both differential association theory and psychological learning theories. Then, it will examine the principles of social learning theory, in particular how the principles relate to peer behavior and individual attitudes. Again, where necessary, studies on delinquency, rather than attitudes, will be included when discussing relevant literature.

Development of Social Learning Theory

Social learning theory was developed by Akers from a combination of Sutherland's (1947) differential association theory and psychological learning theories (Bandura, 1977; Patterson, 1975). In terms of psychology, these theorists argued that both conforming and nonconforming behaviors are learned through processes involving modeling and reinforcement. An individual will be more likely to model behavior of an individual they admire and if they believe it will result in desired outcomes (Bandura, 1977; Patterson, 1975). As mentioned above, Sutherland (1947) proposed in differential association theory that criminal behavior occurs as a result of an excess of pro-delinquent definitions learned by associating with delinquent peers. Importantly, Sutherland (1947) argued that it is the excess of antisocial versus prosocial definitions (or attitudes) that directly results in delinquent behavior. Differential association theory remains one of the most researched in criminology, but has been criticized for a vague presentation of many of its central concepts. Researchers have argued that Sutherland did not accurately operationalize his main variables making them difficult to test empirically, particularly the ratio of definitions favorable and unfavorable to crime (Cressey, 1960; Glueck and Glueck, 1950). In addition, differential association theory has been criticized for an incomplete description of the learning processes as well as for ignoring psychological principles (Akers, 1998; Cressey, 1960). These criticisms have led several researchers to attempt to revise Sutherland's differential association theory (Cressey, 1953; Glaser, 1956), but the work of Akers (1985, 1998) remains the most prominent revision.

Akers' Social Learning Theory

Burgess and Akers (1966) added to differential association theory by restating the main principles in terms of operant and respondent conditioning and reinforcement. From this work, Akers went on to develop his most current and much researched version of social learning theory. This theory begins with the assumption that prosocial and antisocial behaviors are learned through the same processes. The theory's main focus is on the influence of peer's behaviors and attitudes and argues that a youth's peer group will affect both prosocial and antisocial attitudes and behaviors. Four main principles comprise Akers' (1998) social learning theory: differential association, definitions, differential reinforcement, and imitation.

Akers (1998) argues that differential association is the process through which an individual learns definitions for prosocial or antisocial behavior. He states that individuals are exposed to both conforming and nonconforming behaviors and attitudes within associations with peers. Furthermore, Akers (1998) states:

> It proposes that the significance of primary groups comes not only from their role in exposing the individual to culturally transmitted and individually espoused definitions but also from the presence of behavioral models to imitate and their control over rewards and punishers will likely be available and attached to criminal or conforming behavior (Akers, 1998:61).

In other words, it is not only the behavior of the youth's peers, but also the attitudes of these peers that matter in the learning process. Borrowing directly from Sutherland (1947), social learning theory also posits that priority (i.e., early associations), duration (i.e., long lasting), frequency (i.e., take place often), and intensity (i.e., closeness) of these associations impact the learning of attitudes and behaviors. In addition, Akers (1998) argues that differential associations play an important role in the

other central concepts of social learning theory. It is through these associations that definitions are learned, behavior is reinforced, and that modeling occurs.

Definitions are attitudes or rationalizations that individuals attach to behaviors (Akers, 1998). Social learning theory identifies two types of definitions: general beliefs and specific beliefs. Akers (1998) argues that general beliefs include conventional attitudes that promote prosocial behavior over antisocial behavior. In other words, general attitudes are likely to support conforming behavior. Specific beliefs, however, are those that an individual holds regarding certain behaviors. These are the beliefs that promote nonconforming behaviors. He states that positive and neutralizing definitions are those that typically promote deviant behavior. Attitudes that make antisocial behavior more attractive or more favorable are said to be positive definitions. Neutralizing definitions are those that promote antisocial behavior because it is viewed as justified in a given situation. Therefore, while the behaviors are likely still viewed as unfavorable or wrong, individuals will excuse or justify them. Akers (1998) argues that these attitudes are likely learned within the peer group or as part of a larger subculture.

Differential reinforcement is described by Akers (1998) as the balance of actual and perceived rewards and punishments that follow the behavior. Furthermore, these rewards or punishments are thought to determine the onset, continuation, or desistance from antisocial or prosocial behavior. Akers (1998) also argues that the amount, frequency, and probability of rewards and punishments will have an effect on levels of criminal behavior. That is, behaviors that produce more rewards (e.g., more money, more respect, etc.), more frequent rewards, and a high certainty of rewards will be likely to occur more often. While individuals are likely to experience differential reinforcement

through their associations with others, it is possible for nonsocial reinforcement to occur as well. In nonsocial reinforcement the individual determines the rewards and punishments of a behavior outside of his/her associations with others. Here participating in a certain behavior causes an internal emotional response (e.g., sexual) that is personally rewarding to the individual (Akers, 1998:72). However, Akers (1998) argues that it is likely that individuals will look to the behaviors and attitudes of their peers to determine how they should perceive the benefits and consequences of behaviors.

Imitation or modeling occurs when a person participates in a behavior (prosocial or antisocial) after observation of the same behavior (Akers, 1998). Imitation is more likely to occur if the individual respects the model and if they perceive positive rewards from participation in that behavior. The priority, duration, frequency, and intensity of associations will affect imitation. For example, a youth who has known the individual for a long period of time (e.g., duration), sees him/her often (e.g., frequency), and feels particularly close to that individual (e.g., intensity) will be more likely to imitate him/her. Imitation is also more likely to occur at the onset of behavior rather than the continuation (Akers, 1998). While modeling of the behaviors of one's peers or parents is common, Akers (1998) has also extended this to the imitation of images in media (e.g., video games, music, and television).

Akers (1998, 2001) also discusses the process of social learning theory. In other words, how he believes these variables work together, causally, to predict behaviors. He hypothesizes that the definitions, imitation, and reinforcement mediate the relationship between differential peer associations and behavior. However, he does not believe that this process is completely direct, but that the learning process is dynamic with feedback

effects. Akers (2001) states that association with conforming and nonconforming peers will influence attitudes, but these may, in turn, affect interactions with peers. He also argues that definitions may be applied to the behavior retrospectively in order to rationalize or justify an act. In addition, the actions themselves will positively or negatively reinforce future behavior.

This section has provided an overview and discussion of the central concepts to social learning theory; however, it is also pertinent to highlight some items that are specific to the dissertation: the diffusion of attitudes as well as the stability of the social learning concepts. First, it is important to note that both differential association and social learning theory make different hypotheses regarding the diffusion of attitudes. To Sutherland (1947) it was the transmissions of antisocial attitudes by peers that led the way to delinquent involvement. He argued for a direct link between delinquent peer associations and delinquent attitudes, but did not specify how attitudes were learned from peers. In addition, it is unclear from Sutherland's theory whether or not it is the behavior of peers or their attitudes that has an effect on an individual's behavior. Warr and Stafford (1991) specifically examined the question of peers' attitudes versus peers' behaviors on individual behavior. They found that the behavior of friends affects individual behavior through individual attitudes. Akers (1998) attempted to account for this in social learning theory by arguing that it is the behavior as well as the attitudes of peers that reinforce a youth's own attitudes and actions. In other words, positive and neutralizing definitions are learned through reinforcement from a youth's peer group:

> Social learning theory proposes that the definitions themselves are learned through reinforcement contingencies operating in the socialization process and function less as direct motivators than as facilitative or inhibitory "discriminative stimuli," cues that certain behavior is appropriate and

> likely to be rewarded or inappropriate and likely to be punished (Akers, 1998:84).

In addition, social learning theory argues that youth model their own behavior (prosocial or antisocial) after that of their peers. Therefore, it is arguable that youth will also learn attitudes, in addition to behaviors, through this modeling process. Akers (1998) argues that it is through reinforcement and modeling that homophily occurs within the peer group. As Burkett and Warren (1987:113) argue:

> As the socialization process becomes complete, resulting in within-group attitude-behavior similarity, deviations from the group standards should become increasingly visible and the intensity of attitudes should increase as function of mutual reinforcement.

This indicates that the attitudes of a youth will become more like those of his/her peer group over time (e.g., homophily). Akers (1998) also provides a brief discussion on his views of the stability of social learning concepts. He argues that the balance of prosocial versus antisocial attitudes and behaviors is somewhat stable over time, but can change with time or circumstances (e.g., changes in the peer group). In other words, a youth who experiences a change in his/her peer group, whether prosocial or antisocial, can experience a change in his/her attitudes. Akers (1998) does not speak specifically about the how the changes occur, but it could be inferred that changes in social and nonsocial reinforcement could produce changes in attitudes as well as associations with peers.

Empirical Research on Social Learning Theory

A number of studies have tested various aspects of social learning theory (Akers and Jensen, 2006; Pratt et al., 2010). In general this research has found much empirical support for the social learning principles for different behaviors (e.g., delinquency, substance use, etc) (Akers and Lee, 1996; Akers, Krohn, Lanza-Kaduce, and Radosevich,

1979; Krohn, Skinner, Massey, and Akers, 1985; Paternoster and Triplett, 1988; Triplett and Payne, 2004; Winfree and Griffiths, 1983) as well as across gender (Esbensen and Deschenes, 1998), race (Winfree, Vigil-Backstrom, and Mays, 1994), and age groups (Akers, La Greca, Cochran, and Sellers, 1989; Akers and Lee, 1999; Chappell & Piquero, 2004). In a meta-analysis examining the effect sizes of the social learning concepts throughout the large body of literature, Pratt and associates (2010) found that differential association and definitions had larger effect sizes on individual behavior (e.g., delinquency, substance use, etc) than differential reinforcement and imitation. This is consistent with prior meta-analyses as well (Pratt and Cullen, 2000). Overall, Akers views any research that demonstrates a relationship between peer behavior or attitudes and individual behavior to be supportive of social learning theory (Akers and Jensen, 2006; Pratt et al., 2010); however, the majority of prior research does not fully examine the social learning process that was proposed by Akers (1998, 2001) (Pratt et al., 2010). Typically, these studies examine how one or more of the four social learning constructs independently affect delinquent involvement. In other words, social learning concepts are typically pitted against one another in an empirical model rather than examined as a social process. This research generally seeks to determine which construct is most highly correlated with behavior. This is true for both cross-sectional (Akers et al., 1989; Akers and Lee, 1999; Krohn, Lanza-Kaduce, and Akers, 1984; Lanza-Kaduce, Akers, Krohn, and Radoesevich, 1984; Winfree, Sellers, and Clason, 1993) and longitudinal research (Akers and Lee, 1996; Triplett and Payne, 2004) on social learning concepts.

Cross-sectional research, for example, has found support for the relationship between the social learning concepts and various deviant behaviors such as adolescent

smoking (Akers, 1998), cheating (Lanza-Kaduce and Klug, 1986), substance use (Akers et al., 1979; Akers and Lee, 1999; Krohn et al., 1984; Lanza-Kaduce et al., 1984; Paternoster and Triplett, 1988; Winfree, Sellers, and Clason, 1993), and delinquency (Esbensen and Deschenes, 1998; Paternoster and Triplett, 1988; Winfree, Backstrom, and Mays, 1994). These studies have typically found that differential association garners the most support (typically measured as peer participation in delinquency), while imitation has the least (typically measured as the number of admired models) (Pratt et al., 2010). In terms of longitudinal research, Akers and Lee (1996) examined cross-lagged models of the combined effect of social learning variables on smoking as well as each construct (with the exception of imitation) separately. They found that the effects of differential reinforcement variables at Time One were positively related to smoking behavior at Time Two. Also, their results indicated that attitudes toward smoking (e.g., definitions) have an influence on behavior, but not the reverse. A few studies, however, have examined the processes surrounding the social learning concepts. First, Krohn and associates (1985) found that peers' attitudes toward smoking at Time One were able to predict a youth's own attitudes about smoking at Time Two. In addition, Akers (1998) discussed results that found that parental smoking as well as peer attitudes of smoking at Time One predicted one's own attitudes toward smoking at Time Two. Finally, Brezina and Piquero (2003) found that peer approval of alcohol and drug use was related to later attitudes regarding the positive effects of alcohol and drugs.

Overall, research on social learning theory has found the most empirical support for the effects of differential associations and definitions on behaviors. Few studies have examined the full processual relationship proposed by Akers (1998, 2001); therefore,

little research has examined the effect of differential associations with peers on a youth's attitudes. This dissertation only uses social learning as a backdrop for examining the relationship between peer behavior and individual attitudes and does not provide a complete test of the theory. Apart from the focus on attitudes rather than behavior, however, this study is not able to measure the processes of imitation or reinforcement within the peer group. Regardless, this study will directly advance social learning theory in three main ways. First, this dissertation will provide an examination of the effects of peer behavior on individual attitudes as well as the subsequent effect of these attitudes on associations with peers. Focusing on these relationships between peer behavior and individual attitudes will provide a peek into the social learning process, which remains under examined. Second, focus will be on both associations with prosocial *and* antisocial peers and a youth's own prosocial and antisocial attitudes. The preponderance of prior research in social learning theory focuses on the antisocial nature of these relationships; however, Akers (1998) argues that social learning theory can be applied to both conforming and non-conforming youth. This study extends social learning research by focusing on prosocial peer behavior and a youth's prosocial attitudes as well. Finally, this dissertation will examine change in two of the social learning constructs: differential association with peers and individual attitudes. Akers (1998) briefly discusses stability in the social learning concepts, but does not provide empirical support. This dissertation will examine how changes in differential associations with peers affect a change in attitudes.

The Effects of both Prosocial and Antisocial Peer Associations and Instability in the Peer Group

This section examines prior research on associations with both prosocial and antisocial peers as well as changes in the peer group. Many of the following studies examine behavior, but are generally meant to demonstrate that 1) differences in attitudes could be expected based on the prosocial versus antisocial nature of a youth's peers and 2) change does occur in the peer group.

Research shows that some peer groups are not completely delinquent or completely prosocial, which can affect conformity and peer pressure (Berndt, 1979; Elliott, Huizinga, and Menard, 1989; Elliott and Menard, 1996; Haynie, 2002; McGloin, 2009; Mounts and Steinberg, 1995; Warr, 1993b). Berndt (1979), for example, found that youth were more likely to conform to peer pressure in situations involving prosocial behavior. Haynie (2002) found that the greater the proportion of prosocial youth in a peer group reduced delinquent involvement regardless of the number of delinquent peers. Similarly, Wright and Cullen (2004) found that exposure to prosocial peers via employment decreases involvement in delinquency and drug use. It is argued in this dissertation that when a youth's peer group contains both delinquent and prosocial youth, the groups might be less able to provide consistent attitudes regarding behaviors (Haynie, 2002). Youth who associate with both prosocial and antisocial peers may be subject to differing reinforcements and models for attitudes and behaviors as well.

In addition to research that states that youth associate with both prosocial and antisocial peers, several studies have found that peer groups do not remain stable over time and that exposure to delinquent peers is also variable (Elliott and Menard, 1996; Thornberry et al., 1993; Kregaer, Rulison, and Moody, 2011; Warr, 1993b). The

percentage of youth that maintains delinquent peer associations continuously over time has varied in prior research, but does indicate that youth change peer groups frequently. For instance, these studies typically find that anywhere from 35 to 70 percent of youth remain in the same peer group over time (Kreager, Rulison, and Moody, 2011; Thornberry et al., 1993; Warr, 1993b). It is also possible that even when youth remain in the same peer group across time, they could still be experiencing a change in attitudes within the same peer group. In other words, youth may experience an attitude shift within the peer group that is not associated with changing members of the group.

In general, exposure to delinquent peers as well as the amount of time spent with peers has been shown to peak in adolescence and decline thereafter (Warr, 1993b). When examining transitions between typologies of delinquent and prosocial peer groups (e.g., saints, prosocial, mixed, and delinquent), Elliott and Menard (1996) found that, on average, youth transitioned to three different peer group types over the eight years of the National Youth Survey, which led them to conclude that peer groups are not stable. In addition, Warr (1993b) found what he called a "sticky friends" effect in which once a youth joined a delinquent peer group, he/she was not likely to move out of the peer group. Also, these youth accounted for the majority of the delinquent involvement of that sample.

Research has also examined how the instability of the peer group predicts behavior and how a youth's behavior is capable of predicting stability of friendships within the group. Several studies have found that change within the peer group affects youth's behavior (Berndt and Keefe, 1996; Brendgen, Vitaro, Bukowski, 2000; Elliott and Menard, 1996; Lacourse et al., 2003; McGloin, 2009). McGloin (2009) found that

youth who were more/less delinquent than their peers were more likely to change their own levels of delinquency to match the behavior of their peer group. In addition, Mounts and Steinberg (1995) found that youth become more similar to their peers over time with regards to academic achievement and drug use. It is thought that recency and length of time spent with peers moderates the change in behavior (Brendgen, Vitaro, and Bukowski, 2000; Elliott and Menard, 1996; Lacourse et al., 2003; Warr, 1993b). Warr (1993b) found that youth who recently switched from a non-delinquent to a delinquent peer group had higher levels of antisocial behavior compared to those with no change. These results are generally supported by studies examining trajectories of peer group membership. Lacourse and associates (2003) found that youth who participated in delinquent peer groups during preadolescence (e.g., eleven and earlier) or during later adolescence (e.g., fourteen and fifteen) had higher involvement in violent acts. This was compared to youth who were never or only temporarily involved in a delinquent peer group. While the above studies provide analyses of the relationship between changes in the peer involvement and a youth's own behavior, none are able to speak to the effect on changes in peer behavior on individual attitudes.

In general research has identified several variables that are correlated with associations with prosocial over antisocial peers. These studies have found that variables such as self-control (McGloin and Shermer, 2009), neighborhood and school context (Anderson, 1999; Hallinan and Tuma, 1978; Wolfgang and Ferracuti, 1967), prior attitudes (Berndt and Keefe, 1995; Brendgen, Vitaro, and Bukowski, 2000; Chen, Change, and Hu, 2003; Dishion et al., 1991; Jussim and Osgood, 1989; Kandel, 1978b; Schwartz, 1981), prior behavior (Agnew, 1991b; Matsueda and Anderson, 1998;

Thornberry et al., 1994) as well as demographics (Berndt and Hoyle, 1985) were able to predict involvement with prosocial versus delinquent peers. In terms of predicting stability within the peer group, research has found that both attitudes and behavior are capable of predicting stability within the peer group (Brendgen, Vitaro, and Bukowski, 2000; Kreager, Rulison, and Moody, 2011). For example, Kreager and associates (2011) found that the effect of delinquent behavior on peer group stability (i.e., the proportion of peers who listed the same group from friends at two waves) was fully mediated by the presence of a youth's grades and prosocial (e.g., religious) attitudes. This research indicates that attitudes could play a role in predicting stability within the peer group.

While social learning theory supports a processual relationship between peer behavior and individual attitudes, only briefly mentions that change can occur in social learning constructs. Furthermore, Akers (1998) does not make inferences regarding the mechanisms surrounding how the changes may or may not occur. However, changes in attitudes have been the focus of social psychology literature for several decades (Wagner, 1969); therefore, this dissertation draws on theory and literature from this field to examine the relationship between changes in association with prosocial or antisocial peers and changes in a youth's own prosocial or antisocial attitudes.

Attitude Change Theory and Cognitive Dissonance

Cognitive dissonance theory is able to make predictions of attitude change based on social interactions with the group; therefore, this dissertation draws on this theory to discuss change in the relationship between peer behavior and individual attitudes. Keisler and Keisler (1970) define conformity as a change in behavior or attitude that is the result of real or imagined group pressure. This definition suggests that, at its base,

conformity is attitude change that occurs from association with peers. Social psychological research has identified four main theoretical perspectives that explain changes in attitudes: functional, learning, perceptual, and consistency (e.g., cognitive dissonance) theories.

Functional theories argue that attitude change occurs to suit the goals of the individual (Wagner, 1969; Katz, 1960). This could possibly come in the form of neutralizations or rationalizations for participation in delinquent behavior. Social psychological learning theories (discussed above) argue for the effect of conditioning and reinforcement on attitude change. Similar to social learning theory (Akers, 1998), these theories would predict that attitudes change based on rewards and punishers from a valued model (e.g., the peer group) (Hovland, Janis, and Kelley, 1953). Perceptual theories, however, argue that attitudes do not change and that perceptions are just reinterpreted or redefined (Sherif and Sherif, 1956). In other words, this perspective maintains that attitudes are only changing in strength or the degree, not content. Finally, consistency theories argue that individuals strive for consistency, which leads to change in attitudes. There are many theories of consistency, Heider's (1946) balance theory, Osgood and Tannenbaum's (1955) theory of congruity, and Festinger's (1957) cognitive dissonance theory are all prominent perspectives in this approach. This dissertation draws on the consistency theory to measure change, specifically cognitive dissonance theory, to inform the research questions. Cognitive dissonance theory is able to make predictions of attitude change based on social interactions with the group; therefore, it was viewed as an appropriate basis for the research questions. This section will provide a

discussion of cognitive dissonance theory and how it directly relates to the dynamic relationship between changes in the peer group and changes in attitudes.

Cognitive dissonance has been examined in multiple studies and experienced many alterations since its inception in 1957. Based on work by Heider (1946) and other consistency theorists, Festinger (1957) posits that the underlying assumption of cognitive dissonance theory is that individuals strive for consistency. He argues that inconsistency between cognitions creates psychological discomfort or dissonance, which leads to change. Cognition is defined as a piece of knowledge individuals have about their self, their behaviors, or their surroundings. For example, a youth who believes the behavior of his/her peer group is erroneous, but still wants to belong to the peer group or fears ridicule from the group would result in a state of dissonance. These two cognitions are dissonant because the youth's attitudes about his/her friends' behavior do not correspond with a desire to be part of the group. The magnitude of the dissonance depends on the level of discrepancy between the two cognitions. To illustrate this, it is likely that the amount of dissonance created by a youth who believes drug use is wrong and then smokes marijuana is arguably less than if that same youth had participated in hard drug use. The level of importance of the cognition to the individual is related to magnitude as well. A disjunction between two less important attitudes and behaviors will not create a large amount of dissonance.

Festinger (1957) outlines several ways to reduce dissonance once it has occurred: 1) change the cognition about the attitude, 2) add consonant cognitions, and 3) decrease the importance of the cognition. He argues the amount of pressure to reduce dissonance is a function of its magnitude. One way to reduce dissonance is to change the attitudes or

the cognition about the attitude. Festinger (1957) argues that it is easier to change attitudes about the behavior than the behavior itself, which is arguably what makes it a theory of attitude change (Cooper, 2007). Going back to the above example, youth may change attitudes about their peers' behavior in order to reduce dissonance created from spending time with this peer group. Another method of reducing dissonance is by increasing consonant cognitions, which are similar to neutralizations or rationalizations for a behavior. The addition of consonant cognitions can decrease the magnitude of the discrepancy between them. Returning to the drug use example, the youth may rationalize that smoking marijuana is acceptable because at least s/he did not participate in hard drug use. Reduction of dissonance can also occur via decreasing the importance of the attitude. Here the youth would simply decrease the importance they place on their attitudes about drug use or the behavior of the peer group.

The role of the social group in cognitive dissonance was specifically discussed by Festinger (1957). He argued that the social group (e.g., peer group) can be a main cause of cognitive dissonance for an individual as well as a way to reduce/eliminate it. It is in this context that he discussed the possible effects that dissonance may have in changing peer groups. He states:

> …one of the most effective ways of eliminating dissonance is to discard one set of cognitive elements in favor of another, something which can sometimes only be accomplished if one can find others who agree with the cognition one wishes to retain and maintain (Festinger, 1957:177).

This indicates that youth may also seek out peers whose attitudes are similar to their own attitudes. In the above example, rather than changing attitudes to reduce dissonance caused by the behavior of the peer group, the youth may seek out a more similar peer group. This provides support for the idea that changes in attitudes may have an effect on

changes in the peer group. In addition, Festinger (1957) speaks about social influence when discussing specific methods for reducing dissonance created from social relationships. He states that dissonance created from group phenomena can be alleviated by: 1) changing individual attitudes to match those of the group, 2) influencing the group to change their attitudes or behaviors, and 3) rejecting or devaluing certain members of the group.

Since its inception in 1957, cognitive dissonance theory has experienced many changes and variations. One of the advances in this theory has been on the relationship between groups and dissonance. In order to expand on dissonance theory, Stone and Cooper (2001) developed their self-standards model. They argue that when an individual evaluates his/her attitudes or behavior and determines that it differs from some standard of judgment (e.g., self-perception or group culture), a dissonance will occur. In other words, heterogeneity in behaviors and attitudes within the same peer group will create dissonance (Matz and Wood, 2005). This is directly related to the idea of vicarious dissonance, in which witnessing an individual participate in a behavior that is inconsistent with his/her attitudes can cause personal dissonance (Norton, Monin, Cooper, and Hogg, 2003). These advances provide further support for the idea that the peer group behavior can produce an attitude change within a youth belonging to that peer group.

Empirical Research on Cognitive Dissonance Theory

Cognitive dissonance theory has been used to explain a range of attitudes and decision-making behaviors from eating grasshoppers to changing political attitudes (Harmon-Jones and Mills, 1999; Matz and Wood, 2005). While a full review of the

literature is far beyond the scope of the current study, prior research in this area has examined the theoretical tenants at the individual level, whether experimental or based on survey research (see Cooper, 2007 or Harmon-Jones and Mills, 1999 for a more complete review of prior literature). This brief review of the literature focuses on social groups and cognitive dissonance; specifically, the effects of associations with both prosocial and antisocial youth in the same peer group on dissonance as well as research on the methods of dissonance reduction.

Research relating peer groups to the creation of dissonance has been supportive of dissonance and other balance theories. These studies find that individuals view homogenous peer groups as more attractive and that participation in a heterogeneous peer group led to more tension-reducing behaviors (e.g., laughing and joking) (Alexander, 1964; Bales, 1951; Matz and Wood, 2005). In terms of dissonance reduction, prior research has shown that change in the importance of cognitions (Simon, Greenberg, and Brehm, 1995) and the addition of consonant cognitions (Mill, 1965; Sherman and Gorkin, 1980) are effective at reducing the magnitude of dissonance. When looking specifically at group interactions, research has shown that changing one's own attitudes, influencing the attitudes of others, as well as changing group involvement all produced dissonance reduction (Glasford, Pratto, and Dovidio, 2008; Matz and Wood, 2005; Norton et al., 2003).

The experimental nature of the majority of this research presents a significant limitation in that these studies rely on individuals in simulated group situations in an artificial experimental environment. In addition, these environments are designed to have an impact on attitudes (Cooper and Mackie, 1983). Arguably, dissonance in these

situations may be underestimated, particularly given the emphasis that Festinger (1957) places on the importance and value of the group. As discussed throughout this dissertation, the peer group provides a unique platform for conformity and adolescence is a time when youth are most likely to change their attitudes/behaviors to match those of their peers. Therefore, it is possible that the magnitude of the dissonance may be greater in an adolescent peer group situation examined in the context of survey rather than in experimental data.[3] However, it is important to note that, similar to social learning theory, this dissertation is not able to provide a complete test of cognitive dissonance theory. The concept of dissonance cannot be measured and this dissertation is using it as an explanation of the relationship between change in the peer group and change in attitudes.

Predictors of Attitude Change

Similar to behavior, there is no better predictor of attitudes than prior attitudes. In other words, research on both prosocial and antisocial attitudes has shown that attitudes are generally consistent over time (Agnew, 1991b; Menard and Elliott, 1994; Paternoster, 1988; Thornberry et al., 1994). However, social psychology has dedicated much research to factors that are capable of changing attitudes. These studies typically identify individual and group predictors of attitude change. Individual factors that have been shown to affect the likelihood of attitude change include: self-esteem (Eagly and Warren, 1976), authoritarianism (Hovland and Janis, 1959), as well as sex and age differences (Eagly, 1978; Hovland and Janis, 1959; Raudenbush and Chan, 1992; Zhang, Loeber, and Stouthamer-Loeber, 1997). This research typically shows that individuals with high

[3] Survey research, of course, has limitations as well; specifically, survey data cannot control for selection. This and other limitations will be discussed in Chapter Three.

levels of self-esteem are less susceptible to influence, thus less likely to change their attitudes (Eagly and Warren, 1976). Hovland and Janis (1957) define authoritarianism as a personality trait characterized by strong obedience toward authority and finds that these individuals are especially susceptible to attitude change. Furthermore, these researchers also find that females are more likely than males to change their attitudes to conform to those of the peer group. In terms of the group, social psychological research emphasizes the characteristics of the group has an important predictor of attitude change (Eagly and Chaiken, 1975; Hovland, Janis, and Kelley, 1953). For example, a youth who has high levels of trust, attachment, and commitment to a peer group will be more likely to conform to the attitudes of the peer group.

The majority of social psychological research examines the effect of groups on changes in attitudes has been experimental. As mentioned above, this presents a limitation in that these studies are putting individuals into group situations within an experimental environment, which are intended to have an impact on attitudes (Cooper and Mackie, 1983). It is arguable that survey research may be more appropriate when examining these relationships due to the ability to examine attitudes outside an experimental setting and one that it is based on youths' interactions with their own peers. Psychological literature using survey methodology has found that youth will often change their attitudes, both delinquent and conforming, to match those of their peers (Epstein, 1983; Mounts and Steinberg, 1995; Ryan, 2001; Schwartz et al., 2006). For example, youth who belong to academically oriented peer groups have demonstrated greater increases in achievement and enjoyment in school over time (Epstein, 1983; Ryan, 2001). Schwartz and associates (2006), for example, found that changes in popularity within the

group were able to predict changes in academic engagement (e.g., GPA and absenteeism). She found similar results for youth who spent time with peers who disliked school. This dissertation extends research on attitude change by examining the effect of peer prosocial and antisocial behavior on change in both prosocial and antisocial attitudes using a longitudinal survey of youth.

The Current Study

The strong relationship between the behavior of a youth's peers and a youth's own behavior has been demonstrated multiple times in prior research (Agnew, 1991a; Akers, 1998; Brown, Clasen, and Eicher, 1986; Cohen, 1977; Kandel, 1978a; Matsueda and Anderson, 1998; Pratt et al., 2010). In addition, a youth's own attitudes have been shown to be correlated with a youth's own behavior (Paternoster, 1988; Pratt et al., 2010; Warr and Stafford, 1991). However, what remains understudied is the relationship between peer behavior and individual attitudes. Prevention programs, particularly those involving skills building curricula, focus on developing prosocial attitudes and diminishing antisocial attitudes in order to prevent unwanted behaviors. In addition, social psychological research argues that youth sometimes conform to attitudes without conforming to behavior (Kiesler and Kiesler, 1970). Therefore, it is important to develop knowledge and research on what factors are capable of shaping attitudes apart from behavior. The current study focuses on individual attitudes, specifically examining the effect of peer behavior on these attitudes as well as the reverse effects. The goals of this dissertation are to explore the relationship between peer behavior and individual attitudes as suggested by both social learning and cognitive dissonance theories in three main ways: 1) examining the direct and processual relationships, 2) examining the effects of

associations with both prosocial and antisocial peers as well as the ratio of prosocial to antisocial peers, and 3) examining how change in the behavior of a youth's peers predicts a change in attitudes (and vice versa). In order to address these goals, six research questions were developed based on theory and prior research (please see Figure One for a graphic representation of each research question). One of the main discussions presented in this dissertation is the theoretical contexts and prior research surrounding the causal mechanisms in the relationship between peer behavior and attitudes (e.g., socialization, selection, and processual effects). In addition, examining these relationships will have implications for social learning theory. Therefore, the following research questions are asked for both prosocial and antisocial peer behavior and attitudes:

1. What is the contemporaneous effect of peer behavior on individual attitudes? What is the contemporaneous effect of individual attitudes on associations with peers? What are the lagged relationships?

The purpose of this research question is to understand the direct relationships (e.g., socialization versus selection) between peer behavior and a youth's own attitudes. In other words, is the relationship between peer behavior and individual attitudes stronger than the reverse? If there is a stronger effect size of peer behavior on attitudes than the reverse, then the results can be said to be supportive of the socialization perspective. However, the selection perspective would be supported if the effect of attitudes on involvement in a particular peer group is stronger than the reverse or if the effect of peer behavior on attitudes is spurious. In addition, this study examines the forward lag of these relationships, where the outcome (e.g., attitudes at Time Two) precedes the event (e.g., peer behavior at Time Three) (not shown in Figure 1). According to Osgood (2010), if the effect of peer behavior at Time Three on attitudes at Time Two is stronger

than the effect of peer behavior at Time One on attitudes at Time Two, then the relationship is spurious. By examining these mechanisms this dissertation will add to the socialization and selection literature by focusing on individual attitudes. The majority of prior literature has focused on the relationship between peer behavior and individual behavior, thus ignoring attitudes or examining them as a mediator. As discussed above, however, it is likely that the relationship between peer behavior and attitudes is actually a process with individual attitudes also affecting associations with peers. In other words, while youth may select into a peer group the peer group will, in turn, affect their attitudes.

2. What is the effect of peer behavior on individual attitudes? What is the subsequent effect of individual attitudes on associations with peers?

This research question will be examined using three waves of data on peer behavior and attitudes. In general, Akers (1998) would argue that findings that indicate socialization or a processual relationship between peer behavior and attitudes would be supportive of social learning theory. It is also important to highlight that these research questions will advance social learning research by examining prosocial peer behavior and prosocial attitudes. While Akers (1998) speaks about conforming to the behavior and attitudes of one's peers, the majority of research examines deviance in relation to the theory. However, findings indicating a relationship between prosocial peer behavior and individual attitudes would be said to be supportive of the theory.

Prior research has found that peer groups are not completely prosocial or completely antisocial. The combination of prosocial and antisocial youth in a peer group can have an effect on the amount of exposure to deviant attitudes and behaviors (Haynie,

2002). In addition, the attitudes and behaviors supported by the peer group may not be as clear in antisocially mixed peer groups (Haynie, 2002). This prompts the question: will youth conform to the prosocial or antisocial nature of their peer groups? This dissertation examines the contemporaneous and lagged effects of exposure to both prosocial and antisocial peer behavior:

3. What is the contemporaneous effect of both prosocial and antisocial peer behavior on individual attitudes? What is the lagged effect?

This research question is similar to research question one, but it includes measures of both prosocial and antisocial peer behavior. This question will have implications for social learning theory, which emphasizes the importance of both conforming and non-conforming youth. Akers (1998) argues that prosocial definitions are learned from conforming peers and antisocial definitions from nonconforming peers. Therefore, in order for results to be supportive of social learning theory, antisocial peer behavior should have the largest effect on antisocial attitudes relative to prosocial peers (and vice versa). Related to the relative effects of prosocial versus antisocial peer behavior, this dissertation also examines the ratio of prosocial to antisocial peer behavior. The concept of differential associations with delinquent peers is the basis for Akers' (1998) theory and is at the beginning of the social learning process. It is arguable that this concept is best measured using the ratio of prosocial to delinquent peer behavior as it can speak to differential associations with one over the other. This dissertation expands this research by focusing on prosocial and antisocial attitudes and asks:

4. What is the contemporaneous effect of the ratio of prosocial to antisocial peer behavior on individual attitudes? What is the lagged effect?

Overall, a relationship between these variables, whether contemporaneous or lagged, provides support for social learning theory, which argues that peer associations will reinforce and produce attitudes regardless of the prosocial or delinquent nature of the group. While social learning theory does not speak directly about the balance of prosocial and antisocial peers, it is arguable that the findings could be said to be supportive of this theory. For instance, if the number of prosocial peers exceeds the number of antisocial peers, then there should be a positive effect on prosocial attitudes. This finding could be said to be supportive of social learning theory. In addition, prior research has found that a greater proportion of prosocial youth in the peer group reduced delinquency regardless of the number of delinquent peers (Haynie, 2002). Therefore, it is expected that as the prosocial nature of the peer group increases, youth will experience an increase in prosocial attitudes and a decrease in antisocial attitudes.

As mentioned, research questions three and four have implications for social learning theory. However, Akers (1998) does not make inferences regarding whether or not the effect of peer behavior on attitudes is simultaneous or lagged. In order words, it is unclear whether the influence of peer behavior on a youth's attitudes occurs immediately or if the process takes time. Therefore, these research questions will examine both contemporaneous (e.g., cross-sectional) as well as lagged (e.g., longitudinal) effects. Logic, however, suggests that the strongest correlations will be found in the cross-sectional relationships as more recent associations would be more salient.

The final goal of this dissertation is to examine the effect of changes in the behavior of the peer group on changes in attitudes. If delinquent peer behavior influences

delinquent attitudes and prosocial peer behavior provides prosocial attitudes, changes in the delinquent and prosocial nature of the peer group will have an effect on attitudes. In addition, it is likely that changes in attitudes could produce changes in the peer group. The following research questions are based in cognitive dissonance theory, which argues that individuals strive for consistency.

5. Is a change in the behavior of a youth's peer group able to predict a change in individual attitudes? Is a change in individual attitudes able to predict a change in the youth's peer group or a change in the behavior of a youth's peers?

6. Is a change in the ratio of prosocial to antisocial peer behavior able to predict a change in individual attitudes?

Above all, it is expected that movement to a less delinquent peer group over time would lead to lower levels of delinquent attitudes and higher levels of prosocial attitudes and vice versa. Cognitive dissonance theory would predict that the dissonance created from changing to a less delinquent peer group, would cause a dissonance for youth who hold antisocial attitudes. These discrepant cognitions (i.e., prosocial peer behavior and individual antisocial attitudes) would cause them to decrease the magnitude of these antisocial attitudes or change cognitions in order to alleviate the dissonance. Conversely, youth who experience a change in prosocial or antisocial attitudes may experience a similar dissonance within the peer group. One option to reduce this dissonance is to change the peer group. This can be done by attempting to influence the behavior of peers or by selecting into a more prosocial peer group.[4] In terms of possible implications for social learning theory, while the two theories do not share many commonalities, the hypothesized findings could be said to advance social learning theory as well. However,

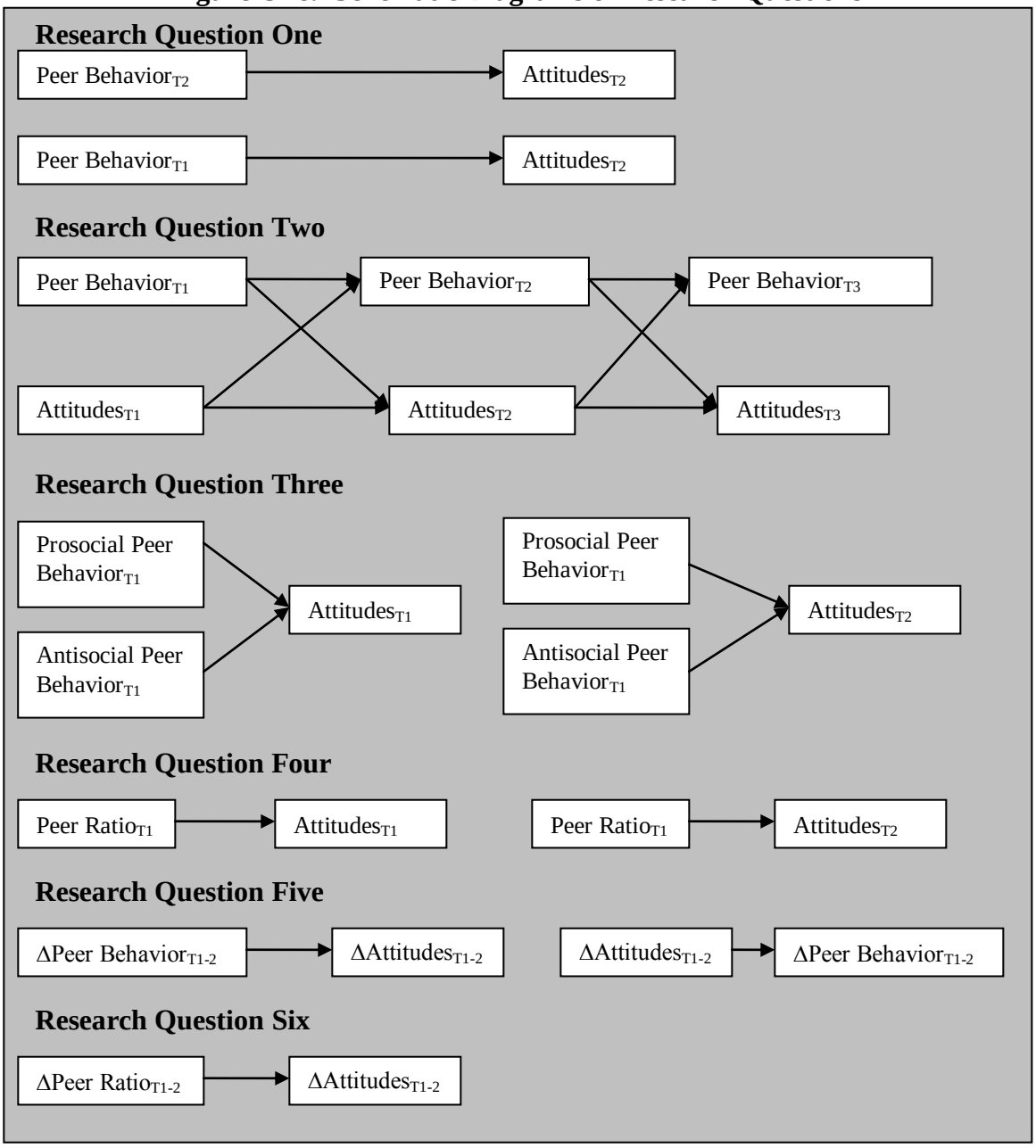
[4]This dissertation is unable to differentiate between these two types of dissonance reduction, as the data do not provide measures of the peer network. Therefore, youth could either be changing their peers or their peers could be changing their behavior.

it would contradict the theory if individuals experience a decrease in delinquent peers and do not experience a change or experience an increase in antisocial attitudes (Akers, 2001).

In order to answer these research questions, the dissertation makes use of data from the national evaluation of the Gang Resistance Education and Training (G.R.E.A.T.) program. Attitudes cannot be assessed via official records or observation; therefore, survey data, such as G.R.E.A.T., are particularly appropriate for the study of attitudes. Apart from the wide range of variables available, the longitudinal nature of these data allows for an examination of not only the contemporaneous relationships between peer behavior and individual attitudes, but of the lagged effects as well. This is important because social learning theory is unclear as to whether the effect of peer behavior on a youth's attitudes is instantaneous or occurs over time. Similarly, the use of longitudinal data in this dissertation will allow for an examination of the nature and development of change in attitudes as well as what predicts these changes. In fact, Hancock and Lawrence (2006:171) state that: "the real attraction of longitudinal studies is in understanding how change comes about, how much change occurs, and how the change process differs across individuals." However, there are multiple data sets that provide longitudinal survey data. The G.R.E.A.T. data are particularly appropriate for this study for two main reasons: 1) they contain several variables of interest and 2) the data are recently collected. While these data were collected as part of a larger project, many of the measures can be used to examine certain theoretical models, such as social learning theory. For instance, these data include measures of both prosocial and antisocial peer behavior as well as individual attitudes regarding delinquency and commitment to school.

Furthermore, these data also include variables that allow this dissertation to accurately control for factors that have been shown to affect associations with peers and individual attitudes (e.g., parental monitoring, impulsivity, delinquency, and perceptions of community disorder). In addition, while some prior research makes use of data from the 1970s and 1980s to examine the effects of peer behavior (see Haynie, 2002; Haynie and Payne, 2006; McGloin, 2009 for notable exceptions), the G.R.E.A.T. data are a very recently collected data source (e.g., first wave collected in 2006).

Figure One: Schematic Diagrams of Research Questions



CHAPTER THREE: METHODOLOGY

There is a multitude of prior research on the effects of the behavior of a youth's peers on his/her attitudes and behaviors; however, prior research has failed to examine the importance of peer behavior on individual attitudes. This dissertation seeks to explore the relationship between peer behavior and a youth's own attitudes in the context of both social learning and cognitive dissonance theories in three main ways: 1) examining the direct and processual relationships, 2) examining the effects of associations with both prosocial and antisocial peers, and 3) examining how change in the peer group predicts a change in individual attitudes (and vice versa). In order to address these issues this study uses data from the National Evaluation of the Gang Resistance Education and Training (G.R.E.A.T.) program. This is a multi-site, longitudinal self-report study of youth.

The National Evaluation of G.R.E.A.T.

The Gang Resistance Education and Training (G.R.E.A.T.) program is a law enforcement officer-taught gang prevention program targeted at middle school youth. The program has two primary goals (1) to prevent gang membership and delinquent behavior and (2) to facilitate a positive relationship between law enforcement and youth (Esbensen et al., 2011). This program was originally developed in 1991 by Phoenix area law enforcement agencies and was quickly implemented across the country. Due to the results of an earlier National Evaluation of G.R.E.A.T. (Esbensen, Osgood, Taylor, Peterson, and Freng, 2001), the curriculum was first revised and then fully implemented in 2003 (Esbensen et al., 2011). The revised G.R.E.A.T. curriculum consists of 13 lessons (versus 9 in the original curriculum) focusing on the life skills (e.g., conflict

resolution, anger management, and refusal skills) deemed necessary to prevent delinquency in general and gang membership specifically. A process and outcome evaluation of the revised curriculum began in 2006 as part of a grant awarded to the University of Missouri-St. Louis by the National Institute of Justice. While the focus of this dissertation is on the student surveys, the evaluation also included several additional components: observations of G.R.E.A.T. and non-G.R.E.A.T. classrooms, teacher and law enforcement surveys, interviews with G.R.E.A.T. officers and supervisors, as well as observations of G.R.E.A.T. Officer Training (G.O.T.) and G.R.E.A.T. Families sessions.

In terms of the student surveys, the evaluation design is a randomized field trial with pre- and post-test examinations in the first year and four annual follow-ups. The pre-test (Wave 1) data were collected in the Fall of 2006 and 2007.[5] The post-test (Wave 2) was given shortly after the completion of the G.R.E.A.T. program (Spring 2007 and 2008) with the year-one follow-up (Wave 3) conducted in the Fall of 2007 and 2008. Data for Wave Four were collected in the Fall of 2008 and 2009. Cities were chosen to participate in the National Evaluation based on the existence of an established G.R.E.A.T. program, geographic and demographic diversity, and presence of gang activity (Esbensen et al., 2011). The final seven sample sites represent a wide range of cities from the east to the west coast and include: Albuquerque, New Mexico; Greeley, Colorado; Nashville, Tennessee; Philadelphia, Pennsylvania; Portland, Oregon; Chicago, Illinois; and a Dallas/Fort Worth, Texas area location. Four to six schools within each of these seven cities were purposively selected to represent the student demographic characteristics of the overall district. Within each of the 31 participating schools,

[5]Due to a disproportionate under-representation of African-American youth in Chicago schools obtained in 2006, two additional schools were added in the 2007-2008 school year (Esbensen et al., 2011).

classrooms were randomly selected to receive G.R.E.A.T.: 102 classrooms received the program and 93 served as controls (Esbensen et al., 2011).

All students in the selected classrooms were eligible to take part in the evaluation (N = 4,905). Due to the special nature of a juvenile sample (e.g., under the age of 18) active rather than passive parental consent was required for youth to participate in the evaluation. In the active parental consent process, the child's parent must specify in writing that his/her child be included in the study. In the passive parental consent process a parent must specify that his/her child be *excluded* from the study. After a thorough active parental consent process, approximately 89 percent (N = 4,372) of youth returned a consent form and 78 percent (N = 3,820) were given permission by a parent or guardian to participate in the evaluation (Esbensen et al., 2011).

Of the youths given permission by their parents to participate in the study (N = 3,820), 98.3 percent completed the pre-test (N = 3,756). In terms of attrition, the second wave of data collection yielded a high completion rate of 94.6 percent (N = 3,614). Data collection efforts at Wave Three and Wave Four yielded completion rates of 87.3 percent (N = 3,334) and 82.7 percent (N = 3,161) respectively. This level of attrition is common in panel studies (Esbensen, Miller, Taylor, He, and Freng, 1999; Thornberry, Bjerregaard and Miles, 1993) and the retention rates presented are exceptional given the student mobility within each city. As mentioned, the evaluation consisted of 31 original schools; however, as of Wave Four the research team was surveying in 219 schools. Given this amount of mobility and the fact that the modal number of students per school was one, the retention rates above should be considered exceptionally high. Mobility between

schools is one of the major causes of attrition and a considerable amount of time, effort, and money was put forth to obtain these retention rates.

Sample Description

The G.R.E.A.T. data consist of a sample of 3,820 youth and is slightly more female (50.3%) and has a large number of Hispanic youth (36.5%) followed by white youth (26.5%) and black youth (17.9%). The average age of the sample at Wave One was between l1 and 12 years of age. The current study makes use of data from Waves One, Three, and Four of the evaluation. Wave Two was excluded from the analyses because of the shorter time period between data collection for the pretest (Wave 1) and posttest (Wave 2). There was approximately a one-year difference between data collected at Waves One, Three, and Four, but only a three to four month difference from pretest to posttest. The majority (84%) of youth were in 6^{th} grade at Wave One, 7^{th} at Wave Three, and 8^{th} at Wave Four.[6]

Youth who did not complete all three waves were excluded from the analysis sample (N = 824). In addition to those cases lost through attrition an additional 491 respondents were deleted listwise due to missing data on the key variables. This led to a final analysis sample of 2,505 youth. Table One (below) compares the analysis and missing data samples for all the variables that will be included in the analyses. As shown, there are multiple differences across the missing data and analysis samples on demographics as well as key variables. In general, youth excluded for missing information or attrition were more antisocial and older than youth in the analysis sample.

[6]Three schools in Chicago, IL and two schools in Albuquerque, NM were in 7^{th} grade at Wave One (16% of the full sample). These youth transitioned from middle to high school from Time Two (or Wave Three) to Time Three (or Wave Four). All analyses were examined whilst controlling for these youth. However, the inclusion of this variable did not change the substantive results and was left out of the final analyses.

For example, these youth had higher levels of antisocial attitudes as well as more delinquent friends. These findings are consistent with prior research, which typically finds that higher risk youth tend to drop out of longitudinal samples (Esbensen et al., 1999; Thornberry, Bjerregaard and Miles, 1993). However, these differences do affect the generalizability of the sample as well as bias the parameter estimates. Therefore, the findings may not fully represent middle school youth as well as underestimate the presence of antisocial attitudes in this sample and overestimate the prosocial attitudes.

Table 1: Missing Data Analysis

	Full Sample %/Mean (S.D.)	Analysis Sample %/Mean (S.D.)	Deletion Sample %/Mean (S.D.)
Sample Size	3820	2505	1215
Percent of Full Sample (%)	—	65.8	34.4
Female (%)	50.3	50.8	49.0
Race (%)*			
White	26.5	28.9	21.7
Black	17.6	15.6	21.6
Hispanic	37.9	39.5	38.0
Other	18.0	15.9	18.8
Age*	11.48 (0.71)	11.45 (0.70)	11.53 (0.73)
Antisocial Attitudes*	2.48 (0.82)	2.43 (0.81)	2.58 (0.82)
Prosocial Attitudes*	3.92 (0.70)	3.94 (0.68)	3.87 (0.72)
Antisocial Peers*	1.30 (0.54)	1.27 (0.51)	1.36 (0.60)
Prosocial Peers*	3.42 (0.97)	3.46 (0.97)	3.35 (0.97)
Parental Monitoring*	4.06 (0.73)	4.09 (0.72)	4.01 (0.76)
Impulsivity*	2.97 (0.81)	2.95 (0.81)	3.02 (0.83)
Community Disorder*	1.82 (0.64)	1.80 (0.63)	1.87 (0.65)
Delinquency*	2.78 (3.82)	2.35 (3.52)	3.60 (4.23)

*Significant differences across analysis and deletion samples based on chi-square tests and ANOVA analyses ($p<0.05$).

The problems surrounding attrition and missing data, often referred to as differential response, are just one of the limitations of longitudinal self-report data on crime and delinquency. In addition, self-report data are also subject to differential validity, testing effects, and maturational effects. First, differential validity is often discussed in relation to self-report data, in general, and occurs when respondents misrepresent themselves in terms of attitudes and behaviors (Hindelang, Hirschi, and

Weis, 1979; Paulhus and John, 1998). For example, a respondent who reports higher or lower levels of delinquency than s/he actually participated in can affect the validity of self-report studies. This is specifically a problem when it is correlated with certain characteristics (e.g., race, gender, or delinquents). However, it is arguably less likely that respondents will lie on attitudinal measures because they are less incriminating (Huizinga and Elliott, 1986). Despite the problems surrounding youth who misrepresent themselves, it is also possible that youth may misunderstand the question as well as under or over report behaviors (Lauritsen, 1998; 1999). Next, testing effects or maturational effects can also be an issue in longitudinal self-report studies. For instance, the validity of a study can be affected by a respondent who has become more sensitized to the attitudes and behaviors being measured over time (Menard, 2002) or the meaning of certain survey items may change as the respondents' age (Lauritsen, 1998, 1999; Schwarz, 1999). When examining the age-crime curve in the National Youth Survey data, Lauritsen (1998) found that self-reported involvement in delinquency decreased over time regardless of age at first interview. She attributes this to testing or maturational effects and argues that measuring change requires that the outcome variable retains the same meaning across all time points (Lauritsen, 1998). However, Raudenbush and Chan (1992) found that this was not a problem when examining delinquent attitudes using the National Youth Survey. Regardless, the use of self-report data is necessary when examining attitudes; therefore, it is likely that these issues will affect the reliability and validity of the results presented in this dissertation. For example, youths' interpretations of the attitudinal variables (e.g., content validity) used in this study may vary over time, which could lead to inaccurate measurements of change. Therefore, it is possible that the

study could be measuring a change in the youths' interpretations of the attitudinal measures, rather than an actual change in youth attitudes over time.

Variable Creation

In order to address the research questions, this study will examine both prosocial and antisocial measures of attitudes and peer behavior. In addition, this study will control for items that may affect attitudes. Particularly, this study will control for parental monitoring, impulsivity, perceptions of community disorder, and delinquency. The following section provides a discussion of the variables used in the analyses as well as a description of the methods used to create these variables. Exact question wordings and factor scores for all the scale variables, however, are listed in Appendix A.

Prior research has found that peers can influence both prosocial and antisocial attitudes and behaviors (Ryan, 2001; Vitaro, Brendgen, and Tremblay, 2000) and that peer groups can vary in their attitudes and behaviors (Brown, 1990; Steinberg and Monahan, 2007). Therefore, it is important to examine how peer behavior can affect both delinquent and non-delinquent attitudes. In addition, it is likely that attitudes and changes in attitudes can affect involvement with prosocial and antisocial peers. Therefore, in this dissertation, both individual attitudes and peer behavior act as both dependent and independent variables.

Prosocial and Antisocial Attitudes

Social learning theory identifies neutralizations as a form of delinquent or antisocial attitudes (Akers, 1998). This theory argues that neutralizing definitions are those that favor law violation and antisocial norms because they justify or excuse them. These acts can be viewed by the youth as undesirable, but justifiable in certain situations.

For example, stealing is justified if the victim is rich (e.g., stores make so much money stealing will not affect them). Furthermore, assault is deemed justifiable if threats are made against a youth's family or a youth is protecting his/her rights. The first variable, antisocial attitudes, is a composite measure of neutralizations for theft and assault. While these two types of neutralizations can arguably be kept separate, they both fall under the heading of delinquent attitudes. For this reason, as well as for parsimony, theft and assault neutralizations are combined in these analyses. Youth were asked how much they agreed or disagreed with six statements regarding neutralizations for theft and assault. The response categories were on a 5-point Likert scale with higher scores representing more antisocial attitudes. The scale score reflects the mean of the six items for each individual. This variable creation strategy was repeated for antisocial attitudes at Times One ($\alpha = 0.81$), Two ($\alpha = 0.85$), and Three ($\alpha = 0.86$). At Time One, youth reported a score of 2.43 on the delinquent attitudes scale with a standard deviation of 0.81. This indicates that youth are opposed to or neutral on neutralizations for theft and assault. Over time youth did not report that they viewed neutralization favorably; however, they did become less opposed to these neutralizations at Time Two (Mean = 2.68; S.D. = 0.89) and Time Three (Mean = 2.69; S.D. = 0.90). In terms of cognitive dissonance theory, these changes could indicate that youth are adding constant cognitions as a way of reducing dissonance. Paired sample t-tests shown in Table Two indicate that antisocial attitudes increased significantly from Time One to Time Two, but not from Time Two to Time Three.[7]

[7] Based on this, analyses involving antisocial attitudes at Time Three (e.g., research questions one and two) should be interpreted with this finding in mind.

While research has shown that peers are capable of influencing youth in a variety of prosocial ways (e.g., not to do drugs, remain a virgin, etc), many have found that a youth's peer group can have a particularly strong effect on school-related variables (e.g., getting good grades) (Berndt, 1979; Brown, Clasen, and Eicher, 1986; Conger, 1976; Mounts and Steinberg, 1995; Ryan, 2001; Steinberg and Monahan, 2007; Vitaro, Brendgen, and Tremblay, 2000). Therefore, this study makes use of seven items gauging school commitment to measure prosocial attitudes. School commitment was measured by asking youth how much they agreed or disagreed with seven items regarding the importance of school. Responses were scored on a 5-point Likert scale with higher scores indicating stronger commitment to school. Similar to the neutralization scale, the prosocial attitudes scale was created from the mean of the seven questions for each youth. Again, this strategy was repeated for prosocial attitudes at Times One ($\alpha = 0.77$), Two ($\alpha = 0.83$), and Three ($\alpha = 0.81$). Youth reported neutral to positive attitudes toward school at Time One (Mean = 3.94; S.D. = 0.68), Time Two (Mean = 3.70; S.D. = 0.76), and Time Three (Mean = 3.65; S.D. = 0.73). While the strength of the positive attitudes toward school was significantly reduced over time, youth in the sample did not, on average, report negative attitudes regarding school.

Prosocial and Antisocial Peers

As mentioned, not all peer groups are completely prosocial or completely antisocial and peers are capable of influencing all types of attitudes and behaviors. Also, prior literature (Haynie, 2002) has found that the ratio of prosocial to delinquent peers affects delinquent involvement. Therefore, this study the effects of both antisocial and prosocial peers as well as the ratio of prosocial to antisocial peers on both prosocial and

antisocial attitudes. First, the proportion of delinquent peers in a youth's peer group was measured using seven items asking how many of his/her friends had participated in various deviant acts ranging from skipping school to being in a gang. The responses to these questions were scored on a 5-point scale ranging from "none of them" to "all of them." The scale score reflects the mean of the seven items for each individual at Times One ($\alpha = 0.86$), Two ($\alpha = 0.90$), and Three ($\alpha = 0.89$). At Time One, youth reported that none to few of their friends participated in the seven delinquent acts (Mean = 1.27; S.D. = 0.51). The proportion of delinquent peers significantly increased at both Time Two (Mean = 1.42; S.D. = 0.65) and Time Three (Mean = 1.52; S.D. = 0.69), but still remained in the same range (e.g., few delinquent peers).

Next, the analyses include a measure of the proportion of the youth's peers who engage in prosocial behavior. For example, how many of the youth's friends had been thought of as good students or been generally honest and told the truth. This scale score reflects the mean of the four items for each individual. Similar to the antisocial peer scale, the responses ranged from "none of them" to "all of them" and was measured at Times One ($\alpha = 0.83$), Two ($\alpha = 0.88$), and Three ($\alpha = 0.88$). At Time One, youth reported a score of 3.46 on the prosocial peers scale with a standard deviation of 0.97. This indicates that youth reported that over half of their peers participated in prosocial behavior. Youth experienced a significant decrease in the proportion of prosocial peers at Time Two (Mean = 3.37; S.D. = 0.99) and a subsequent significant increase at Time Three (Mean = 3.44; S.D. = 0.94). The increase and subsequent decrease is somewhat surprising given the increase in antisocial peers over the same time period and could be

representative of possible testing effects, discussed above, or differential attrition of youth with fewer prosocial peers.

In order to create a ratio of prosocial to delinquent peers, the prosocial peer scale was divided by the antisocial peer scale. This resulted in ratios ranging from 0.2 (all/mostly delinquent peer group) to 5.0 (all prosocial peer group). The vast majority of youth belonged to mostly prosocial peer groups (e.g., ratio greater than one) at Time One (94.6%), Time Two (90.4%), and Time Three (89.5%). Similar to the measure of the proportion of antisocial peers, youth experienced a decline in the ratio of prosocial to antisocial peers across time. However, youth reported a majority prosocial peer group (e.g., ratio greater than one) at Times One (Mean = 3.05; S.D. = 1.23), Two (Mean = 2.79; S.D. = 1.23), and Three (Mean = 2.69; S.D. = 1.26). However, the prosocial nature of the peer group did significantly decrease over time.

It is important to discuss two caveats in the measurement of the above variables: 1) these are measures of peer behavior rather than peer attitude and 2) these variables measure respondent's perceptions of peer behavior. First, theory and prior research typically examine delinquent/prosocial peers in the context of the behavior rather than the attitudes of peers. Measures of peer behavior have been shown to strongly predict a youth's own *behavior*; however, the focus of this paper is on the *attitudes* of these youth. While looking at the relationships between peer behavior, peer attitudes, and individual attitudes and behaviors contemporaneously, Warr and Stafford (1991) have shown that peer attitudes are correlated with a youth's own attitudes, but they also show that peer behavior affects these attitudes as well. Furthermore, friends' attitudes have a stronger effect on individual attitudes than friends' behavior; however, the correlation between

friends' behavior and individual attitudes was still high. It would be ideal to have measures of both peers' attitudes and peers' behavior; however, this study is only able to focus on the effects of peer prosocial and antisocial behavior. It is likely that the relationship between peer behavior and individual attitudes would hold if examining peer attitudes rather than behavior. Warr and Stafford (1991) find that the strongest correlations occur between peer behavior and individual behavior as well as between peer attitudes and individual attitudes. Weaker correlations are found for the relationship between peer behavior and individual attitudes; therefore, it is likely that the results presented in this dissertation will be underestimated due to the use of peer behavior to predict attitudes.

The second caveat is the limitation presented by respondents' perceptions of peer behavior. Typically, prior research measures delinquent groups by asking the respondent to report on the offending of his/her peers. However, some researchers argue that this measure is inaccurate due to the fact that youth are simply projecting their own delinquent levels onto their peers (Gottfredson and Hirschi, 1990; Ryan, 2001). This projection of one's own attitudes and behaviors onto his/her peers in self-report research has been discussed extensively in the literature (Jussim and Osgood, 1989; Matsueda and Anderson, 1998; Warr, 1993b; Zhang and Messner, 2000). For instance, Matsueda and Anderson (1998) found a slight projection effect when examining the relationship between delinquent peers and delinquency. Typically, the correlation between peer delinquency and an individual's own delinquency is smaller when peers report on their own behavior. However, research using peer reports of his/her own delinquency to predict individual behavior has consistently found a positive correlation between peer

behavior and individual delinquency (Aseltine, 1995; Haynie, 2001; Kandel, 1978a). This suggests that peer delinquency remains an important predictor of delinquent behavior. However, some work suggests that the projection effect has caused a vast over-representation of the relationship between peer behavior and delinquency and has resulted in down playing other important variables (Haynie and Osgood, 2005; Kandel, 1996). This dissertation makes use of youth's perceptions of peer behavior, which based on the above research is not as accurate of a measure of peer behavior as peer self-report. However, this dissertation argues that it may be youth's *perceptions* of their peer's behavior that is the most salient. For example, if youth act in accordance with how they view their peers then how their peers *actually* behave is arguably less important than how youth *perceive* their peers to behavior. Furthermore, perceptions of the peer group may have a particularly salient effect on a youth's attitudes. Heimer and Matsueda (1994) argued that youth who view their peer groups as conventional or prosocial are likely to also believe that their peer groups would not promote delinquency, thus developing attitudes against delinquency. On the other hand, youth who believe that they are part of a delinquent group may adopt rationalizations for this type of behavior. Based on this, and the fact that peer delinquency is not too highly correlated with delinquent attitudes in this sample, it is likely that youths' perception of their peers' behavior still plays a significant role when explaining attitudes. Overall though, it is important to be aware of possible over-estimation of the relationship between peer behavior and attitudes.

Control Variables

As discussed above, this study will control for factors that may affect the relationship between peer behavior and individual attitudes. Prior research has shown

that parental control and supervision can have an effect on peer associations (Hirschi, 1969; Warr, 1993a). Highly supervised youth might be more likely to associate with prosocial peers and hold fewer antisocial attitudes. In order to measure parental monitoring, respondents were asked how much they agreed or disagreed with four statements measuring perceptions of parenting. Responses were scored on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." The scale score reflects the mean of the four items for each individual, with higher scores indicating stronger parental monitoring (Time 1: $\alpha = 0.68$; Time 2: $\alpha = 0.77$; Time 3: $\alpha = 0.80$). Levels of parental monitoring varied over time with youth experiencing a significant increase from Time One (Mean = 4.09; S.D. = 0.72) to Time Two (Mean = 4.14; S.D. = 0.75) and a subsequent significant decrease at Time Three (Mean = 4.04; S.D. = 0.80). Overall, youth reported consistently high levels of parental monitoring over time.

Gottfredson and Hirschi (1990) argue that impulsive individuals tend to spend more time with their friends and select into certain peer groups; therefore, it is expected to influence the proportion of prosocial and antisocial peers, changes in the peer group, as well as attitudes and attitudinal changes. Impulsivity consists of four items tapping spontaneous characteristics. The response categories were on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." The scale score reflects the mean of the four items for each individual and ranged from one to five, with higher values indicating higher levels of impulsivity (Time 1: $\alpha = 0.68$; Time 2: $\alpha = 0.69$; Time 3: $\alpha = 0.72$). At Time One, youth reported a mean of 2.95 with a standard deviation of 0.81 on impulsivity. This indicates that, on average, youth reported low to average levels of impulsivity. Levels of impulsivity significantly decreased from Time One to Time Two

(Mean = 2.77; S.D. = 0.83) and from Time Two to Time Three (Mean = 2.69; S.D. = 0.81).

Neighborhood context has been shown to have an effect on both prosocial and antisocial attitudes (Anderson, 1999). In addition, peer groups are not formed in a vacuum and research shows that where a youth lives can affect his/her peer group (Matsueda and Anderson, 1998). To account for these effects, this study controls for youths' perceptions of disorder in their community. Community disorder is a six item measure asking respondents about the level of disorder in their community. Responses ranged from "not a problem" to "a big problem" and the scale score reflects the mean of the responses for each individual (Time 1: $\alpha = 0.87$; Time 2: $\alpha = 0.88$; Time 3: $\alpha = 0.87$). Youth reported a mean of 1.80 with a standard deviation of 0.63 on perceptions of community disorder at Time One. This indicates that youth held positive to neutral perceptions of their community. Perceptions of disorder in the community did significantly decrease at Time Two (Mean = 1.68; S.D. = 0.60) and Time Three (Mean = 1.60; S.D. = 0.56).

Since prior research shows that peer behavior is correlated with individual behavior and that individual attitudes are able to predict individual behavior, not controlling for behavior (in the form of delinquency) will bias estimates of peer behavior on individual attitudes. Therefore, this study controls for a youth's own delinquent behavior. The delinquency measure consists of fourteen delinquent acts that included both minor offenses (e.g., skipping school, theft and vandalism) as well as more serious acts (e.g., robbery, aggravated assault and gang fights). Youth were asked how many times they had participated in each delinquent act in the past six months. The responses

ranged from zero to more than ten times and were capped at the 90th percentile. This resulted in a range of zero to ten for the delinquency measure. At Time One, youth participated in an average of 2.35 delinquent acts with a standard deviation of 3.52. Delinquency significantly increased over time with youth being involved in 3.27 delinquent acts at Time Two (SD = 3.93) and 3.56 at Time Three (SD= 4.05).

Table 2: Descriptive Information for Proposed Variables

	Time 1	Time 2	Time 3	Change Score T1 to T2
Key Variables				
Antisocial Attitudes[a]	2.43 (0.81)	2.68 (0.89)	2.69 (0.90)	0.24 (0.80)
Prosocial Attitudes[a, b]	3.94 (0.68)	3.70 (0.76)	3.65 (0.73)	-0.25 (0.71)
Delinquent Peers[a, b]	1.27 (0.51)	1.42 (0.65)	1.52 (0.69)	0.15 (0.63)
Prosocial Peers[a, b]	3.46 (0.97)	3.37 (0.99)	3.44 (0.94)	-0.09 (1.01)
Prosocial:Antisocial Ratio[a, b]	3.05 (1.23)	2.79 (1.23)	2.69 (1.26)	-0.25 (1.19)
Control Variables				
Parental Monitoring[a, b]	4.09 (0.72)	4.14 (0.75)	4.04 (0.80)	0.06 (0.82)
Impulsivity[a, b]	2.95 (0.81)	2.77 (0.83)	2.69 (0.81)	-0.18 (0.92)
Community Disorder[a, b]	1.80 (0.63)	1.68 (0.60)	1.60 (0.56)	-0.12 (0.59)
Delinquency[a, b]	2.35 (3.52)	3.27 (3.93)	3.56 (4.05)	0.92 (3.08)
Age	11.45 (0.70)			
Sex (Female)	50.8 %			
White	28.9 %			
Black	15.6 %			
Hispanic	39.5 %			
Other	15.9 %			
G.R.E.A.T. Program	53.5 %			

[a]Significantly different from Time 1 to Time 2 (Paired Sample T-test, $p<0.05$)
[b]Significantly different from Time 2 to Time 3 (Paired Sample T-test, $p<0.05$)

The analyses also controlled four demographic variables: sex, race/ethnicity, age, and involvement in the G.R.E.A.T. program. The sex distribution of the respondents was almost even, with females making up 50.8 percent of the sample. Race/ethnicity was dummy coded into white (28.9%), black (15.6%), Hispanic (39.5%), and other (15.9%). The other category included biracial youth as well as Native American and Asian youth. The sample was approximately 11.5 years of age at wave one. Finally, a little over half

of the respondents participated in the program (53.5%), with the other half being part of the control group.

Description of Multivariate Models

The section discusses the two main techniques used to examine the research question. It is important to note that bivariate relationships were examined prior to answering the research questions, but the techniques surrounding those analyses will be discussed in the results section.

Random Effects Models

Random-effects regression techniques were used to answer all research questions with the exception of the question inquiring about the processual relationship between peer behavior and individual attitudes across all three waves (i.e., research question 2). The research design of the G.R.E.A.T. evaluation called for random assignment by classroom of the G.R.E.A.T. program. Due to this, youth in the data are clustered within 31 different schools. Individual observations that are pulled from the same environment (e.g., schools) may have correlated error terms. This violates the ordinary least squares regression assumption of independent observations. In order for the error terms to be uncorrelated, each observation must be independent of the other observations, which can be a problem when multiple observations are collected within the same school. Violation of this assumption typically leads to invalid standard errors (Berry, 1993; Rabe-Hesketh & Skrondal, 2008). Random-effects models are able to adjust for the clustered nature of the data resulting in more accurate standard errors. These models estimate separate regression equations for each school. The basic form of the random effects model is:

$$y_{ij} = \alpha + \beta x_{ij} + \upsilon_i + \varepsilon_{ij}$$

In this equation, y_{ij} equals the observed dependent variable (e.g., attitudes or peer behavior) for individual *i* in school *j*, α represents the intercept, and βx_{ij} symbolizes the regression coefficient for individual *i* in school *j*. The residual is made up of both υ_i and ε_{ij}. The variances in these error terms make up the within and between person error variances (Rabe-Hesketh & Skrondal, 2008). Regression coefficients produced from this equation are interpreted in the same manner as ordinary least squares regression coefficients. It is worthwhile to stress that likelihood-ratio tests determined that random effects models are needed to control for the clustered nature of the data; however, no multilevel hypotheses will be examined in this dissertation.

Path Models

Research question two examines the processual relationship between peer behavior and attitudes over time. In order to answer this research question the dissertation makes use of path analysis in Amos 17.0. By using path analysis, this study is able to more appropriately examine the processual relationship between peers and attitudes across three time periods. Using observed variables, this type of analysis estimates multiple regression equations to discern direct, indirect, as well as cross-lagged effects. A single ordinary least squares regression is only able to examine recursive models (e.g., not cross-lagged effects) and only direct effects. In addition, path analysis is able to test whether or not the proposed model fits the data.

Model fit is determined via the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and the root mean square error of approximation (RMSEA). Hu and Bentler (1995) describe the GFI and AGFI as absolute fit indices in that they compare the hypothesized model with no model at all. The GFI is a measure of the relative amount of

variance and covariance in the data that is explained by the hypothesized model (Bryne, 2010). The AGFI, however, goes beyond this by taking into account the degrees of freedom, which addresses the issue of parsimony. In general, these fit indices range from zero to one, with values close to one indicating a good fit (Bryne, 2010). The RMSEA is an important criterion for path modeling and can be thought of as answering the question: "how well would the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it were available (Browne and Cudeck, 1993:137-138)?" Similar to the AGFI, the RMSEA also takes into account the degrees of freedom. Good fit values are typically under 0.05. However, values as high as 0.08 to 0.10 are viewed as moderate (Browne and Cudeck, 1993).

Path models are able to provide information on the direct, indirect, total, and cross-lagged effects of the relationship between peer behavior and attitudes as well as determine how well the proposed model (discussed below) fits the data.[8] It is important to note that the path model produces unstandardized and standardized coefficients and both are interpreted in the same manner as OLS regression coefficients.

Analytic Plan

This section discusses the analytic plan followed in each research question. First, however, a discussion is warranted about how this dissertation makes comparisons between coefficients within and between models. Typically, comparing unstandardized coefficients (b) within the same model is appropriate if variables are on the same metric, as is the case in this dissertation. However, Menard (2002) argues that standardized coefficients (β) should be used for comparisons if the metric is arbitrary, such as a Likert

[8]The use of path analysis over structural equation modeling was deemed necessary due to the larger amount of scale variables in the data. The SEM model was saturated even when including only minimal controls.

scale (strongly agree to strongly disagree). Due to the fact that the all of the key variables adhere to a Likert scale or similar, relative size will be discussed in terms of standardized coefficients. As mentioned, the majority of the research questions use random-effects regression modeling in StataSE 10.0, which does not readily produce standardized coefficients for these equations. Therefore, z-scores were created for all scale variables and change scores prior to regression analysis in order to obtain standardized coefficients. These values are included in each of the results tables under standardized coefficients (β). Clogg tests were used to compare coefficients across models (Clogg, Petkova, & Haritou, 1995; Paternoster, Brame, Mazerolle, & Piquero, 1998). This technique tests for statistically significant differences between unstandardized coefficients across the separate models using the following equation:

$$z = \frac{\theta_1 - \theta_2}{\sqrt{(SE\theta_1^2 + SE\theta_2^2)}}$$

where θ is the regression coefficient and $SE\theta$ is the standard error of the regression coefficient. If the value is above the threshold ($z = 1.96$) one would reject the null hypothesis that $\theta_1 = \theta_2$. Clogg test results for each comparison will not be provided, but the z-value will be noted in parentheses when necessary.

Research Question One: What is the contemporaneous effect of peer behavior on individual attitudes? What is the contemporaneous effect of individual attitudes on associations with peers? What are the lagged relationships? The purpose of this research question is to understand the relationships (e.g., socialization versus selection) between peer behavior and a youth's own attitudes. In other words, is the relationship between peer behavior and individual attitudes stronger than the reverse? As mentioned

above, the mechanisms surrounding this relationship have implications for theory and the debate surrounding the causal mechanisms at work. According to Osgood (2010), causal interpretation can depend on the timing of events. For instance, if the change in attitudes occurs prior to association with peers then it is unlikely that the effects of the behavior of a youth's peers led to the change in attitudes. A lagged effect between association with peers and change in attitudes, however, is viewed as support for a causal relationship depending on the theoretical context (Osgood, 2010). Osgood (2010) proposed a method of determining causal mechanisms, which involves a three stage process:

(1) $X_t \rightarrow Y_t$ (contemporaneous)
(2) $X_{t-1} \rightarrow Y_t$ (lagged)
(3) $X_{t+1} \rightarrow Y_t$ (forward lag)

In the first equation, attitudes at Time Two will be regressed on peer behavior at Time Two to examine the contemporaneous relationship. Next, the lagged relationship will be examined by regressing attitudes at Time Two on peers at Time One. Finally, in the third equation the outcome precedes the event. Therefore, attitudes at Time Two are regressed on peer behavior at Time Three. If there is a stronger effect of peer behavior at Time Three (i.e., the forward lag) than peer behavior at Time One on attitudes at Time Two (i.e., the lagged effect), then the relationship is said to be spurious because the effect (e.g., attitudes) cannot precede the cause (e.g., association with peers) (Osgood, 2010). It is important to note that these equations will be examined when controlling for the effect of a number of relevant variables on attitudes. This three-stage strategy will be repeated for the reverse relationship as well (e.g., the effect of attitudes on associations with peers). This analytic strategy will be completed for both antisocial and prosocial peers

using random effects regression techniques. Overall, this strategy should allow for differentiation between socialization and selection effects.

Research Question Two: What is the effect of peer behavior on individual attitudes? What is the subsequent effect of individual attitudes on associations with peers? Path models will be used to examine the processual relationship between peer behavior and individual attitudes and make use of all three time points. The path model will be able to examine several direct, indirect, and cross-lagged effects while controlling for a number of relevant observed variables. Overall, it is hypothesized that associations with peers at Time One will affect attitudes at Time Two, which, in turn, affects associations with peers at Time Three. Similarly, attitudes at Time One will affect associations with peers at Time Two, which, in turn, affects attitudes at Time Three. These are the basic relationships being examined in the proposed models; however, the control variables play into the model as well. It is proposed that the control variables (e.g., parental monitoring, impulsivity, community disorder, and delinquency) will have an effect on each other at different time points as well as an effect on both peer behavior and attitudes at corresponding times. Overall, this model will help to demonstrate the causal relationships as well as determine if there are cross-lagged effects present. It is important to note that the proposed model will be examined for both prosocial and antisocial attitudes.

Research Question Three: What is the contemporaneous effect of both prosocial and antisocial peer behavior on individual attitudes? What is the lagged effect? This research question seeks to determine if prosocial or antisocial peer behavior has a stronger effect on individual attitudes. Using random effects regression techniques, this

study will examine the contemporaneous and lagged effects of prosocial and antisocial peers on attitudes. First, antisocial attitudes at Time One will be regressed on both prosocial and antisocial peers at Time One to determine the contemporaneous effects. Then, the lagged effects will be examined by regressing antisocial attitudes at Time Two on both peer measures at Time One. These analyses will be repeated for prosocial attitudes as well.

Research Question Four: What is the contemporaneous effect of the ratio of prosocial to antisocial peer behavior on individual attitudes? What is the lagged effect? The peer ratio variable is a measure of the proportion of prosocial peers compared to antisocial peers. Similar to above, random effects regression will be used to examine the effect of this variable on attitudes. First, contemporaneous effects will be examined by regressing attitudes at Time One on the ratio of prosocial to antisocial peers at Time One. Second, attitudes at Time Two will be regressed on the peer ratio variable at Time One to determine lagged effects. Again, these analyses will be repeated for both antisocial and prosocial attitudes.

Research Question Five: Is a change in the behavior of a youth's peer group able to predict a change in individual attitudes? Is a change in individual attitudes able to predict a change in the youth's peer group or a change in the behavior of a youth's peers? The purpose of this research question is to examine change. In order to do this, change scores were created for all scale variables (e.g., peers, attitudes, parental monitoring, impulsivity, community disorder, and delinquency) by subtracting variables at Time One from Time Two. The change score method is an appropriate way of measuring change, but is still subject to certain amount of debate (Allison, 1990;

Cronbach and Furrey, 1970; McGloin, 2009). Allison (1990) compared two methods to measuring change (e.g., regressor and change score models) and concluded that the change score model is more appropriate than the regressor model. The regressor model, which controls for the dependent variable at Time One, was found to produce inconsistent results due to under-adjustment of the prior differences at Time One (Allison, 1990). Overall, the change score method of measuring change from Time One to Time Two was deemed appropriate for this dissertation. Table Two presents the mean change scores for all scale variables. Overall, antisocial peers and attitudes increased from Time One to Time Two. Conversely, prosocial peers and attitudes decreased over time. In addition, Table Two shows that the change in the peer ratio variable is negative indicating that youths' peer groups became more antisocial over time.

Using random effects regression techniques and change scores, this dissertation will examine the effect of a change in peer group on a change in attitudes as well as the reverse. First, the change score measuring differences in attitudes from Time One to Time Two will be regressed on changes in associations with peers from Time One to Time Two. Then, the reverse will be examined to determine the effect of changes in attitudes on changes in the peer group. These equations will be examined for both prosocial and antisocial youth.

Research Question Six: Is a change in the ratio of prosocial to antisocial peer behavior able to predict a change in individual attitudes? The final research question seeks to determine whether or not a change in the ratio of prosocial to antisocial peers will produce a change in attitudes as well as the reverse effect. Similar to above, this will be accomplished through the use of random effects regression and change scores.

The dependent variables to be examined in the above analyses are either peer behavior or individual attitudes. Whether these variables are focusing on prosocial or antisocial peers and attitudes, they were measured using a Likert-type scale. While this type of variable could be considered count or ordered, the scales were created from the mean of the youths' responses to each question. This produced scales that included multiple values containing decimals and would no longer be considered count or ordered variables. Therefore, regression techniques appropriate for continuous variables were deemed acceptable for these variables as well. Change scores were created from these variables.

Overall, these research questions will help to better understand the relationship between peer behavior and individual attitudes. The majority of the analyses include only Time One and Time Two. Given that the youth are also in middle school from Time Two to Time Three and are only one year older, it is not expected that results will differ for Time Two to Time Three lagged effects. However, these effects will be examined and interesting results, when applicable, will be presented via footnote.

CHAPTER FOUR: RESULTS

Bivariate Analyses

Bivariate relationships were examined first to determine the nature of the relationship between changes in associations with peers and changes in attitudes. This was done by translating the change scores for the key measures into categorical variables. This allowed for a basic look at 1) the amount of change present in the sample and 2) the relationships between changes in the key variables. While categorizing the variables decreases variance in the measures, it allows for a unique look at the relationships between youth who experienced an increase, a decrease, or no change in proportion of prosocial or antisocial peer behavior and those who had an increase, decrease, or no change in prosocial or antisocial attitudes.

Change in Associations with Peers and Individual Attitudes

Before answering the research questions, the nature of change in this sample needs to be discussed. In order to do this, this dissertation first examined the percent change present in the sample on the key variables (see Table 3). While the information presented here is more limited than change scores, these values are presented for descriptive purposes only.

Table 3: Percent Change on Key Variables from Time One to Time Two

	Decrease	No Change	Increase
Antisocial Attitudes	32.9	9.7	57.3
Prosocial Attitudes	60.0	8.5	31.5
Antisocial Peers	22.3	34.5	43.3
Prosocial Peers	46.0	14.0	40.0
Prosocial:Antisocial Ratio	54.4	6.9	38.6

In terms of antisocial attitudes, the results show that the majority of youth (57.3%) increased their level of antisocial attitudes from Time One to Time Two. This

was expected from the mean of the change score for this time frame (see Table 2). Corresponding to the increase in delinquent attitudes from Time One to Time Two, 60 percent of youth experienced a decrease in prosocial attitudes during this time. Prosocial attitudes measure school commitment so this decrease could be due to changes that may occur as youth move through the middle school process. For instance, youth could be settling into middle school or perhaps dislike their teachers. Table Three shows that youth experienced some change in the peer group variables as well. The most change occurred in the ratio between prosocial and antisocial peers with approximately 54 percent of youth experiencing a decrease from Time One to Time Two. This indicates that youth's peer groups became more antisocial during this time period. Above all, youth experienced the least change in their proportion of delinquent peers at 34.5 percent. This is consistent with some prior research that argues that associations with delinquent youth are somewhat stable (Thornberry et al., 1993; Warr, 1993b).

Table Four compares changes in the peer group variables from Time One to Time Two to changes in antisocial and prosocial attitudes from Time One to Time Two. In terms of antisocial attitudes, approximately 69 percent of youth who experience an increase in associations with antisocial peers from Time One to Time Two also experienced an increase in antisocial attitudes during this time. In terms of the ratio of prosocial to antisocial peers, approximately 68 percent of youth who reported a decrease in the ratio also experienced an increase in delinquent attitudes from Time One to Time Two. These findings are expected based on prior research and social learning theory, which argues that delinquent peers are associated with delinquent attitudes. When examining prosocial peers, however, the results indicate that the majority of youth

experienced an increase in antisocial attitudes from Time One to Time Two regardless of whether or not they experienced an increase, decrease, or no change in prosocial peers. While this finding is not consistent with the hypotheses made in this dissertation, it is not entirely unexpected based on the age/crime curve. If adolescents become more delinquent over time, it is likely that correlates to delinquency (e.g., antisocial attitudes) would increase as well.

Table 4: Changes in the Associations with Peers (Time 1 to Time 2) by Changes in Individual Attitudes

	Antisocial Attitudes (T1 to T2)			Prosocial Attitudes (T1 to T2)		
	Decrease	No Change	Increase	Decrease	No Change	Increase
Delinquent Peers						
Decrease	46.6	10.6	42.8	50.4	7.3	42.3
No Change	37.0	11.5	51.6	53.9	10.1	36.0
Increase	22.7	7.9	69.4	69.7	7.9	22.3
Prosocial Peers						
Decrease	27.0	8.0	65.0	70.4	7.0	22.5
No Change	36.3	12.0	51.7	53.4	11.7	34.9
Increase	28.6	11.0	50.4	50.2	9.2	40.6
Prosocial:Antisocial Ratio						
Decrease	24.8	7.7	67.5	69.3	7.7	23.0
No Change	37.9	14.9	47.1	50.0	12.6	37.4
Increase	43.5	11.7	44.8	48.7	9.0	42.4

*Chi-square tests significant for all relationships ($p<0.05$)

Changes in prosocial attitudes point to similar relationships as those regarding antisocial attitudes. Approximately 70 percent of youth who experienced an increase in delinquent peers also reported a decrease in prosocial attitudes. Conversely, a decrease in prosocial peers resulted in an increase in prosocial attitudes for 70 percent of youth. In addition, a reduction in the ratio of prosocial to antisocial peers was associated with a decrease in prosocial attitudes (69%). These findings are consistent with prior research and social learning theory as well. Overall, this bivariate examination of the nature of change in this sample indicates that the relationships between changes in associations with peers and individual attitudes are consistent with theory and research.

Correlations between the Key Variables

In a second bivariate analysis, a correlation matrix was created to examine the relationship among the attitudinal variables, peer variables, and control variables at multiple waves (see Table 5). The analyses are able to demonstrate what variables are associated with prosocial and antisocial attitudes. These are correlations for all time points used in the analyses. The variable most correlated with antisocial attitudes at Time One is antisocial attitudes (r = 0.560) at Time Two and the ratio of prosocial to antisocial peers at Time One (r = -0.553). This indicates that current attitudes are the best predictor of later attitudes, which is consistent with prior research (Agnew, 1991b; Menard and Elliott, 1994; Paternoster, 1988; Thornberry et al., 1994). In addition, a decrease in the ratio of prosocial to antisocial peers (e.g., movement toward a more antisocial group) is associated with an increase in antisocial attitudes. A slightly different picture is told for attitudes at Time Two. Here the peer ratio at Time Two is more correlated with Time Two antisocial attitudes (r = -0.625), than prior antisocial attitudes (r = 0.560). At Time Three, these attitudes were best predicted by prior antisocial attitudes (r = 0.591) followed by the ratio of prosocial to antisocial peers at Time Three (r = -0.576). Similarly, in terms of prosocial attitudes, both prior attitudes and the peer ratio variables are the strongest correlates of current attitudes. These findings indicate that the ratio of prosocial to antisocial peers may be an important factor when examining both prosocial and antisocial attitudes; however, these findings do not control for the presence of other factors, which may affect attitudes (e.g., parental monitoring, impulsivity, community disorder, and demographic variables). It is important to note that both the proportions of delinquent peers as well as prosocial peers are significantly correlated with both

antisocial and prosocial attitudes and in the expected directions. The most interesting findings in the control variables come from the demographic variables. For example, the relationship between sex and association with delinquent peers decreases over time. At Time One ($r = -0.107$) and Time Two ($r = -0.086$) males associated with a significantly higher proportion of antisocial peers than females. However, by Time Three the difference between males and females on associations with antisocial peers was no longer significant. This indicates that, over time, males may not associate with more delinquent peers than females. This could be an artifact of the idea that as females experience puberty, they become more antisocial overall (Caspi et al., 1993).

Table 5: Correlation Matrix (Part 1)

	1	2	3	4	5	6	7	8	9	10	11
1. Antiatt1											
2. Antiatt2	0.560*										
3. Antiatt3	0.448*	0.591*									
4. Proatt1	-0.487*	-0.359*	-0.296*								
5. Proatt2	-0.314*	-0.510*	-0.413*	0.516*							
6. Proatt3	-0.210*	-0.347*	-0.428*	0.407*	0.598*						
7. Antipeer1	0.473*	0.321*	0.220*	-0.373*	-0.225*	-0.154*					
8. Antipeer2	0.384*	0.551*	0.372*	-0.305*	-0.410*	-0.275*	0.434*				
9. Antipeer3	0.326*	0.417*	0.509*	-0.295*	-0.375*	-0.383*	0.330*	0.585*			
10. Propeer1	-0.463*	-0.378*	-0.300*	0.430*	0.294*	0.218*	-0.428*	-0.331*	-0.280*		
11. Propeer2	-0.402*	-0.536*	-0.408*	0.372*	0.528*	0.358*	-0.316*	-0.491*	-0.402*	0.473*	
12. Propeer3	-0.311*	-0.387*	-0.462*	0.305*	0.396*	0.490*	-0.211*	-0.306*	-0.443*	0.375*	0.519*
13. Ratio1	-0.553*	-0.431*	-0.339*	0.471*	0.323*	0.231*	-0.668*	-0.413*	-0.344*	0.915*	0.503*
14. Ratio2	-0.462*	-0.625*	-0.472*	0.389*	0.550*	0.380*	-0.395*	-0.723*	-0.530*	0.490*	0.896*
15. Ratio3	-0.373*	-0.485*	-0.576*	0.336*	0.448*	0.503*	-0.297*	-0.481*	-0.756*	0.396*	0.558*
16. Parmon1	-0.250*	-0.208*	-0.157*	0.334*	0.183*	0.152*	-0.245*	-0.171*	-0.118*	0.316*	0.247*
17. Parmon2	-0.331*	-0.413*	-0.310*	0.333*	0.438*	0.300*	-0.238*	-0.360*	-0.288*	0.315*	0.434*
18. Parmon3	-0.244*	-0.306*	-0.333*	0.300*	0.350*	0.436*	-0.191*	-0.280*	-0.362*	0.271*	0.344*
19. Impulsv1	0.220*	0.150*	0.126*	-0.188*	-0.141*	-0.143*	0.130*	0.119*	0.113*	-0.173*	-0.142*
20. Impulsv2	0.270*	0.373*	0.274*	-0.303*	-0.387*	-0.292*	0.201*	0.265*	0.248*	-0.257*	-0.341*
21. Impulsv3	0.259*	0.290*	0.373*	-0.253*	-0.337*	-0.382*	0.151*	0.234*	0.337*	-0.231*	-0.298*
22. Comdis1	0.217*	0.160*	0.141*	-0.056*	-0.059*	-0.055*	0.188*	0.126*	0.107*	-0.207*	-0.195*
23. Comdis2	0.200*	0.211*	0.142*	-0.102*	-0.076*	-0.056*	0.185*	0.227*	0.154*	-0.210*	-0.220*
24. Comdis3	0.185*	0.172*	0.188*	-0.092*	-0.065*	-0.060*	0.161*	0.164*	0.218*	-0.175*	-0.188*
25. Delinq1	0.539*	0.405*	0.306*	-0.406*	-0.269*	-0.193*	0.484*	0.407*	0.342*	-0.398*	-0.345*
26. Delinq2	0.392*	0.587*	0.426*	-0.327*	-0.470*	-0.330*	0.344*	0.583*	0.471*	-0.320*	-0.477*
27. Delinq3	0.297*	0.419*	0.516*	-0.269*	-0.372*	-0.380*	0.220*	0.388*	0.582*	-0.248*	-0.351*
28. Age	0.267*	0.193*	0.103*	-0.184*	-0.086*	-0.039	0.258*	0.180*	0.181*	-0.208*	-0.157*
29. Sex	-0.201*	-0.183*	-0.182*	0.140*	0.108*	0.102*	-0.107*	-0.086*	-0.030	0.149*	0.109*
30. White	-0.268*	-0.267*	-0.231*	0.079*	0.107*	0.077*	-0.167*	-0.173*	-0.177*	0.228*	0.272*
31. Black	0.139*	0.085*	0.056*	0.071*	0.079*	0.078*	0.052*	0.027	-0.027	-0.081*	-0.067*
32. Hispanic	0.162*	0.202*	0.182*	-0.136*	-0.178*	-0.157*	0.127*	0.176*	0.191*	-0.173*	-0.211*
33. Other	-0.022	-0.022	-0.012	0.013	0.027	0.037	-0.014	-0.047*	-0.010	0.028	0.011

Table 5: Correlation Matrix (Part 2)

	12	13	14	15	16	17	18	19	20	21	22
1. Antiatt1											
2. Antiatt2											
3. Antiatt3											
4. Proatt1											
5. Proatt2											
6. Proatt3											
7. Antipeer1											
8. Antipeer2											
9. Antipeer3											
10. Propeer1											
11. Propeer2											
12. Propeer3											
13. Ratio1	0.389*										
14. Ratio2	0.520*	0.556*									
15. Ratio3	0.842*	0.446*	0.642*								
16. Parmon1	0.190*	0.328*	0.240*	0.179*							
17. Parmon2	0.325*	0.344*	0.444*	0.347*	0.390*						
18. Parmon3	0.413*	0.289*	0.366*	0.432*	0.292*	0.533*					
19. Impulsv1	-0.170*	-0.186*	-0.169*	-0.161*	-0.046	-0.111*	-0.092*				
20. Impulsv2	-0.297*	-0.288*	-0.375*	-0.328*	-0.198*	-0.240*	-0.200*	0.369*			
21. Impulsv3	-0.349*	-0.255*	-0.320*	-0.397*	-0.195*	-0.257*	-0.247*	0.316*	0.475*		
22. Comdis1	-0.186*	-0.257*	-0.207*	-0.186*	-0.142*	-0.140*	-0.091*	0.152*	0.188*	0.165*	
23. Comdis2	-0.178*	-0.241*	-0.260*	-0.210*	-0.157*	-0.174*	-0.103*	0.128*	0.225*	0.175*	0.533*
24. Comdis3	-0.200*	-0.020*	-0.219*	-0.244*	-0.122*	-0.144*	-0.099*	0.091*	0.186*	0.226*	0.463*
25. Delinq1	-0.254*	-0.500*	-0.418*	-0.336*	-0.203*	-0.279*	-0.228*	0.122*	0.222*	0.190*	0.154*
26. Delinq2	-0.366*	-0.395*	-0.612*	-0.492*	-0.163*	-0.352*	-0.272*	0.133*	0.309*	0.262*	0.121*
27. Delinq3	-0.417*	-0.295*	-0.444*	-0.582*	-0.129*	-0.278*	-0.316*	0.091*	0.251*	0.299*	0.133*
28. Age	-0.069*	-0.257*	-0.204*	-0.165*	-0.044*	-0.118*	-0.107*	0.039	0.081*	0.080*	0.056*
29. Sex	0.084*	0.166*	0.118*	0.071*	0.117*	0.136*	0.135*	-0.004	-0.043*	-0.027	0.013
30. White	0.236*	0.252*	0.293*	0.260*	0.136*	0.153*	0.127*	-0.148*	-0.161	-0.145*	-0.227*
31. Black	-0.063*	-0.097*	-0.062*	-0.033	-0.063*	-0.031	0.002	0.009	-0.026	-0.031	0.160*
32. Hispanic	-0.201*	-0.185*	-0.241*	-0.243*	-0.078*	-0.118*	-0.122*	0.146*	0.194	0.158*	0.098*
33. Other	0.039*	0.031	0.020	0.035	-0.001	-0.001	0.004	-0.021	-0.033	-0.001	-0.008

Table 5: Correlation Matrix (Part 3)

	23	24	25	26	27	28	29	30	31	32
1. Antiatt1										
2. Antiatt2										
3. Antiatt3										
4. Proatt1										
5. Proatt2										
6. Proatt3										
7. Antipeer1										
8. Antipeer2										
9. Antipeer3										
10. Propeer1										
11. Propeer2										
12. Propeer3										
13. Ratio1										
14. Ratio2										
15. Ratio3										
16. Parmon1										
17. Parmon2										
18. Parmon3										
19. Impulsv1										
20. Impulsv2										
21. Impulsv3										
22. Comdis1										
23. Comdis2										
24. Comdis3	0.602*									
25. Delinq1	0.151*	0.130*								
26. Delinq2	0.186*	0.151*	0.482*							
27. Delinq3	0.155*	0.164*	0.353*	0.537*						
28. Age	0.084*	0.069*	0.173*	0.164*	0.104*	-0083*				
29. Sex	-0.008	0.017	-0.103*	-0.103*	-0.060*	-0153*				
30. White	-0.209*	-0.184*	-0.167*	-0.184*	-0.131*	0.000	0.010			
31. Black	0.133*	0.123*	0.122*	-0.094*	0.045*	0.185*	-0.013	-0.275*		
32. Hispanic	0.109*	0.084*	0.067*	0.117*	-0.109*	-0.058*	-0.008	-0.515*	-0.348*	
33. Other	-0.019	-0.006	-0.004*	-0.021	-0.029	-0.083*	0.012	-0.278*	-0.187*	-0.352*

Multivariate Analyses

This section provides results for the random effects regression models and the path models addressing all the research questions. Due to the fact that this dissertation uses both peer behavior and individual attitudes (prosocial or antisocial) as dependent variables, the tables, whether in the title or content, will specify the dependent variable and whether it is prosocial or antisocial in nature.

Research Question One

Table 6: Random Effects Regression Results Examining the Relationships between Antisocial Peer Behavior and Antisocial Attitudes

	Model One		Model Two		Model Three	
	$Peers_2 \rightarrow Attitudes_2$		$Peers_1 \rightarrow Attitudes_2$		$Peers_3 \rightarrow Attitudes_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Antisocial Peers	0.330*	0.239	0.147*	0.083	0.215*	0.164
	(0.025)		(0.036)		(0.028)	
Parental Monitoring	-0.173*	-0.142	-0.088*	-0.071	-0.111*	-0.097
	(0.019)		(0.022)		(0.021)	
Impulsivity	0.162*	0.149	0.064*	0.057	0.115*	0.104
	(0.017)		(0.020)		(0.020)	
Community Disorder	0.008	0.006	0.050	0.035	0.045	0.028
	(0.023)		(0.026)		(0.028)	
Delinquency	0.069*	0.305	0.070*	0.273	0.047*	0.210
	(0.004)		(0.005)		(0.005)	
Age	0.038*	0.030	0.069*	0.054	0.057*	0.044
	(0.022)		(0.027)		(0.026)	
Black	0.232*		0.276*		0.346*	
	(0.045)		(0.054)		(0.052)	
Hispanic	0.212*		0.346*		0.273*	
	(0.036)		(0.043)		(0.042)	
Other	0.152*		0.171*		0.169*	
	(0.041)		(0.049)		(0.047)	
Sex	-0.175*		-0.213*		-0.244*	
	(0.026)		(0.031)		(0.030)	
GREAT-Program	-0.007		-0.036		-0.040	
	(0.026)		(0.031)		(0.030)	
R^2	0.489		0.259		0.313	
Wald Chi^2 (df)	2099.82 (11)*		676.77 (11)*		936.54 (11)*	

*p<0.05

The first research question seeks to examine the direct relationships between peer behavior and individual attitudes (e.g., socialization versus selection). Table Six

examines the effect of association with antisocial peers on antisocial attitudes (e.g., socialization). Model One examines the contemporaneous effects of this relationship. The model explained 49 percent of the variance in antisocial attitudes at Time Two. As expected, an increase in associations with antisocial peers is correlated with an increase in antisocial attitudes. When examining the lagged effects, there is a positive relationship between antisocial peer behavior at Time One and antisocial attitudes at Time Two. The forward lag, presented in Model Three, indicates that there is a relationship between the presence of antisocial peers at Time Three and antisocial attitudes at Time Two. In terms of what the findings suggest about causal ordering, the standardized coefficient for antisocial peers in Model Three ($b = 0.164$) is stronger in magnitude than that of Model Two ($\beta = 0.083$), but not significantly stronger ($z = -1.78$). Despite this, these results suggest that the effect of antisocial peer behavior on antisocial attitudes may be spurious because the outcome precedes the cause (Osgood, 2010).[9]

An examination of the reverse relationship also shows support for the selection perspective (see Table 7). Model One examines the contemporaneous effect and explains 43 percent of the variance in associations with antisocial peers. As expected, there is a positive correlation between antisocial attitudes and associations with antisocial peers. The lagged effect shows that an increase in antisocial attitudes is associated with an increase in associations with antisocial peers at Time Two. In addition, the forward lag shows that the presence of antisocial peers at Time Three is correlated with antisocial attitudes at Time Two. The effect of antisocial attitudes at Time One on antisocial peers at Time Two ($\beta = 0.171$) is stronger (although not significantly, $z = 1.29$) in magnitude

[9] It is important to note that Osgood (2010) only makes statements regarding the relative size of coefficients and does not mention that the differences should be statistically significant.

than the effect of antisocial attitudes at Time Three (β = 0.140). These findings do suggest, however, that there is a causal relationship between the presence of antisocial attitudes and associations with antisocial peers. This finding, in combination with the above results, which suggests that the effect of antisocial peers on later antisocial attitudes may be spurious, show support for the selection perspective. In other words, youth with antisocial attitudes are likely to be selecting into associations with antisocial peers.

Table 7: Random Effects Regression Results Examining the Relationship between Antisocial Attitudes and Antisocial Peer Behavior

	Model One		Model Two		Model Three	
	$Attitudes_2 \rightarrow Peers_2$		$Attitudes_1 \rightarrow Peers_2$		$Attitudes_3 \rightarrow Peers_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Antisocial Attitudes	0.191*	0.264	0.137*	0.171	0.102*	0.140
	(0.015)		(0.018)		(0.016)	
Parental Monitoring	-0.090*	-0.103	-0.048*	-0.054	-0.098*	-0.119
	(0.015)		(0.016)		(0.016)	
Impulsivity	-0.001	-0.002	0.012	0.015	0.037*	0.046
	(0.013)		(0.015)		(0.015)	
Community Disorder	0.102*	0.094	0.031	0.030	0.078*	0.067
	(0.018)		(0.019)		(0.021)	
Delinquency	0.060*	0.361	0.051*	0.274	0.036*	0.226
	(0.003)		(0.004)		(0.003)	
Age	0.031	0.033	0.042*	0.045	0.060*	0.065
	(0.017)		(0.020)		(0.020)	
Black	-0.027		0.032		0.107*	
	(0.034)		(0.041)		(0.040)	
Hispanic	0.022		0.116*		0.087*	
	(0.027)		(0.032)		(0.032)	
Other	-0.058		-0.025		-0.012	
	(0.031)		(0.036)		(0.036)	
Sex	0.026		-0.003		-0.024	
	(0.020)		(0.023)		(0.023)	
GREAT-Program	-0.029		-0.050*		-0.052*	
	(0.020)		(0.023)		(0.023)	
R^2	0.429		0.225		0.233	
Wald Chi^2 (df)	1692.37 (11)*		606.60 (11)*		649.61 (11)*	

*p<0.05

Table 8: Random Effects Regression Results Examining the Relationship between Prosocial Peer Behavior and Prosocial Attitudes

	Model One		Model Two		Model Three	
	$Peers_2 \rightarrow Attitudes_2$		$Peers_1 \rightarrow Attitudes_2$		$Peers_3 \rightarrow Attitudes_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Prosocial Peers	0.229*	0.298	0.135*	0.171	0.150*	0.186
	(0.015)		(0.017)		(0.017)	
Parental Monitoring	0.212*	0.205	0.085*	0.080	0.158*	0.162
	(0.018)		(0.021)		(0.019)	
Impulsivity	-0.171*	-0.185	-0.070*	-0.074	-0.167*	-0.177
	(0.015)		(0.018)		(0.018)	
Community Disorder	0.107*	0.084	0.016	0.013	0.054*	0.040
	(0.021)		(0.024)		(0.025)	
Delinquency	-0.045*	-0.231	-0.038*	-0.177	-0.036*	-0.191
	(0.003)		(0.004)		(0.004)	
Age	0.030	0.027	-0.002	-0.002	-0.000	-0.000
	(0.019)		(0.024)		(0.023)	
Black	0.255*		0.179*		0.150*	
	(0.040)		(0.050)		(0.046)	
Hispanic	0.013		-0.136*		-0.056	
	(0.032)		(0.039)		(0.037)	
Other	0.088*		0.016		0.030	
	(0.038)		(0.045)		(0.041)	
Sex	0.025		0.066*		0.070*	
	(0.023)		(0.029)		(0.026)	
GREAT-Program	-0.015		-0.009		-0.018	
	(0.023)		(0.028)		(0.026)	
R^2	0.428		0.151		0.278	
Wald Chi^2 (df)	1788.77 (11)*		383.83 (11)*		916.86 (11)*	

*p<0.05

While the results for the relationship between antisocial peers and attitudes indicate support for the selection perspective, it is possible that these results may be different when examining prosocial peers and attitudes. Table Eight examines the socialization perspective, or the effect of association with prosocial peers on school commitment (e.g., prosocial attitudes). Similar to above, 43 percent of the variance is explained in the contemporaneous model. The results of Model One indicate that an increase in associations with prosocial peers is correlated with an increase in prosocial attitudes. In addition, in the lagged model, the presence of prosocial peers at Time One was associated with increased prosocial attitudes at Time Two. Model Three indicates

that the presence of prosocial peers at Time Three is positively correlated with school commitment at Time Two. Also similar to above, the effect of the prosocial peers in the forward lag ($\beta = 0.186$) is somewhat higher than the lagged effect ($\beta = 0.171$), which suggests that the relationship is possibly spurious. However, similar to above, the forward lag is not significantly stronger than the lagged effect ($z = -0.62$).

Turning now to the reverse relationship (e.g., selection), Table Nine presents the results for the effect of prosocial attitudes on prosocial peers. The contemporaneous model indicates that prosocial attitudes are correlated with prosocial peers even when controlling for a variety of relevant factors. When comparing the lagged and forward effects, the results show that the effect of prosocial attitudes at Time One on prosocial peers at Time Two ($\beta = 0.228$) is significantly stronger than the effect of prosocial attitudes at Time Three on prosocial peers at Time Two ($\beta = 0.159$). Given that the analyses involving the socialization perspective indicates that the relationship may be spurious, it is likely that prosocial attitudes are better able to predict involvement with prosocial peers than the reverse.

To summarize, these results are able to speak somewhat to the causal ordering between both prosocial and antisocial peers and attitudes by using Osgood's (2010) three-stage strategy. Overall, the simultaneous and lagged results show that there is a relationship between peer behavior and individual attitudes. However, the three models combined show some support for the selection perspective over the socialization perspective for both prosocial and antisocial youth. In other words, the results indicate that youth may be self-selecting into peer groups. Given that no significant differences were found in the magnitudes of the coefficients, the results are not able to fully support

the causal mechanisms support by the selection perspective. Furthermore, Akers (1998) does not fully discount selection perspective in social learning theory. He argues that both socialization and selection are at work in the social learning process. In this process, associations with peers have an effect on attitudes, which, in turn, will have an effect on associations with peers. This process will be examined in the second research question using cross-lagged models; first, however, these models are able to provide some insight into the effect of the control variables on associations with peers and attitudes.

Table 9: Random Effects Regression Results Examining the Causal Ordering between Prosocial Attitudes and Prosocial Peer Behavior

	Model One		Model Two		Model Three	
	$Attitudes_2 \rightarrow Peers_2$		$Attitudes_1 \rightarrow Peers_2$		$Attitudes_3 \rightarrow Peers_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Prosocial Attitudes	0.392*	0.301	0.333*	0.228	0.215*	0.159
	(0.025)		(0.030)		(0.028)	
Parental Monitoring	0.225*	0.167	0.111*	0.081	0.188*	0.148
	(0.024)		(0.026)		(0.024)	
Impulsivity	-0.090*	-0.075	-0.030	-0.024	-0.124*	-0.101
	(0.021)		(0.022)		(0.023)	
Community Disorder	-0.120*	-0.073	-0.141*	-0.090	-0.123*	-0.069
	(0.027)		(0.030)		(0.032)	
Delinquency	-0.049*	-0.193	-0.048*	-0.169	-0.039*	-0.160
	(0.005)		(0.005)		(0.005)	
Age	-0.043*	-0.030	-0.043	-0.030	-0.054	-0.055
	(0.025)		(0.028)		(0.029)	
Black	-0.347*		-0.360*		-0.405*	
	(0.052)		(0.059)		(0.059)	
Hispanic	-0.286*		-0.416*		-0.333*	
	(0.041)		(0.046)		(0.047)	
Other	-0.214*		-0.242*		-0.237	
	(0.048)		(0.054)		(0.053)	
Sex	0.047		0.079*		0.099*	
	(0.031)		(0.035)		(0.034)	
GREAT-Program	0.015		0.027		0.013	
	(0.030)		(0.034)		(0.034)	
R^2	0.421		0.254		0.278	
Wald Chi^2 (df)	1613.45 (11)*		711.59 (11)*		794.30 (11)*	

*p<0.05

Drawing from Model One in all tables, the control variables are also able to provide some interesting insights when examining prosocial and antisocial peers and

attitudes. High levels of parental monitoring are a significantly stronger predictor of involvement with prosocial peers (β = 0.167) than antisocial peers (β = -0.103). Interestingly, a youth's level of impulsivity was not able to predict selection into an antisocial peer group. This finding could be said to be contradictory to Gottfredson and Hirschi's (1990) self-control theory, which would argue that levels of self-control (e.g., impulsivity) determine peer involvement. Community disorder was included in these models because prior research has argued that selection into a peer group as well as attitude formation is partially determined by neighborhood (Anderson, 1999; Matsueda and Anderson, 1998). When controlling for other relevant variables, community disorder was not related to antisocial attitudes and only as small effect on prosocial attitudes (β = 0.084). This research indicates that as the perceptions of community disorder increase so to does prosocial attitudes. As mentioned above, prosocial attitudes are measured as commitment to school; therefore, it is possible that youth in disadvantaged areas believe that school is important. It is also possible that youth in this age range believe that school is beneficial regardless of contextual issues. When examining peer group selection, however, the results were as expected, community disorder was associated with decreased involvement in prosocial peers (β = -0.073).

As expected, delinquency was correlated with an increase in antisocial attitudes and associations with antisocial peers as well as a decrease in prosocial attitudes and associations with prosocial peers. In terms of demographics, a youth's age was able to predict antisocial attitudes and associations with prosocial peers. Compared with white youth, black, Hispanic, and youth of other races held more antisocial attitudes and had fewer prosocial peers. However, there was no effect of race on association with

antisocial peers when controlling for other pertinent variables. Interestingly, black youth had higher levels of prosocial attitudes than white youth. Similar to community disorder, this could be an artifact of the measure of commitment to school. Finally, females held less antisocial attitudes compared with males.

Research Question Two

The second research question seeks to understand the dynamic nature of the relationship between peer behavior and individual attitudes. Path analysis was used to answer the second research question with regards to both prosocial and antisocial peers and attitudes. Figures Two and Three show the path models of both the antisocial and prosocial relationships as well as the standardized estimates for the key relationships. In addition, Table Ten lists the key relationships and provides unstandardized estimates, standard errors, and standardized estimates for both models. Please refer to Appendix B for the full results (including the control variables) of these models for both antisocial and prosocial relationships.

The model examining the cross-lagged relationship between antisocial peers and attitudes demonstrated an acceptable fit to the current data. While the chi-square was significant (χ^2 = 1224.46; d.f. =146), this goodness-of-fit test is not always appropriate for larger sample sizes. Chi-square is sensitive to sample size and small differences between the observed and estimated covariance matrix can be statistically significant, which leads to incorrect rejection of a good model (Paternoster, 1988). Other tests, however, demonstrated that the model provided a good fit for the data (GFI = 0.96; AGFI = 0.92; RMSEA =0.054). The results for the antisocial model fail to support the social learning process. Antisocial peers at Time One were not able to predict antisocial

attitudes at Time Two; furthermore, these attitudes were not able to predict associations with antisocial peers at Time Three. The strongest relationships were between the same variables at different times. For instance, antisocial peers at Time One had strong relationship on these peers at Time Two ($\beta = 0.208$), which had a strong effect on antisocial peers at Time Three ($\beta = 0.405$). Some further support was found for the selection perspective. Antisocial attitudes at Time One leads to an increase in antisocial peer behavior at Time Two ($\beta = 0.087$); however, there was no subsequent effect of antisocial peers at Time Two on antisocial attitudes at Time Three.[10]

Table 10: Tabulated Results of the Path Model for the Key Relationships

	b	S.E.	β
Antisocial			
Antisocial $Peers_1 \rightarrow Antisocial\ Attitudes_2$	-0.047	0.032	-0.027
Antisocial $Peers_2 \rightarrow Antisocial\ Attitudes_3$	-0.001	0.028	-0.001
Antisocial $Attitudes_1 \rightarrow Antisocial\ Peers_2$	0.071*	0.020	0.087
Antisocial $Attitudes_2 \rightarrow Antisocial\ Peers_3$	-0.006	0.015	-0.007
Antisocial $Peers_1 \rightarrow Antisocial\ Peers_2$	0.265*	0.025	0.208
Antisocial $Peers_2 \rightarrow Antisocial\ Peers_3$	0.426*	0.020	0.405
Antisocial $Attitudes_1 \rightarrow Antisocial\ Attitudes_2$	0.418*	0.023	0.380
Antisocial $Attitudes_2 \rightarrow Antisocial\ Attitudes_3$	0.417*	0.021	0.415
Prosocial			
Prosocial $Peers_1 \rightarrow Prosocial\ Attitudes_2$	0.039*	0.017	0.049
Prosocial $Peers_2 \rightarrow Prosocial\ Attitudes_3$	0.014	0.016	0.019
Prosocial $Attitudes_1 \rightarrow Prosocial\ Peers_2$	0.195*	0.034	0.138
Prosocial $Attitudes_2 \rightarrow Prosocial\ Peers_3$	0.102*	0.029	0.084
Prosocial $Peers_1 \rightarrow Prosocial\ Peers_2$	0.286*	0.022	0.283
Prosocial $Peers_2 \rightarrow Prosocial\ Peers_3$	0.317*	0.022	0.332
Prosocial $Attitudes_1 \rightarrow Prosocial\ Attitudes_2$	0.508*	0.027	0.458
Prosocial $Attitudes_2 \rightarrow Prosocial\ Attitudes_3$	0.486*	0.021	0.506

*$p<0.05$

The path model of prosocial peers and attitudes (Figure 3) demonstrates similar results. This model also provides a decent fit to the data (GFI = 0.96; AGFI = 0.92; RMSEA = 0.055). Similar to the findings for antisocial attitudes, the strongest relationships occur between the same variables over time. For instance, associations

[10] It is important to note that this finding could be do to the relatively small amount of change occurring between antisocial attitudes at Time Two and antisocial attitudes at Time Three.

with prosocial peers at Time One had a stronger effect on prosocial peers at Time Two ($\beta = 0.283$), than on attitudes ($\beta = 0.049$). When examining the cross-lagged results, prosocial peers at Time One increases prosocial attitudes at Time Two ($\beta = 0.049$), and, in turn, these attitudes have an effect on prosocial peers ($\beta = 0.084$). Prosocial attitudes at Time One increase prosocial peers at Time Two ($\beta = 0.138$); however, those peers do not significantly influence attitudes at Time Three.

Similar to above, these models indicate some support for the selection perspective in both prosocial and antisocial models. There was mixed evidence of a cross-lagged relationship between peer behavior and individual attitudes. Support for a cross-lagged relationship was found in the prosocial model, but not in the antisocial model. While social learning theory is typically thought of as a theory of socialization, Akers (1998) argues that the social learning constructs are a process with attitudes affecting differential associations with peers as well.

Figure 2: Panel Model Examining the Cross-Lagged Relationship between Antisocial Peers and Antisocial Attitudes. Coefficients are standardized (*p<0.05).

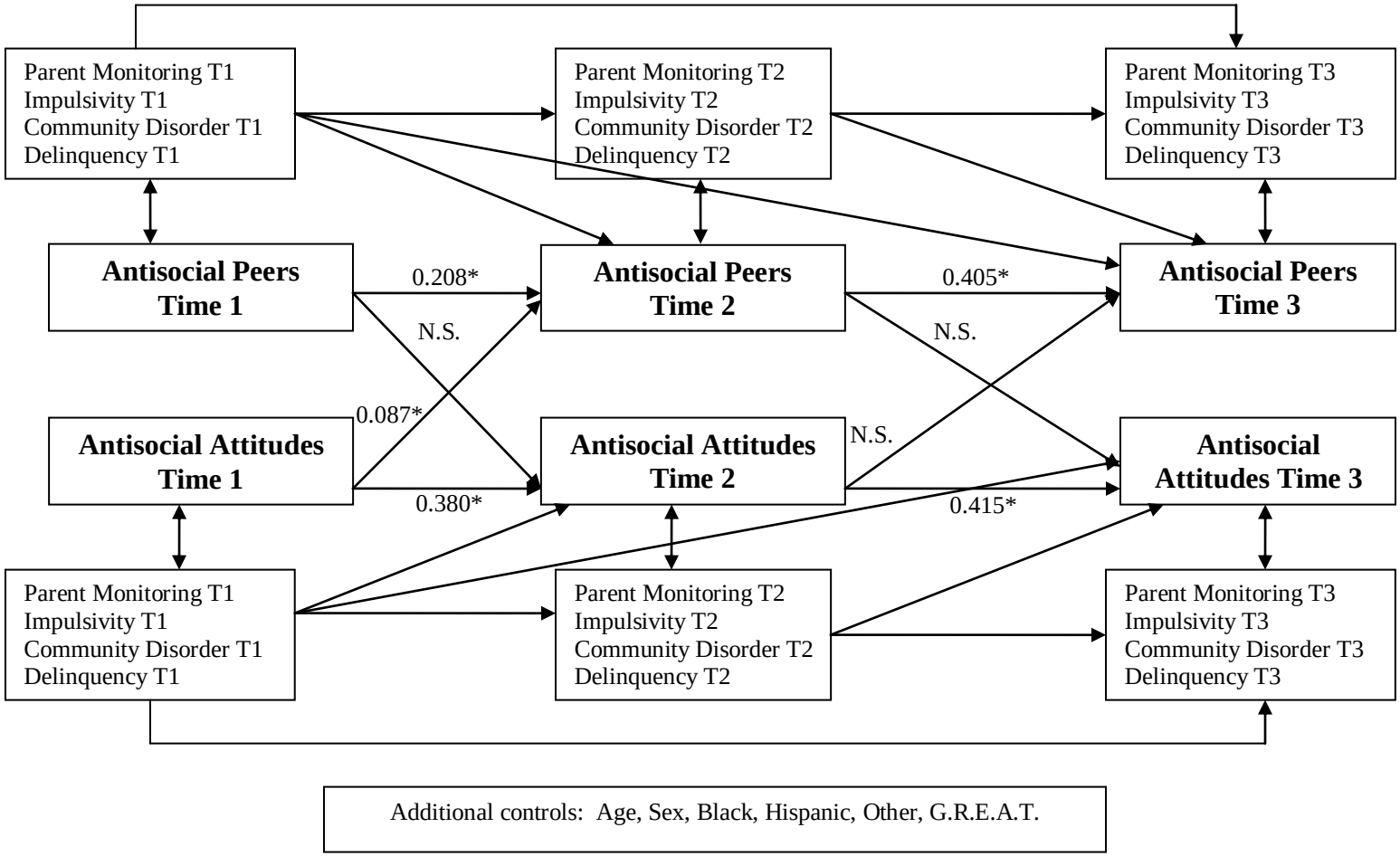
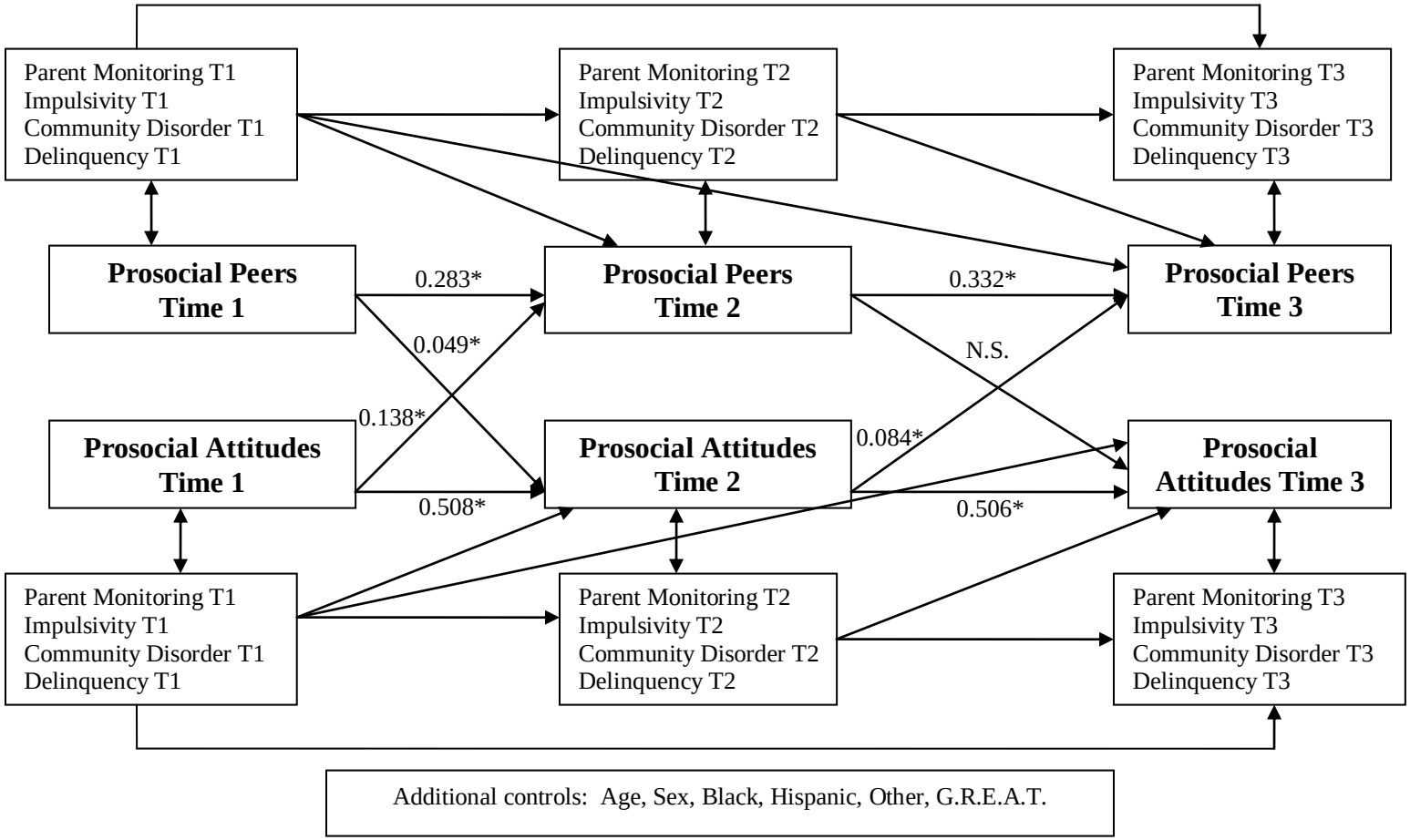


Figure 3: Panel Model Examining the Cross-Lagged Relationship between Prosocial Peers and Prosocial Attitudes. Coefficients are standardized (*p<0.05).



Research Question Three

The above results explored the direct and cross-lagged relationships between peer behavior and individual attitudes separately for antisocial and prosocial youth. As discussed above, however, peer groups are typically not entirely prosocial or antisocial. This mix of pro- and antisocial peers can lead to varying levels of antisocial and prosocial attitudes. The third research question asks about the contemporaneous and lagged effect of both prosocial and antisocial peers on attitudes. The results of the random effects regression analyses are shown in Table Eleven.

Table 11: Random Effects Regression Results Examining the Relative Effect of Prosocial Versus Antisocial Peer Behavior on Individual Attitudes

	Antisocial Attitudes				Prosocial Attitudes			
	Model One		Model Two		Model Three		Model Four	
	$Attitudes_1$		$Attitudes_2$		$Attitudes_1$		$Attitudes_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Antisocial Peers	0.250*	0.158	0.090*	0.051	-0.144*	-0.108	-0.057	-0.038
	(0.029)		(0.037)		(0.027)		(0.034)	
Prosocial Peers	-0.129*	-0.154	-0.139*	-0.150	0.157*	0.224	0.129*	0.164
	(0.015)		(0.019)		(0.014)		(0.018)	
Parental Monit	-0.060*	-0.053	-0.056*	-0.045	0.188*	0.199	0.081*	0.076
	(0.018)		(0.023)		(0.017)		(0.021)	
Impulsivity	0.102*	0.102	0.051*	0.046	-0.095*	-0.113	-0.069*	-0.073
	(0.015)		(0.020)		(0.014)		(0.018)	
Comm Disorder	0.060*	0.047	0.035	0.025	0.068*	0.063	0.019	0.016
	(0.021)		(0.026)		(0.019)		(0.024)	
Delinquency	0.072*	0.314	0.062*	0.246	-0.043*	-0.224	-0.036*	-0.164
	(0.004)		(0.005)		(0.004)		(0.005)	
Age	0.097*	0.084	0.059*	0.046	-0.056*	-0.058	0.003	0.003
	(0.021)		(0.027)		(0.017)		(0.025)	
Black	0.247*		0.256*		0.262*		0.178*	
	(0.042)		(0.054)		(0.037)		(0.050)	
Hispanic	0.173*		0.319*		0.040		-0.137*	
	(0.034)		(0.043)		(0.030)		(0.039)	
Other	0.108*		0.162*		0.064		0.016	
	(0.038)		(0.049)		(0.035)		(0.045)	
Sex	-0.172*		-0.193*		0.050*		0.066*	
	(0.026)		(0.031)		(0.023)		(0.029)	
GREAT-Program	0.015		-0.031		-0.022		-0.009	
	(0.024)		(0.031)		(0.022)		(0.028)	
R^2	0.447		0.276		0.355		0.152	
Wald Chi^2 (df)	1684.86 (12)*		737.54 (12)*		1210.96 (12)*		386.31 (12)*	

*p<0.05

When examining antisocial attitudes, the results show that the contemporaneous model explained 45 percent of the variance in antisocial attitudes and the lagged model 28 percent. The explained variance is larger than in Table Six, which is likely due to the inclusion of the prosocial peers measure. Examining the contemporaneous model (Model 1), the results show that antisocial attitudes are associated with both prosocial and antisocial peers. In this model, the effect of antisocial peers ($\beta = 0.158$) on antisocial attitudes is similar to the effect of prosocial peers ($\beta = -0.154$). However, the stronger differences were identified in the lagged model (Model 2). Prosocial peer behavior at Time One has a stronger effect on antisocial attitudes at Time Two ($\beta = -0.150$) than antisocial peers ($\beta = 0.051$).[11] This indicates that the presence of prosocial peers has a stronger protective effect on antisocial attitudes than antisocial peers has an amplification effect. A different story is told when examining prosocial attitudes. When examining the simultaneous effects (Model 3), the positive effect of prosocial peers on prosocial attitudes ($\beta = 0.224$) is stronger than the negative effect of antisocial peers ($\beta = -0.108$). Furthermore, when examining the lagged effect of these variables on prosocial attitudes the effect of antisocial peers does not attain significance. The results point to the fact that, particularly over time, the protective effect of prosocial peers on both antisocial and prosocial attitudes is stronger than the negative effect of antisocial peers. Based on this, it is possible that having prosocial youth in the peer group simultaneously reduces antisocial attitudes and increases commitment to school, regardless of the proportion of antisocial youth in the peer group. Furthermore, the effect of prosocial peers seems to have a longer lasting impact than the effect of antisocial peers. These findings also

[11]The difference between antisocial ($\beta = 0.087$) and prosocial ($\beta = -0.153$) peer effects on antisocial attitudes is less pronounced when examining Time Two to Time Three, but substantively the same.

provide support for both prior research and social learning theory. Prior research has found that the presence of both prosocial and antisocial peers has an effect on behavior, but these findings extend this to attitudes. Furthermore, the results provide support for Akers (1998) argument that both prosocial and antisocial peer associations are important in the learning process.

Research Question Four

Given the above findings and prior research on associations with both prosocial and antisocial youth within the peer group, it is arguable that the ratio of prosocial to antisocial youth will provide additional insight on individual attitudes. In addition, the peer ratio variable is a unique measure of differential association with antisocial peers. A ratio is able to provide information on the number of antisocial peers relative to prosocial peers, thus taking both into account in the equation. The fourth research question asks about the effect of a youth's ratio of prosocial to antisocial peers on prosocial and antisocial attitudes. As mentioned above, this study uses a ratio that ranges from 0.2 (all delinquent peer group) to 5.0 (all prosocial peer group) to answer this question. Table Twelve presents the results of these analyses. Examining the contemporaneous effects (Model 1) shows that an increase in the prosocial nature of the peer group is able to predict a decrease in antisocial attitudes ($\beta = -0.264$). A similar effect was found for the lagged relationship (Model 2), but the magnitude of the relationship was slightly weaker ($\beta = -0.199$). Similar relationships were identified when examining prosocial attitudes. An increase in the prosocial nature of the peer group at Time One is associated with an increase in prosocial attitudes at Time One ($\beta = 0.290$) and Time Two ($\beta = 0.205$). After examining the simultaneous and lagged models, it is clear that the ratio of prosocial to

antisocial peers is capable of explaining both prosocial and antisocial attitudes. These findings extend prior research by using the peer ratio variable to examine attitudes. Past studies have used a ratio measure to predict behavior (Haynie, 2002). In addition, these findings further social learning theory by examining the effect of differential association with prosocial versus antisocial peers on attitudes.

Table 12: Random Effects Regression Results Examining the Effect of the Ratio of Prosocial to Antisocial Peers on Individual Attitudes

	Antisocial Attitudes				Prosocial Attitudes			
	Model One		Model Two		Model Three		Model Four	
	$Attitudes_1$		$Attitudes_2$		$Attitudes_1$		$Attitudes_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Pro:Anti Ratio	-0.175*	-0.264	-0.146*	-0.199	0.161*	0.290	0.128*	0.205
	(0.013)		(0.016)		(0.012)		(0.015)	
Parental Monit	-0.062*	-0.055	-0.055*	-0.045	0.192*	0.204	0.080	0.076
	(0.018)		(0.050)		(0.016)		(0.021)	
Impulsivity	0.102*	0.101	0.050*	0.045	-0.096*	-0.114	-0.069*	-0.072
	(0.015)		(0.019)		(0.014)		(0.018)	
Comm Disorder	0.054*	0.042	0.026	0.018	0.075*	0.070	0.028	0.023
	(0.021)		(0.026)		(0.019)		(0.024)	
Delinquency	0.074*	0.322	0.059*	0.233	-0.043*	-0.221	-0.113*	-0.148
	(0.004)		(0.005)		(0.004)		(0.016)	
Age	0.108*	0.093	0.057*	0.044	-0.058*	-0.059	0.008	0.007
	(0.020)		(0.026)		(0.017)		(0.024)	
Black	0.235*		0.250*		0.269*		0.184*	
	(0.042)		(0.054)		(0.037)		(0.050)	
Hispanic	0.164*		0.315*		0.044		-0.133*	
	(0.033)		(0.043)		(0.030)		(0.039)	
Other	0.108*		0.162*		0.064		0.016	
	(0.038)		(0.049)		(0.035)		(0.045)	
Sex	-0.162*		-0.187*		0.045*		0.061*	
	(0.025)		(0.031)		(0.023)		(0.029)	
GREAT-Program	0.014		-0.032		-0.020		-0.008	
	(0.024)		(0.031)		(0.022)		(0.028)	
R^2	0.448		0.281		0.335		0.155	
Wald Chi^2 (df)	1745.06 (11)*		761.42 (11)*		1208.92 (11)*		399.77 (11)*	

*p<0.05

Research Question Five

Prior research has shown that youth do not maintain the same peer group throughout their adolescence (Cairns et al., 1995; Elliott and Menard, 1996; Haynie, 2002; Warr, 1993b). In other words, the number of prosocial and antisocial youth in a

group is not stable over time. Therefore, this dissertation seeks to examine the effects of changes in the both the prosocial and antisocial nature of the peer group on changes in attitudes. The fifth research question asks: Is change in the peer group (prosocial versus antisocial) able to predict a change in attitudes? Is a change in attitudes able to predict a change in the peer group (prosocial or antisocial)? In order to answer this research question, this study uses random effects regression analysis with change scores (discussed above).

Table 13: Random Effects Regression Results Examining the Relationship between Changes in the Peer Group and Changes in Antisocial Attitudes

	Model One $\Delta_{1\text{-}2}$ Peers→ $\Delta_{1\text{-}2}$ Attitudes		Model Two $\Delta_{1\text{-}2}$ Attitudes→ $\Delta_{1\text{-}2}$ Peers		Model Three $\Delta_{1\text{-}2}$ Peer Ratio→ $\Delta_{1\text{-}2}$ Attitudes	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Δ Antisocial Peers	0.277* (0.024)	0.216				
Δ Antisocial Attitudes			0.178* (0.016)	0.228		
Δ Pro:Anti Ratio					-0.138* (0.013)	-0.204
Δ Parental Monitoring	-0.073* (0.018)	-0.073	-0.101* (0.014)	-0.130	-0.074* (0.018)	-0.074
Δ Impulsivity	0.118* (0.016)	0.134	0.018 (0.013)	0.026	0.114* (0.016)	0.131
Δ Community Disorder	0.048* (0.024)	0.036	0.078* (0.019)	0.074	0.058* (0.024)	0.043
Δ Delinquency	0.054* (0.004)	0.257	0.033* (0.003)	0.202	0.054* (0.004)	0.256
Age	-0.064* (0.024)	-0.056	-0.032 (0.017)	-0.035	-0.063* (0.024)	-0.054
Black	-0.044 (0.049)		0.043 (0.036)		-0.043 (0.049)	
Hispanic	0.043 (0.039)		0.075* (0.029)		0.038 (0.039)	
Other	0.038 (0.045)		-0.014 (0.036)		0.013 (0.045)	
Sex	0.003 (0.029)		-0.002 (0.023)		-0.011 (0.029)	
GREAT-Program	-0.021 (0.029)		-0.023 (0.023)		-0.028 (0.029)	
R^2	0.208		0.178		0.204	
Wald Chi^2 (df)	639.84 (11)*		540.52 (11)*		618.75 (11)*	

*p<0.05

When focusing on antisocial youth (Model 1 and 2 in Table 13), the results indicate that an increase in the proportion of antisocial peers from Time One to Time Two is associated with an increase in antisocial attitudes during this time ($\beta = 0.216$). While not significant, this effect is slightly smaller than what would be predicted by the selection perspective. A change in antisocial attitudes was correlated with a change in antisocial peers from Time One to Time Two ($\beta = 0.228$).

Table 14: Random Effects Regression Results Examining the Relationship between Changes in the Peer Group and Changes in Prosocial Attitudes

	Model One $\Delta_{1\text{-}2}$ Peers→ $\Delta_{1\text{-}2}$ Attitudes		Model Two $\Delta_{1\text{-}2}$ Attitudes→ $\Delta_{1\text{-}2}$ Peers		Model Three $\Delta_{1\text{-}2}$ Peer Ratio→ $\Delta_{1\text{-}2}$ Attitudes	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Δ Prosocial Peers	0.144* (0.013)	0.203				
Δ Prosocial Attitudes			0.316* (0.029)	0.224		
Δ Pro:Anti Ratio					0.140* (0.012)	0.233
Δ Parental Monitoring	0.174* (0.016)	0.197	0.129* (0.024)	0.103	0.169* (0.016)	0.191
Δ Impulsivity	-0.083* (0.014)	-0.107	-0.071* (0.021)	-0.064	-0.082* (0.014)	-0.106
Δ Community Disorder	0.059* (0.022)	0.049	-0.032 (0.032)	-0.019	0.073* (0.021)	0.060
Δ Delinquency	-0.040* (0.003)	-0.214	-0.032* (0.005)	-0.122	-0.034* (0.004)	-0.184
Age	0.089* (0.021)	0.087	0.046 (0.031)	0.032	0.086* (0.021)	0.084
Black	-0.015 (0.043)		-0.089 (0.063)		-0.016 (0.034)	
Hispanic	-0.075* (0.034)		-0.098 (0.050)		-0.064 (0.034)	
Other	0.008 (0.040)		-0.121* (0.060)		0.011 (0.040)	
Sex	-0.011 (0.026)		-0.070 (0.038)		-0.008 (0.026)	
GREAT-Program	0.008 (0.026)		-0.019 (0.038)		0.004 (0.026)	
R^2	0.201		0.123		0.209	
Wald Chi^2 (df)	607.89 (11)*		343.44 (11)*		641.00 (11)*	

*p<0.05

The results for prosocial attitudes demonstrate a similar story (see Model 1 and 2 in Table 14). While an increase in prosocial peers is correlated with an increase in prosocial attitudes ($\beta = 0.203$), it is slightly less (although not significantly different) than the magnitude of the relationship between attitude change and peer change ($\beta = 0.224$). An increase in prosocial attitudes from Time One to Time Two is associated with an increase in the proportion of prosocial peers during this time frame. Overall, the results indicate that the relationship between changes in attitudes and changes in the peer group is slightly stronger than the reverse. However, since these equations are only measuring simultaneous changes in peers' behavior and individual attitudes, no inferences can be made regarding causal ordering. Overall, these findings can be said to be supportive of cognitive dissonance theory. Youth who experienced an increase in the antisocial behavior of their peers arguably dealt with the dissonance this created by also increasing their level of antisocial attitudes. Also, Festinger (1957) argues that youth may change their peer group to reduce dissonance. When youth experienced an increase in prosocial attitudes, there was an increase in the prosocial behavior in the peer group. This finding suggests that youth sought out a change in the peer group to reduce dissonance created by the attitude change.

Research Question Six

These above results examined prosocial and antisocial peers and individual attitudes separately; however, given that youth are likely to associate with both prosocial and antisocial peers it is important to look at change in the ratio of prosocial to antisocial peers as well. The final research question seeks to determine if a change in ratio of prosocial to antisocial youth is able to predict a change in attitudes. The results in

Models Three of Tables Thirteen and Fourteen demonstrate that the ratio is able to predict change for both prosocial and antisocial attitudes. Movement to a more prosocial peer group from Time One to Time Two is associated with a decrease in antisocial attitudes ($\beta = -0.204$) and an increase in prosocial attitudes ($\beta = 0.233$). In addition, the magnitude of these effects are not significantly different across prosocial and antisocial attitudes. This shows that youth who experience an increase in the prosocial nature of the peer group will experience similar changes in the prosocial and antisocial attitudes. These results indicate that changes in differential associations with prosocial over antisocial peers can predict changes in both prosocial and antisocial attitudes and are supportive of both social learning and cognitive dissonance theories. A youth who experienced movement to a more prosocial peer group may have dealt with the dissonance by decreasing antisocial attitudes and increasing prosocial attitudes.

The control variables provide interesting results for both peer behavior and individual attitude change as well. Increases in the level of parental monitoring were associated with decreases in antisocial attitudes and peers as well as increases in prosocial attitudes and peers. In addition, increases in impulsivity were able to predict increases in antisocial attitudes as well as decreases in prosocial attitudes and peers. There was no effect of increases in impulsivity on increases in association with delinquent peers. In addition, increases in perceptions of community disorder lead to slight increases in both antisocial and prosocial attitudes. As mentioned above, prosocial attitudes are measured as commitment to school; therefore, it is possible that youth in disadvantaged areas believe that school is important or that youth in this age range believe that school is beneficial regardless of contextual issues. As expected, increases in

delinquency were correlated with increases in antisocial attitudes and associations with antisocial peers as well as decreases in prosocial attitudes and associations with prosocial peers. Few demographic variables were able to predict change. Age was associated with decreases in antisocial attitudes and increases in prosocial attitudes. Hispanic youth experienced an increase in antisocial peers and youth of other races had a decrease in prosocial peers over time compared to white youth.

Controlling for Delinquency in Attitudinal Research

While the focus of this dissertation is on relationship between peer behavior and individual attitudes apart from behavior, a discussion is warranted on the importance of controlling for delinquent involvement in attitudinal research. Therefore, the purpose of this section is to discuss the differences in the findings when delinquency is eliminated from the regression equations. This is done in order to highlight the importance of controlling for delinquency in attitudinal research. The tables below present coefficients for the key independent variables with and without controlling for delinquency. Also, included is the R-squared value when not including delinquency, which provides information on how much explained variance was lost when excluding delinquency. The same analytic plans discussed in the dissertation were employed for these analyses. In addition, these analyses included all of the original control variables.

The results examining the direct relationships between peer behavior and individual attitudes, when not controlling for delinquency, shows that it does have an effect on these relationships. As expected, the exclusion of delinquency tended to increase the magnitudes of the effect sizes when focusing on antisocial peers and attitudes. When examining antisocial peers and attitudes, the unstandardized coefficients

increased significantly with the exclusion of delinquency (see Tables 15 and 16). While the substantive findings of these relationships remained the same, the coefficients increased by an average of 43 percent in all models. The most prominent change occurred in Model Two of Table Fifteen. The magnitude of the effect of antisocial peers at Time One on antisocial attitudes at Time Two increased by 57 percent when delinquency was excluded from the model.

Table 15: Random Effects Results Examining Antisocial Peers on Antisocial Attitudes

	Model One		Model Two		Model Three	
	$Peers_2 \rightarrow Attitudes_2$		$Peers_1 \rightarrow Attitudes_2$		$Peers_3 \rightarrow Attitudes_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Antisocial Peers	0.530*	0.384	0.349*	0.198	0.356*	0.272
	(0.024)		(0.034)		(0.025)	
Antisocial Peers	0.330*	0.239	0.147*	0.084	0.215*	0.164
(With Delinquency)	(0.025)		(0.036)		(0.028)	
R^2	0.431		0.203		0.284	
Clogg Test (z)	5.77*		4.08*		3.76*	

*p<0.05

Table 16: Random Effects Results Examining Antisocial Attitudes on Antisocial Peers

	Model One		Model Two		Model Three	
	$Attitudes_2 \rightarrow Peers_2$		$Attitudes_1 \rightarrow Peers_2$		$Attitudes_3 \rightarrow Peers_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Antisocial Attitudes	0.316*	0.437	0.246*	0.306	0.172*	0.237
	(0.014)		(0.017)		(0.015)	
Antisocial Attitudes	0.191*	0.264	0.137*	0.171	0.102*	0.140
(With Delinquency)	(0.015)		(0.018)		(0.016)	
R^2	0.342		0.171		0.198	
Clogg Test (z)	6.09*		4.36*		3.19*	

*p<0.05

The effect of the exclusion of delinquency was not as large when focusing on prosocial peers and attitudes. Similarly, the substantive findings are consistent, but the magnitude of the coefficients was decreased by 21 percent on average (see Tables 17 and 18). Additionally, the magnitude of the effect of prosocial peers at Time One on

prosocial attitudes at Time Two did not significantly increase with the exclusion of delinquency from the equation. These findings indicate that, despite no change in substantive findings, failing to control for a youth's delinquent involvement led to a significant bias in these relationships. It is important to note that this bias was especially pronounced when focusing on antisocial attitudes and peer behavior. The bias was less strong when examining associations with prosocial peers and prosocial attitudes.

Table 17: Random Effects Results Examining Prosocial Peers on Prosocial Attitudes

	Model One		Model Two		Model Three	
	$Peers_2 \rightarrow Attitudes_2$		$Peers_1 \rightarrow Attitudes_2$		$Peers_3 \rightarrow Attitudes_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Prosocial Peers	0.287* (0.014)	0.373	0.178* (0.017)	0.226	0.195* (0.016)	0.241
Prosocial Peers (With Delinquency)	0.229* (0.015)	0.298	0.135* (0.017)	0.171	0.150* (0.028)	0.187
R^2	0.391		0.126		0.250	
Clogg Test (z)	2.83*		1.79		1.40	

*p<0.05

Table 18: Random Effects Results Examining Prosocial Attitudes on Prosocial Peers

	Model One		Model Two		Model Three	
	$Attitudes_2 \rightarrow Peers_2$		$Attitudes_1 \rightarrow Peers_2$		$Attitudes_3 \rightarrow Peers_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Prosocial Attitudes	0.478* (0.024)	0.368	0.419* (0.028)	0.287	0.270* (0.027)	0.199
Prosocial Attitudes (With Delinquency)	0.392* (0.025)	0.301	0.333* (0.030)	0.228	0.219* (0.028)	0.159
R^2	0.393		0.231		0.258	
Clogg Test (z)	2.48*		2.10*		1.31	

*p<0.05

Arguably the most pronounced bias when excluding delinquency is found in the path models, particularly, focusing on antisocial peer behavior and antisocial attitudes (see Table 19). In these models, the substantive findings changed when excluding delinquency from the path model. When controlling for delinquency, no evidence of a

cross-lagged relationship was found between antisocial peers and antisocial attitudes. However, a cross-lagged relationship was found when delinquency was not included in the model. In addition, the magnitude of the relationships increased by an average of 74 percent. The effect of antisocial peers on antisocial attitudes attained significance when delinquency was excluded from the model. This was true when looking across both time periods. However, when examining the effect of antisocial attitudes on antisocial peers failing to control for delinquency only increased the effects.

Table 19: Results of the Path Analyses

	b (S.E.)	b (S.E.) (With Delinq)	Clogg Test
Antisocial			
Antisocial $Peers_1 \rightarrow Antisocial\ Attitudes_2$	0.093*	-0.004	2.95*
	(0.035)	(0.007)	
Antisocial $Peers_2 \rightarrow Antisocial\ Attitudes_3$	0.066*	0.010	1.72
	(0.027)	(0.027)	
Antisocial $Attitudes_1 \rightarrow Antisocial\ Peers_2$	0.174*	0.088*	3.64*
	(0.020)	(0.019)	
Antisocial $Attitudes_2 \rightarrow Antisocial\ Peers_3$	0.065*	0.021*	3.24*
	(0.016)	(0.016)	
Antisocial $Peers_1 \rightarrow Antisocial\ Peers_2$	0.397*	0.227*	3.52*
	(0.028)	(0.028)	
Antisocial $Peers_2 \rightarrow Antisocial\ Peers_3$	0.508*	0.439*	2.90*
	(0.020)	(0.021)	
Antisocial $Attitudes_1 \rightarrow Antisocial\ Attitudes_2$	0.530*	0.452*	3.30*
	(0.025)	(0.025)	
Antisocial $Attitudes_2 \rightarrow Antisocial\ Attitudes_3$	0.480*	0.441*	2.12*
	(0.021)	(0.021)	
Prosocial			
Prosocial $Peers_1 \rightarrow Prosocial\ Attitudes_2$	0.074*	0.039*	1.41
	(0.018)	(0.017)	
Prosocial $Peers_2 \rightarrow Prosocial\ Attitudes_3$	0.024	0.014	0.46
	(0.015)	(0.016)	
Prosocial $Attitudes_1 \rightarrow Prosocial\ Peers_2$	0.290*	0.195*	1.92
	(0.036)	(0.034)	
Prosocial $Attitudes_2 \rightarrow Prosocial\ Peers_3$	0.138*	0.102*	0.88
	(0.029)	(0.029)	
Prosocial $Peers_1 \rightarrow Prosocial\ Peers_2$	0.334*	0.286*	1.51
	(0.138)	(0.022)	
Prosocial $Peers_2 \rightarrow Prosocial\ Peers_3$	0.336*	0.317*	0.62
	(0.334)	(0.022)	
Prosocial $Attitudes_1 \rightarrow Prosocial\ Attitudes_2$	0.580*	0.508*	1.82
	(0.029)	(0.027)	
Prosocial $Attitudes_2 \rightarrow Prosocial\ Attitudes_3$	0.510*	0.486*	0.81
	(0.021)	(0.021)	

When focusing on prosocial attitudes and peer behavior, however, failing to control for individual behavior did not significantly increase the results. However, on average, the magnitude of the coefficients increased by 37 percent when delinquency was excluded from the path model. These results also highlight the importance of controlling for delinquency in attitudinal research, particularly when examining antisocial peer behavior and attitudes. Conclusions made based on the results without delinquency would have led to false support for a cross-lagged relationship between antisocial peers and attitudes.

Table 20: Random Effects Regression Results Examining the Relative Effects of Antisocial Versus Prosocial Peers

	Antisocial Attitudes				Prosocial Attitudes			
	Model One		Model Two		Model Three		Model Four	
	$Attitudes_1$		$Attitudes_2$		$Attitudes_1$		$Attitudes_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Antisocial Peers	0.432* (0.029)	0.272	0.247* (0.035)	0.140	-0.253* (0.026)	-0.189	-0.147* (0.032)	-0.098
Prosocial Peers	-0.181* (0.016)	-0.216	-0.183* (0.019)	-0.197	0.188* (0.014)	0.268	0.154* (0.017)	0.196
Antisocial Peers (With Delinq)	0.250* (0.029)	0.158	0.090* (0.037)	0.051	-0.144* (0.027)	-0.108	-0.057 (0.034)	-0.038
Prosocial Peers (With Delinq)	-0.129* (0.015)	-0.154	-0.139* (0.019)	-0.150	0.157* (0.014)	0.224	0.129* (0.018)	0.164
R^2	0.377		0.234		0.299		0.134	
Antisocial Clogg Test (t)	4.44*		3.08*		2.90*		1.93	
Prosocial Clogg Test (t)	2.37*		0.24		1.56		1.11	

*$p<0.05$

The third research question inquires about the relative effects of prosocial versus antisocial peers on attitudes (see Table 20). When examining antisocial attitudes, failing to control for delinquent behavior significantly increases the effect of associations with antisocial (42% increase) and prosocial peers (29% increase) in the contemporaneous model. When examining the lagged model of antisocial attitudes, the effect of antisocial

peers increased significantly (64%) and failing to control for delinquent behavior had no significant impact on the effect of prosocial peers.

When predicting prosocial attitudes, the exclusion of the delinquency variable did not significantly increase the effect of prosocial peers. The contemporaneous effect of antisocial peer behavior on prosocial attitudes did increase significantly when delinquency was left out of the models (43% increase); furthermore, this variable attains significance in the lagged models. Similar to research question one, failing to control for delinquency does bias the models analyzing the relative effects of prosocial versus antisocial peer behavior. However, few of the substantive findings remained similar.

Table 21: Random Effects Regression Results Examining the Relationship between Peer Ratio and Attitudes

	Antisocial Attitudes				Prosocial Attitudes			
	Model One		Model Two		Model Three		Model Four	
	$Attitudes_1$		$Attitudes_2$		$Attitudes_1$		$Attitudes_2$	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Pro:Anti Ratio	-0.271* (0.012)	-0.410	-0.222* (0.015)	-0.302	0.216* (0.011)	0.389	0.169* (0.014)	0.272
Pro:Anti Ratio (With Delinq)	-0.175* (0.013)	-0.264	-0.146* (0.016)	-0.199	0.161* (0.012)	0.290	0.128* (0.015)	0.205
R^2	0.371		0.171		0.298		0.139	
Clogg Test (t)	5.42*		7.77*		3.38*		2.00*	

*p<0.05

Controlling for delinquent involvement also affected the results when examining the effect of the ratio of prosocial to antisocial peers on attitudes (see Table 21). The exclusion of delinquent involvement significantly increased the magnitude of the effect of the ratio of prosocial to antisocial peers in all models. Focusing on antisocial attitudes, the magnitude increased by approximately 34 percent in the contemporaneous and lagged models. The magnitude of the effect of the ratio of prosocial to antisocial peers on prosocial attitudes increased by about 24 percent when delinquency was excluded for

both models. Again, substantive results remain the similar, but the increase in the magnitude of the coefficients indicates bias when failing to control for delinquency.

Table 22: Random Effects Regression Results Examining Change with Antisocial Peer Behavior and Attitudes

	Model One $\Delta_{1\text{-}2}$ Peers→ $\Delta_{1\text{-}2}$ Attitudes		Model Two $\Delta_{1\text{-}2}$ Attitudes→ $\Delta_{1\text{-}2}$ Peers		Model Three $\Delta_{1\text{-}2}$ Peer Ratio→ $\Delta_{1\text{-}2}$ Attitudes	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Δ Antisocial Peers	0.370* (0.024)	0.288				
Δ Antisocial Peers (With Delinquency)	0.277* (0.024)	0.216				
Δ Antisocial Attitudes			0.231* (0.015)	0.296		
Δ Antisocial Attitudes (With Delinquency)			0.178* (0.016)	0.228		
Δ Pro:Anti Ratio					-0.189* (0.013)	-0.279
Δ Pro:Anti Ratio (With Delinquency)					-0.138* (0.013)	-0.204
R^2	0.146		0.143		0.144	
Clogg Test (t)	2.74*		2.42*		2.77*	

*p<0.05

When predicting a change in antisocial attitudes, the effect of changes in association with antisocial peers significantly increased when failing to control for delinquency (25% increase) (see Table 22). Similar results were found when examining the reverse relationship (23% increase). The exclusion of changes in delinquency did not have the same effect when examining prosocial peers and attitudes (see Table 23). Failing to control for delinquency did not significantly alter the effect of changes in prosocial peers on changes in prosocial attitudes or the reverse. Failing to control for delinquent behavior also affected the regression equations when using changes in the ratio of prosocial to antisocial peers to predict changes in prosocial and antisocial attitudes (see Model 3 in Tables 22 and 23). Similar to above, the effect of a change in the ratio of prosocial to antisocial peers increased for both antisocial (27%) and prosocial

(19%) attitudes. Similar to above, despite the consistency in substantive results, the change in the magnitude of the coefficients for the key independent variables indicates bias when failing to control for delinquency.

Table 23: Random Effects Regression Results Examining Change with Prosocial Peer Behavior and Attitudes

	Model One $\Delta_{1\text{-}2}$ Peers→ $\Delta_{1\text{-}2}$ Attitudes		Model Two $\Delta_{1\text{-}2}$ Attitudes→ $\Delta_{1\text{-}2}$ Peers		Model Three $\Delta_{1\text{-}2}$ Peer Ratio→ $\Delta_{1\text{-}2}$ Attitudes	
	b (S.E.)	β	b (S.E.)	β	b (S.E.)	β
Δ Prosocial Peers	0.171* (0.013)	0.242				
Δ Prosocial Peers (With Delinquency)	0.144* (0.013)	0.204				
Δ Prosocial Attitudes			0.363* (0.028)	0.257		
Δ Prosocial Attitudes (With Delinquency)			0.316* (0.029)	0.224		
Δ Pro:Anti Ratio					0.173* (0.011)	0.288
Δ Pro:Anti Ratio (With Delinquency)					0.140* (0.012)	0.233
R^2	0.156		0.109		0.179	
Clogg Test (t)	1.47		1.17		2.03*	

*p<0.05

One of the main purposes of this dissertation was to examine correlates to delinquency, specifically peers' behavior and individual attitudes both prosocial and antisocial, while controlling for the effects of delinquent involvement on these variables. This section was meant to illustrate the importance of controlling for delinquency in attitudinal research. It is clear from the results presented here that failing to control for delinquent behavior creates bias in the effect sizes and in some cases, substantive findings. While the majority of the substantive findings remained the same with or without controlling for delinquency, many of the magnitudes of the coefficients increased significantly. Particularly, when examining antisocial peer behavior and antisocial attitudes.

The chapter was presented the analytic results used to address the three central goals and six research questions discussed in this dissertation. First, the results surrounding the causal mechanisms between peer behavior and individual attitudes were examined. These results demonstrated slightly stronger, but not significantly more support for the selection perspective over the socialization perspective. In addition, evidence of a cross-lagged relationship was found when examining the relationship between prosocial peer behavior and prosocial attitudes. Next, this chapter examined the effect of associations with both prosocial and antisocial peers on a youth's attitudes. These findings were largely as expected and found that the effects of associations with prosocial peers are particularly salient over time. The final focus of this chapter was on the relationship between changes in associations with peers and changes in attitudes. Again, the results were consistent with the hypotheses. Increases in the antisocial nature of the peer group led to increases in antisocial attitudes as well as the reverse. Similar relationships were found when focusing on prosocial attitudes as well. Additional analyses regarding the importance of controlling for delinquency in attitudinal research were also presented in this chapter.

CHAPTER FIVE: DISCUSSION AND CONCLUSION

The relationship between peer behavior and individual behavior has been well documented in prior research. These studies primarily use attitudes as a mediator variable, thus ignoring its potential as an outcome variable. This is surprising given that prevention programs, particularly those with skills building curricula, rely on building prosocial attitudes and diminishing antisocial attitudes in order to prevent unwanted behaviors. In addition, social psychological research argues that youth sometimes conform to attitudes without conforming to behavior (Kiesler and Kiesler, 1970). Therefore, this dissertation sought to develop knowledge on what factors are capable of shaping attitudes. Specifically, this dissertation focused on attitudes and their relationship with the peer group. Furthermore, the dissertation examined both delinquent attitudes as well as prosocial attitudes in the form of commitment to school. The three main goals of this work consisted of: 1) examining the direct and cross-lagged relationships between associations with peers and individual attitudes, 2) examining the relative importance of prosocial versus antisocial peers on attitudes as well as the effect of the ratio of prosocial to antisocial peers, and 3) examining how change in peer associations predicts a change in individual attitudes (and vice versa). In order to accomplish these goals, the dissertation used data from the National Evaluation of the Gang Resistance Education and Training (G.R.E.A.T.) program. The longitudinal nature of these data allowed for a strong examination of the causal ordering between peer behavior and individual attitudes as well as the nature of change in the peer group and attitudes. This chapter first proceeds by reviewing the findings in relation to each of the above goals and then discussing the implications for social learning and cognitive

dissonance theories. This is followed by a discussion of policy implications. Finally, avenues for future research will be discussed in the context of both limitations and prior research.

In terms of the first goal, this dissertation examined the effect of peer behavior on attitudes (e.g., socialization) versus the effect of attitudes on associations with peers (e.g., selection) as well as the cross-lagged relationship. The findings showed support for the selection perspective when examining both prosocial and antisocial peer behavior and individual attitudes. Using Osgood's (2010) technique for analyzing causal ordering, all socialization (i.e., peer behavior predicting attitudes) models pointed to a spurious relationship between peer behavior and attitudes. However, when examining the effect of attitudes on association with peers, the models showed some support for a causal relationship. These results led to the conclusion that youth with prosocial or antisocial attitudes are likely selecting into similar peer groups. In other words, youth with strong commitment to school are possibly seeking out other youth who are prosocial in nature. Similarly, youth who hold neutralizing definitions of theft and assault (e.g., antisocial attitudes) tend to self-select into peer groups consisting of other antisocial youth. However, these models were not capable of examining the cross-lagged relationships. In other words, if youth are selecting into peer groups, are these groups, in turn, affecting their attitudes? Examining path models of associations with peers and their relationship with attitudes over time identified only partial support for a cross-lagged relationship. In terms of antisocial attitudes, the path model showed youth select into peer groups based on their attitudes, but these peer groups had no effect on later antisocial attitudes. Some support for a cross-lagged relationship, however, was found for associations with

prosocial peers and prosocial attitudes. Associations with prosocial peers had an effect on prosocial attitudes, which, in turn, had an effect on associations with prosocial peers. Overall, these findings are inconsistent with much of the research on socialization versus selection presented in this dissertation. These studies would argue that both socialization and selection are at work in peer relationships and work together to develop prosocial or antisocial attitudes (Agnew, 1991b; Matsueda and Anderson, 1998; Menard and Elliott, 1994; Paternoster, 1988; Thornberry et al., 1991).

The relative effect of prosocial versus antisocial peer behavior on the attitudinal measures is at the center of the second goal. The results point to the fact that, over time, the protective effect of prosocial peer behavior on both antisocial and prosocial attitudes is stronger than the negative effect of antisocial peer behavior. A youth who holds associations with both prosocial and antisocial youth will experience a stronger protective effect, over time, of the presence prosocial youth. This was found when controlling for the presence of antisocial youth within the peer group. The presence of prosocial youth produces a stronger inverse effect on antisocial attitudes than involvement with antisocial peers. This effect is also found when examining commitment to school. In addition to examining the effects of prosocial peers versus antisocial peers, this dissertation examined the effects of the ratio of prosocial to antisocial peers on attitudes. Results indicate that the ratio of prosocial to antisocial peers has both contemporaneous and lagged effects on prosocial and antisocial attitudes. As a youth's peer group became more prosocial relative to antisocial s/he experienced an increase in prosocial attitudes and a decrease in antisocial attitudes. This finding is consistent with prior research

examining the effect of the proportion of prosocial youth compared with antisocial youth on a delinquent behavior (Haynie, 2002).

The final goal of the dissertation was to examine the relationship between change in associations with peers and changes in attitudes as well as the reverse relationship. Specifically, the dissertation focused on changes in the proportion of antisocial peers, the proportion of prosocial peers, and the ratio of prosocial to antisocial as well as changes in delinquent attitudes and commitment to school. By and large the results were as expected. Youth who experienced an increase in the proportion of antisocial peers also experienced an increase in antisocial attitudes. Similar findings were demonstrated for prosocial youth. In addition to this, changes in attitudes were also correlated to changes in associations with peers. An increase in school commitment was associated with increases in associations with prosocial peers. These findings, however, were not able to examine the effect of associations with both prosocial and antisocial peers. In order to do this, the effect of changes in the ratio of prosocial to antisocial peers on changes in attitudes was examined. Youth who encountered an increase in the prosocial nature of the peer group had a decrease in antisocial attitudes and an increase in prosocial attitudes.

Overall, this dissertation was able to accomplish its goals and has furthered knowledge on the relationship between peer behavior and individual attitudes. In addition, the results, excluding those examining the causal mechanism, were mostly as expected and consistent with prior research examining behavior. The results discussed above, however, were examined in the context of both social learning theory and cognitive dissonance theory and are able to provide implications and advancements to these theories.

Social learning theory assumes that both conforming and nonconforming behavior are learned through the same mechanisms. Akers (1998) argues that differential association with deviant peers leads to more pro-delinquent attitudes, which, in turn, produce delinquent behavior. Since this study only examines the relationships between peer behavior and individual attitudes and not the full social learning process it is not considered a full test of the theory. However, the findings are able to provide important advancements for this theory. Akers (1998) would argue that results that are supportive of socialization or a processual relationship between peer behavior and a youth's own attitudes are supportive of social learning theory. This dissertation was not able to find support for the socialization perspective and only partial support for a processual relationship between peer behavior and individual attitudes. The majority of prior research on this theory ignores the social learning process by pitting all the central constructs against one another to predict delinquency (Pratt et al., 2010). This dissertation makes a small step in examining the social learning process by identifying a processual or cross-lagged relationship between prosocial peer behavior and prosocial attitudes. However, the lack of support for a cross-lagged relationship when examining antisocial peer behavior and individual attitudes as well as support for selection over socialization are not able to show support for social learning theory.

While Akers (1998) speaks about conforming peer behavior and individual attitudes, the majority of research examines deviance in relation to the theory. This study extends this research on this theory by examining the prosocial nature of the peer group. For example, this study demonstrated that the effect of associations with prosocial peers is stronger than the effect of antisocial peers when examining both commitment to school

and antisocial attitudes. While Akers (1998) argues that both conforming and nonconforming peers are capable of influencing youth, these findings provide mixed support for the theory. Akers (1998) argues that prosocial attitudes are learned from conforming peers and antisocial attitudes from nonconforming peers. Therefore, in order for results to be supportive of social learning theory, antisocial peers should have the largest or an equally large effect on antisocial attitudes relative to prosocial peers. In the contemporaneous model, the effect of prosocial peers on antisocial attitudes was similar to the effect of antisocial peers. However, when examining the lagged relationships, the protective effect of prosocial peers was stronger. When focusing on prosocial attitudes, prosocial peers did have a larger effect on these attitudes than antisocial peers, which would be considered supportive of the social learning theory.

In relation to the importance of both conforming and nonconforming youth, the concept of differential associations with delinquent peers proposed by social learning theory has been most frequently examined by measuring the number of delinquent friends (although see Haynie, 2002 for a notable exception). This dissertation interprets differential associations with delinquent peers through an examination of the effects of the ratio of prosocial to antisocial peers on attitudes. While Akers (1998) did not talk specifically about a ratio of prosocial to antisocial peers it is arguable that having a greater number of antisocial compared with prosocial peers could be a strong indicator of the extent of differential associations with those peers. The results are consistent with social learning theory and find that increases in the prosocial relative to the antisocial nature of the peer group are able to increase prosocial attitudes and decrease antisocial attitudes.

Finally, while this study draws on cognitive dissonance to examine the relationship between changes in the peer group and changes in antisocial attitudes, the results indicate that change in social learning variables may also be important to the development of this theory. Akers (1998) briefly states that change can occur in these variables, but provides no empirical examinations of this argument. Changes in differential associations with delinquent as well as prosocial peers were associated with changes in prosocial and antisocial attitudes. These results suggest that change is an important factor in the relationship between two social learning concepts, differential association with delinquent peers and antisocial attitudes.

It is important to note that Akers (1998) does not make inferences regarding whether or not the effect of peer behavior on attitudes is simultaneous or lagged. These research questions, however, found support for social learning theory when examining both contemporaneous (e.g., cross-sectional) and lagged (e.g., longitudinal) effects. It is likely that this theory is applicable to both simultaneous and lagged relationships. Until there is a consensus regarding the simultaneous or lagged nature of the effects of social learning concepts, future research should be careful when making assumptions regarding the elapsed time of social learning relationships. Furthermore, future research on social learning theory would benefit from a full examination of the social learning process, particularly involving the dynamic nature of the social learning concepts. Additionally, the results show that social learning theory is very applicable to prosocial peers and attitudes and this should not be ignored in this area of research. Finally, future research should continue to examine change within the social learning process. It is clear from

these results that changes in both prosocial and antisocial peers and individual attitudes are important.

Understanding the relationship between change in the peer group and attitudinal changes was another purpose of this study. According to cognitive dissonance theory, a youth who belongs to a peer group that is more antisocial than s/he can cause dissonance. This dissonance will, in turn, lead the youth to change his/her attitudes to match those associated with the behavior of the group. Above all, it is expected that movement to a less delinquent peer group over time would lead to lower levels of delinquent attitudes and higher levels of prosocial attitudes and vice versa. Overall, the results reported here are supportive of this theory; youth who experienced a change in the behavior of their peer group over time also demonstrated a change in their level of antisocial attitudes. These findings held when examining prosocial attitudes as well. This suggests that the behavior the youth experienced within the peer group created a dissonance, which led to the change in attitudes. Further support was found when examining the ratio of prosocial to antisocial youth in the peer group. Youth whose group became more prosocial over time experienced a decrease in antisocial attitudes and an increase in prosocial attitudes. These results are supportive of cognitive dissonance as well.

In addition, youth who experience a change in prosocial or antisocial attitudes may experience a similar dissonance within the peer group. One option to reduce this dissonance is to change the peer group. This can be done by attempting to influence the behavior of the peers or by selecting into a more prosocial peer group. Results indicate that youth who experienced a change in attitudes also experienced a change in associations with peers. For example, an increase in school commitment was associated

with an increase in prosocial peers. This could indicate that youth changed their peer group as a result of an increase in prosocial attitudes (although see limitations).

These findings are supportive of cognitive dissonance theory overall and are consistent with much of the research in this area. However, the bulk of the research on cognitive dissonance has been conducted in experimental settings designed to impact attitudes. By using survey research to measure attitudes, this study alleviates this problem. Additionally, attitudes cannot be successfully assessed via official records or observation; therefore, survey data, such as G.R.E.A.T., is particularly appropriate for the study of attitudes.

Policy Implications

Warr (2002) argues that understanding and attempting to change the causes of behavior, rather than the behavior itself, is an important path for policy. By examining the relationship between peer behavior and individual attitudes this dissertation is able to make policy recommendations about two causes of criminal behavior: peer influence and individual attitudes. While the focus of the dissertation has been on prosocial and antisocial peer behavior and prosocial and antisocial attitudes, all are capable of influencing or changing delinquent behavior. While the presence of antisocial peers and delinquent attitudes have both been shown to be correlated with delinquent involvement, prosocial peers and attitudes are inversely correlated with this behavior. High levels of prosocial peers and school commitment have been shown to decrease delinquent involvement (Esbensen, Peterson, Taylor, and Freng, 2010; Gottfredson, 2001; Haynie, 2001). Overall, this dissertation is able to make inferences into what affects all of these correlates of delinquency.

Policy initiatives surrounding the effects of peer influence have argued for the importance of limiting or controlling exposure to delinquent peers and increasing associations with prosocial youth. For example, after school programs designed to keep youth "off the streets" are meant to increase associations with prosocial youth (Warr, 2002). While Warr (2002) states that these programs are not successful (for unstated reasons), he does argue that changing exposure to peers is important for behavior prevention. The results of this dissertation showed that peer variables were important to changing attitudes above and beyond the effects of parental monitoring, impulsivity, and perceptions of neighborhood disorder. Based on this, it is arguable that programs designed to teach youth to choose their friends more wisely or techniques for getting out of troublesome peer groups would be beneficial. Furthermore, prevention programs that involve skills building curricula should pay particular attention to the effect of peer behavior on attitudes. These programs should be helping youth choose prosocial over antisocial peers. Prosocial peers are able to increase commitment to school and decrease antisocial attitudes, both of which are correlated with delinquent involvement. While this study is not capable of making predictions regarding factors that cause a change in the peer group (see limitations discussed below), it is still arguable that strategies meant to help youth break away from antisocial peer groups will produce a change in attitudes. This dissertation demonstrated that an increase in the prosocial nature of the peer group is associated with a decrease in antisocial attitudes and an increase in commitment to school. In addition, the results of this dissertation also showed that attitudes are capable of predicting associations with peers. Given this, prevention and intervention programs should also focus on increasing prosocial attitudes and decreasing antisocial attitudes.

The findings of this dissertation indicate that the relationship between attitudes and associations with peers is intertwined; therefore, programs that wish to change peer associations should also include a focus on attitudes. Of course other factors play a role in peer group formation and attitude change that cannot be accounted for by prevention programs such as neighborhood and school context. Prevention and intervention programs could certainly benefit youth regardless of context, but they are unlikely to be able to eliminate situations that occur in disadvantaged neighborhoods and schools (Anderson, 1999; Miller, 2008).

Given prior research, and the results of this dissertation, one important area to change peer associations and individual attitudes is through parenting practices. Research has found that spending time a large amount of time with family reduced delinquent involvement regardless of delinquent peers (Warr, 1993a) and that family involvement increases commitment to school (Jenkins, 1995). In addition, the results presented here show that increases in parental monitoring are significantly associated with increases in prosocial peers and attitudes as well as decreases in antisocial peers and attitudes. These findings indicate that parental monitoring is capable of influencing two causes of behavior: peers and attitudes. Warr (1993a) finds that closeness to parents is correlated with completely prosocial peer groups. He argues that this occurs because the parents are monitoring the youth's peer group or the youth wishes to please his/her parents. Increased supervision by parents and better parenting practices in general are likely to be beneficial to youth in terms of both decreasing antisocial attitudes and associations, but also increasing associations with prosocial youth and attitudes.

Overall, prevention and interventions strategies aimed at youths' peer groups and parenting practices will benefit youth in terms of increased school commitment and decreased antisocial attitudes, which are both correlated with criminal behavior. It is also important to be conscious of the fact that peer groups and attitudes can be influenced by other factors such as neighborhood and school context. Policy implications do not encompass all factors that can affect involvement with antisocial peers over prosocial peers and the formation of antisocial attitudes over prosocial attitudes.

Limitations and Future Research

This dissertation was able to provide some advancement to both theory and policy, but is not without limitations. The primary limitations were discussed in detail in the methods section, but will be reviewed here. First, this dissertation uses longitudinal self-report data, which are subject to limitations surrounding differential validity and maturational effects. Differential validity occurs when respondents misrepresent themselves in terms of attitudes and behaviors or simply misunderstand the questions (Hindelang, Hirschi, and Weis, 1979; Paulhus and John, 1998). However, it is arguably less likely that respondents will lie on attitudinal measures because they are less incriminating (Huizinga and Elliott, 1986). Maturational or testing effects can also be an issue in longitudinal self-report studies. For instance, a respondent who has become more sensitized to the attitudes and behaviors being measured over time can affect study validity (Menard, 2002). In addition, the meaning of certain survey items may change as the respondents' age, which affects validity (Lauritsen, 1998, 1999; Schwarz, 1999). The use of self-report data is necessary when examining attitudes; therefore, it is likely that these issues may have affected the reliability the results presented here. It is possible that

the study could have measured a change in the youths' interpretations of the attitudinal measures, rather than an actual change in youth attitudes. Furthermore, researchers have argued that longitudinal survey data may not be precise enough to determine causality (Menard, 2002) or be the best measurement of social learning theory (Akers and Jensen, 2006; Warr, 2002). Measurement periods used in this study may not be close enough together to separate out changes in peer behavior and changes in attitudes. The length of time between survey administrations in G.R.E.A.T. study was approximately one year, which could have an affect on the causal mechanisms discussed in this dissertation.

As discussed, the measure of peer behavior used in this dissertation is problematic in two main ways. First, prior research examines delinquent and prosocial peers in the context of the behavior rather than the attitudes of peers. Prior research has found that the relationship between peer behavior and individual attitudes is not as strong as the relationship between peer behavior and individual behavior (Warr and Stafford, 1991). This study used peer behavior to predict youth's attitudes; therefore, is it likely that the results were underestimated due to the use of peer behavior. Future research would benefit from a reexamination of the research questions to determine the effect of peer attitudes on individual attitudes above and beyond behavior. This would provide a more accurate picture of the strength of the relationships examined in this dissertation.

Second, similar to other studies, this study relies on youth's perceptions of his/her peers' behavior. Researchers argue that this measure is inaccurate because youth are projecting their own delinquency onto their peers (Gottfredson and Hirschi, 1990; Haynie, 2001; Jussim and Osgood, 1989; Matsueda and Anderson, 1998). Furthermore, research finds that the correlation between peer delinquency and an individual's own

delinquency is smaller when peers report on their own behavior (Haynie, 2001; Jussim and Osgood, 1989; Matsueda and Anderson, 1998). The measure of peer behavior used in this research was likely not as accurate as measures obtained using social network analysis. However, perceptions of the peer behavior may still have had a salient effect on a youth's attitudes. Heimer and Matsueda (1994) argued that youth who view their peer group as conventional or prosocial are likely to also believe that their peer group would not promote delinquency, thus developing attitudes against delinquency. On the other hand, youth who believe that they are part of a delinquent group may adopt rationalizations for this type of behavior. Based on this, it is likely that youth's perception of his/her peers' behavior still played an important role when explaining attitudes. In addition, cognitive dissonance theory would suggest that how a youth perceives the attitudes and behaviors of their peers is particularly salient in the formation of a dissonance. A related limitation concerns change in the peer group. Due to the measure of peer behavior, this dissertation was not able to determine if a youth changed his/her peer group or if the peer group changed behaviors. This is especially problematic for the examination of cognitive dissonance theory as it cannot be determined if youth are reducing dissonance by attempting to influence the behavior of the peers or by selecting into a more prosocial peer group. While it is not likely that the substantive findings of this study will change, examining the research questions using peer network analysis would be beneficial to future research. Peer network analysis would provide more accurate measurements of peer behavior as well as differentiation between a peer behavior change and a change in the peer group.

It is also important to note the limitation surrounding the instability of peer groups. There is an approximately one year time period between each wave of data collected in the G.R.E.A.T. evaluation; therefore, it is possible that youth experienced multiple changes in their peer group or attitudes between survey administrations. Research has shown that youth move in and out of peer groups frequently over time (Cairns et al., 1995; Elliott and Menard, 1996; Haynie, 2002; Thornberry, 1987). This phenomenon has been studied in the context of gang membership as well, which finds that membership typically lasts less than one year (Esbensen & Huizinga, 1993; Gordon et al., 2004; Thornberry et al., 2003). This research indicates that the measures of change in peer behavior may be inaccurate because a youth may have moved in and out of several peer groups within the time frame. Furthermore, the ratio of prosocial to antisocial peers could be representative of the instability of peer groups, rather than the range of prosocial and antisocial associations within a youth's group.

In addition, this study is not able to determine friendship quality, which has been shown to affect attitudes and behaviors (Agnew, 1991a; Berndt and Keefe, 1996). Social psychology research emphasizes the characteristics of the group has an important predictor of attitude change (Eagly and Chaiken, 1975; Hovland, Janis, and Kelley, 1953). For instance, friendships that are high in trust, loyalty, companionship, and caring are thought to be more influential, particularly for school commitment (Berndt and Keefe, 1996; Hallinan and Williams, 1990). Quality of friendships is thought to moderate the relationship between peer influence and attitudes (Agnew, 1991a; Warr, 1993b).[12] Agnew (1991a), for example, argues that the effect of delinquent peers is moderated by

[12]Additional analyses did examine the moderating effect of commitment to both positive and negative peers on the relationship between peer behavior and individual attitudes. However, no evidence of an interaction effect was found for either prosocial or antisocial attitudes.

friendship quality. Additionally, other characteristics (e.g., centrality, density, and popularity) of youth in peer groups have been shown to affect delinquency (Haynie, 2001; Warr, 1996). Future research should examine the moderating effects of these variables on the relationship between peer behavior and attitudes; specifically, focusing on the prosocial nature of these groups.

Finally, there are limitations surrounding the attitudinal variables used in this dissertation. First, the prosocial attitudes measured commitment to school only. It is likely that other forms of prosocial attitudes (e.g., religion, moral beliefs, etc) may not be as susceptible to changes in peer behavior. Second, neutralizations for theft and assault are not the only possible measures of antisocial attitudes. Other studies, using the National Youth Survey data, have examined attitudinal measures that consist of asking youth how wrong they think it is to participate in various delinquent acts (Warr and Stafford, 1991). While the attitudinal measures used in this dissertation are adequate, future research should examine additional types of antisocial and prosocial attitudes to determine the effect of peers.

Despite limitations, several avenues for future research can be drawn from this study. First, this dissertation only focused on the effect of peer behavior and changes in peer behavior on individual attitudes as well as the reverse. However, this is just one step in the process of determining which factors shape attitudes. Furthermore, given the importance of peer influence for both attitudes and behavior it is also imperative to determine factors that are capable of predicting stability and change in the peer group. It is likely that both structural context and demographic characteristics are capable of affecting changes in attitudes and peer groups.

Research has shown that where a youth lives can have an effect on his/her attitudes as well as peer associations (Anderson, 1999; Osgood and Anderson, 2004; Wolfgang and Ferracuti, 1967). In addition, research has argued that homophily within the peer group as well as increased time spent with peers can be the result of neighborhood context (Haynie, 2002; Osgood and Anderson, 2004; Warr, 2002). Distressed neighborhoods, as described by theories of social disorganization (Bursik and Grasmick, 1993; Shaw and McKay, 1942), have little social control over the youth in the community and low levels of parental monitoring, which increases unsupervised peer groups (Osgood and Anderson, 2004). Other research has shown that the adverse conditions created by disadvantaged neighborhoods may lead to increases in associations with antisocial peers as well as help to foster delinquent attitudes (Haynie, Silver, and Teasdale, 2006). Additionally, Anderson (1999) argues that youth in disadvantaged areas have put less value on school success, which could decrease levels of school commitment. This dissertation argues that examining the relationships proposed here in the context of neighborhood characteristics is an important avenue for future research. In addition, what, if any, effect does changes in neighborhood disadvantage have on association with delinquent and prosocial peers as well as changes in attitudes (prosocial and antisocial)? Are the possible effects of a change in neighborhood context occurring immediately, or does it take time to acclimate to a new neighborhood (i.e., expect a lagged effect)?

In a related call for future research, the schools youth attend are also likely to influence association with prosocial versus antisocial peers as well as delinquent attitudes and attitudes toward school. The age-graded nature of schools allows youth of similar

phases of psychical and cognitive development to associate with one another, which influences peer formation (Kandel and Andrews, 1987). In disadvantaged schools, with poor school climate, youth have been found to have lower levels of school bonding (Gottfredson and Gottfredson, 1985; Welsh, Greene, and Jenkins, 1999). It is possible that youth who attend disadvantaged schools are unable to develop the appropriate bonds to the school to prevent the development of antisocial attitudes and associations with delinquent peers (Felson, Liska, South, and McNulty, 1994; Hirschi, 1969; Welsh, Greene, and Jenkins, 1999). For instance, Felson and associates (1994) find that youth in disadvantaged schools have higher pro-violent attitudes. Future research would benefit from an examination of the relationship between associations with delinquent versus prosocial peers and attitudes in the context of school characteristics. Is it possible that changing from a more to less disadvantaged school is able to predict changes in peer associations and attitudes?

Demographic factors such as age, race, and sex are likely to have an impact on stability and change in peer groups as well as attitudes. First, research has shown that controlling for the effect of peers substantially weakens the relationship between age and crime (Warr, 1993b). In addition, conformity to peers, delinquent attitudes, and school commitment are likely to change throughout adolescence (Berndt, 1979; Welsh, Greene, and Jenkins, 1999; Zhang, Loeber, and Stouthamer-Loeber, 1997). While this dissertation looked at three time periods, it is likely that changes occur as youth become older (e.g., high school age). An examination of the effects of transitioning from middle to high school on these relationships would benefit future research. Is it possible that

youth use the transition to make new more prosocial or delinquent friends? Is it possible that school commitment increases as a youth moves to high school?

Youth of different races are likely to have unique experiences regarding peer associations, delinquent attitudes, and school commitment. Prior research has found race differences in the way youth respond to their peers regarding delinquency (Giordano, Cernkovich, and DeMaris, 1993). For example, black youth, compared with whites, report lower need for approval from peers and perceive less peer pressure. In addition, black youth compared with white youth indicated that having a peer group is less important and that they spend more time with their family (Giordano, Cernkovich, and DeMaris, 1993). This dissertation found that black, Hispanic, and youth of other races had significantly less prosocial peer associations than white youth, but they were not significantly different from white youth on associations with antisocial peers. As an extension of this, the relationship between peers and attitudes could be particularly strong for minority youth (Anderson, 1999; Wolfgang and Ferracuti, 1967). Black youth have been shown to have higher levels of delinquent attitudes and lower levels of school commitment (Anderson, 1999). This is thought to be at least partially due to black youth not wanting to keep up a tough appearance and not be thought of as "acting white" (Anderson, 1999). However, in the current work, black youth had significantly higher levels of antisocial attitudes and school commitment. Hispanics and youth of other races, however, did hold more delinquent attitudes than white youth. Overall, it is clear that peer associations, delinquent attitudes, and commitment to school all vary by race; however, does the relationship between associations with peers and attitudes also vary by race?

Finally, sex differences may also be found in these relationships. It is likely that females may have different experiences within the peer group than males (Berndt, 1979; Kanter, 1977; Peterson, Miller, and Esbensen, 2001). Females are also likely to hold less delinquent attitudes as well as more positive attitudes toward school (Esbensen et al., 2010). Furthermore, research finds that females are more likely than males to change their attitudes in a conforming way (Hovland, Janis, and Kelley, 1957). In addition, the correlation matrix presented in this dissertation indicates that the relationship between sex and association with delinquent peers does not hold across time. Males were associated with more antisocial peers than females at earlier time points. However, as they aged there was no difference between males and females on associations with antisocial peers. It would be beneficial to examine male and female differences in the research questions asked in this dissertation.

In conclusion, despite many significant limitations, this dissertation was able to make advancements to both social learning and cognitive dissonance theory, implications for policy, and provide many future research paths. Overall, this research finds support for the selection perspective and that attitudes are associated with selection into a prosocial or antisocial peer group. In addition, changes in attitudes are able to predict changes in the peer group. The effects of peer associations should not be discounted either. It was revealed in this dissertation that prosocial peers relative to antisocial attitudes are very important in reducing antisocial attitudes and increasing prosocial attitudes across time. In addition, the ratio of prosocial to antisocial peers was associated with both prosocial and antisocial attitudes. This dissertation also examined change in these variables. Changes in the prosocial and antisocial nature of the peer group were

associated with changes in prosocial and antisocial attitudes. Overall, these findings indicate the significance of continuing to examine factors that predict associations with delinquent peers over prosocial peers as well as changes in attitudes. In addition, criminological research should not ignore the importance of understanding and predicting other correlates to criminal behavior. As Warr (2002:124) states "…stopping crime *before* it happens by understanding and altering its causes is surely the most defensible and profitable course of action."

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APPENDIX A

This appendix lists the exact wordings of all the questions used in variable creation as well as the Time One factor scores in parentheses. The scale means and alpha scores are provided for Time One as well.

Antisocial Attitudes: How much do you agree or disagree with each statement?

1. It's okay to steal something from someone who is rich and can easily replace it (0.742)
2. It's okay to take little things from a store without paying for them since stores make so much money that it won't hurt them (0.746)
3. It's okay to steal something if that's the only way you could ever get it (0.743)
4. It's okay to beat up someone if they hit you first (0.757)
5. It's okay to beat up someone if you have to stand up for or protect your rights (0.690)
6. It's okay to beat up someone if they are threatening to hurt your friends or family (0.645)

Response categories: Strongly disagree, Disagree, Neither agree nor disagree, Agree, and Strongly agree
Scale Mean: 2.44 (0.81); Alpha Reliability: 0.81

Prosocial Attitudes about School: How much do you agree or disagree with each statement?

1. Homework is a waste of time $(0.606)^{R}$
2. I try hard in school (0.674)
3. Education is so important that it's worth it to put up with things about school that I don't like (0.554)
4. In general, I like school (0.659)
5. Grades are very important to me (0.738)
6. I usually finish my homework (0.671)
7. If you had to choose between studying to get a good grade on a test or going out with your friends which would you do (0.706)

Response categories: Strongly disagree, Disagree, Neither agree nor disagree, Agree, and Strongly agree
Scale Mean: 3.94 (0.68); Alpha Reliability: 0.77

Prosocial Peers: During the last year, how many of your current friends have done the following?

1. Gotten along will with teachers and adults at school (0.797)
2. Have been thought of as good students (0.841)
3. Have been generally honest and told the truth (0.814)
4. Almost always obeyed school rules (0.820)

Response categories: None of them, Few of them, Half of them, Most of them, All of them
Scale Mean: 3.46 (0.87); Alpha Reliability: 0.83

Antisocial Peers: During the last year, how many of your current friends have done the following?

1. Skipped school without an excuse (0.652)
2. Stolen something worth less than $50 (0.703)
3. Attacked someone with a weapon (0.711)
4. Sold marijuana or other illegal drugs (0.820)
5. Used tobacco or alcohol products (0.829)
6. Used marijuana or other illegal drugs (0.817)
7. Belonged to a gang (0.762)

Response categories: None of them, Few of them, Half of them, Most of them, All of them
Scale Mean: 1.28 (0.52); Alpha Reliability: 0.86

Parental Monitoring: How much do you agree or disagree with each statement?

1. When I go someplace, I leave a note for my parents or call them to tell them where I am (0.561)
2. My parents know where I am when I am not at home or at school (0.807)
3. I know how to get in touch with my parents if they are not at home (0.656)
4. My parents know who I am with if I am not at home (0.801)

Response categories: Strongly disagree, Disagree, Neither agree nor disagree, Agree, and Strongly agree
Scale Mean: 4.08 (0.73); Alpha Reliability: 0.68

Impulsivity: How much do you agree or disagree with each statement?

1. I often act without stopping to think (0.631)
2. I don't devote much thought and effort to preparing for the future (0.700)
3. I often do whatever brings me pleasure here and now, even at the cost of some distant goal (0.699)
4. I'm more concerned with what happens to me in the short run than in the long run (0.655)

Response categories: Strongly disagree, Disagree, Neither agree nor disagree, Agree, and Strongly agree
Scale Mean: 2.95 (0.81); Alpha Reliability: 0.59

Community Disorder: How much of a problem are each of these things?

1. Run-down or poorly kept buildings in your neighborhood (0.755)
2. Groups of people hanging out in public places causing trouble in your neighborhood (0.850)
3. Graffiti on buildings and fences in your neighborhood (0.744)
4. Hearing gunshots in your neighborhood (0.838)
5. Cars traveling too fast throughout the streets of your neighborhood (0.645)
6. Gangs in your neighborhood (0.850)

Response categories: Not a problem, Somewhat of a problem, A big problem
Scale Mean: 1.80 (0.63); Alpha Reliability: 0.87

Delinquency: How many times in the past 6 months have you…

1. Skipped classes without an excuse
2. Lied about your age to get into some place or to buy something
3. Avoided paying for things such as movies, bus, or subway rides
4. Purposely damaged or destroyed property that did not belong to you
5. Carried a hidden weapon for protection
6. Illegally spray painted a wall or a building
7. Stolen or tried to steal something worth less than $50
8. Stolen or tried to steal something worth more than $50
9. Gone into or tried to go into a building to steal something
10. Hit someone with the idea of hurting him/her
11. Attacked someone with a weapon
12. Used a weapon or force to get money or things from people
13. Been involved in gang fights
14. Sold marijuana or other illegal drugs

Response categories: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, more than 10

APPENDIX B

Full Path Analysis results for Antisocial Attitudes (1)

			Estimate	S.E.	C.R.	P	Standardized Estimate
age	→	antipeer1	0.124	0.014	8.983	*	0.173
age	→	antiatt1	0.164	0.020	8.082	*	0.147
sex	→	antipeer1	-0.018	0.019	-0.976	*	-0.018
sex	→	antiatt1	-0.236	0.028	-8.465	*	-0.152
black	→	antipeer1	0.116	0.038	3.052	*	0.085
black	→	antiatt1	0.308	0.052	5.918	*	0.145
hisp	→	antiatt1	0.313	0.037	8.555	*	0.204
hisp	→	antipeer1	0.114	0.026	4.445	*	0.115
other	→	antiatt1	0.179	0.043	4.136	*	0.085
other	→	antipeer1	0.074	0.029	2.519	*	0.054
great	→	antiatt1	0.007	0.028	0.261		0.005
great	→	antipeer1	-0.012	0.019	-0.645		-0.012
delinq1	→	antipeer1	0.063	0.003	19.167	*	0.447
delinq1	→	antiatt1	0.111	0.005	24.253	*	0.504
delinq1	→	delinq2	0.538	0.020	27.548	*	0.482
antipeer1	→	antiatt2	-0.047	0.032	-1.439		-0.027
antiatt1	→	antipeer2	0.071	0.018	4.010	*	0.087
antipeer1	→	antipeer2	0.265	0.025	10.464	*	0.208
antiatt1	→	antiatt2	0.418	0.023	18.389	*	0.380
age	→	antiatt2	0.017	0.020	0.856		0.014
age	→	antipeer2	0.010	0.015	0.620		0.011
sex	→	antipeer2	0.007	0.021	0.313		0.005
sex	→	antiatt2	-0.130	0.027	-4.782	*	-0.076
black	→	antipeer2	-0.076	0.033	-2.266	*	-0.044
black	→	antiatt2	0.122	0.043	2.840	*	0.052
hisp	→	antipeer2	0.108	0.027	4.070	*	0.087
hisp	→	antiatt2	0.238	0.034	6.986	*	0.141
other	→	antiatt2	0.128	0.041	3.093	*	0.055
other	→	antipeer2	-0.026	0.032	-0.811		-0.015
great	→	antiatt2	-0.017	0.027	-0.649		-0.010
great	→	antipeer2	-0.028	0.021	-1.346		-0.022
impulsv1	→	impulsv3	0.309	0.019	16.542	*	0.307
parmon1	→	parmon3	0.294	0.018	16.223	*	0.291
comdis1	→	comdis3	0.470	0.016	28.765	*	0.496
impulsv1	→	parmon3	-0.022	0.016	-1.380		-0.024
impulsv1	→	comdis3	0.018	0.013	1.437		0.025
parmon1	→	impulsv3	-0.117	0.021	-5.457	*	-0.103
parmon1	→	comdis3	-0.042	0.014	-2.896	*	-0.050
comdis1	→	parmon3	-0.024	0.021	-1.175		-0.021
comdis1	→	impulsv3	0.097	0.024	4.009	*	0.075
impulsv1	→	antipeer2	0.057	0.017	3.416	*	0.073
parmon1	→	antipeer2	-0.046	0.019	-2.447	*	-0.053
comdis1	→	antipeer2	-0.012	0.026	-0.458		-0.012
impulsv1	→	antiatt2	-0.016	0.021	-0.746		-0.015

Full Path Analysis results for Antisocial Attitudes (2)

			Estimate	S.E.	C.R.	P	Standardized Estimate
parmon1	→	antiatt2	-0.094	0.024	-3.891	*	-0.079
comdis1	→	antiatt2	0.069	0.033	2.116	*	0.050
delinq1	→	antipeer2	0.009	0.004	2.310	*	0.051
delinq1	→	antiatt2	-0.004	0.005	-0.742		-0.016
delinq2	→	antipeer2	0.083	0.004	22.918	*	0.516
delinq2	→	antiatt2	0.104	0.005	22.771	*	0.480
delinq2	→	delinq3	0.554	0.017	31.891	*	0.537
antiatt2	→	antipeer3	-0.006	0.015	-0.364		-0.007
antipeer2	→	anitatt3	-0.001	0.028	-0.033		-0.001
antipeer2	→	antipeer3	0.426	0.020	21.266	*	0.405
antiatt2	→	anitatt3	0.417	0.021	20.005	*	0.415
age	→	antipeer3	0.052	0.014	3.771	*	0.055
age	→	anitatt3	-0.043	0.019	-2.282	*	-0.035
sex	→	antipeer3	0.049	0.019	2.536	*	0.037
sex	→	anitatt3	-0.161	0.027	-6.061	*	-0.094
black	→	antipeer3	-0.057	0.030	-1.868		-0.031
black	→	anitatt3	0.135	0.041	3.269	*	0.058
hisp	→	anitatt3	0.179	0.033	5.385	*	0.106
hisp	→	antipeer3	0.095	0.024	3.886	*	0.072
other	→	anitatt3	0.118	0.041	2.891	*	0.050
other	→	antipeer3	0.077	0.030	2.572	*	0.042
great	→	anitatt3	0.001	0.026	0.049		0.001
great	→	antipeer3	0.018	0.019	0.918		0.013
impulsv2	→	impulsv3	0.372	0.018	20.775	*	0.380
parmon2	→	parmon3	0.466	0.019	24.240	*	0.439
comdis2	→	comdis3	0.546	0.015	35.639	*	0.581
impulsv2	→	parmon3	-0.019	0.017	-1.100		-0.020
impulsv2	→	comdis3	0.018	0.012	1.493		0.026
parmon2	→	impulsv3	-0.089	0.020	-4.353	*	-0.081
comdis2	→	impulsv3	0.047	0.023	2.009	*	0.035
comdis2	→	parmon3	0.030	0.022	1.373		0.023
parmon2	→	comdis4	-0.004	0.013	-0.333		-0.006
impulsv2	→	antipeer3	0.026	0.015	1.684		0.032
parmon2	→	antipeer3	-0.011	0.019	-0.582		-0.012
comdis2	→	antipeer3	-0.094	0.026	-3.694	*	-0.084
impulsv2	→	anitatt3	-0.016	0.022	-0.706		-0.015
parmon2	→	anitatt3	-0.063	0.028	-2.291	*	-0.053
comdis2	→	anitatt3	-0.023	0.038	-0.608		-0.016
delinq1	→	antipeer3	0.006	0.003	1.739		0.029
delinq1	→	anitatt3	0.002	0.004	0.409		0.007
delinq2	→	antipeer3	-0.002	0.004	-0.466		-0.010
delinq2	→	anitatt3	-0.008	0.005	-1.627		-0.037
delinq3	→	antipeer3	0.069	0.003	23.575	*	0.416
delinq3	→	antiatt3	0.072	0.004	17.906	*	0.340
impulsv1	→	antiatt1	-0.120	0.035	-3.465	*	-0.125

Full Path Analysis results for Antisocial Attitudes (3)

			Estimate	S.E.	C.R.	P	Standardized Estimate
parmon1	→	antiatt1	0.182	0.039	4.676	*	0.168
comdis1	→	antiatt1	0.262	0.068	3.843	*	0.211
parmon1	→	antipeer1	-0.074	0.030	-2.505	*	-0.107
comdis1	→	antipeer1	-0.228	0.055	-4.127	*	-0.286
impulsv1	→	antipeer1	0.103	0.028	3.740	*	0.166
antiatt1	→	comdis1	-0.184	0.074	-2.506	*	-0.229
antiatt1	→	parmon1	-0.335	0.046	-7.263	*	-0.363
antiatt1	→	impulsv1	0.395	0.055	7.182	*	0.381
antipeer1	→	impulsv1	-0.290	0.097	-2.983	*	-0.179
antipeer1	→	parmon1	0.001	0.078	0.008		0.000
antipeer1	→	comdis1	0.622	0.126	4.938	*	0.495
impulsv2	→	antiatt2	0.061	0.038	1.585		0.058
parmon2	→	antiatt2	0.173	0.040	4.281	*	0.147
comdis2	→	antiatt2	-0.106	0.048	-2.187	*	-0.074
impulsv2	→	antipeer2	-0.193	0.032	-5.972	*	-0.248
parmon2	→	antipeer2	0.032	0.032	1.018		0.037
comdis2	→	antipeer2	0.085	0.039	2.186	*	0.080
antiatt2	→	impulsv2	0.054	0.053	1.030		0.057
antiatt2	→	parmon2	-0.310	0.038	-8.222	*	-0.366
antiatt2	→	comdis2	0.103	0.030	3.398	*	0.148
antipeer2	→	impulsv2	0.447	0.075	5.943	*	0.348
antipeer2	→	parmon2	-0.137	0.051	-2.719	*	-0.120
antipeer2	→	comdis2	0.016	0.041	0.377		0.017
impulsv3	→	antiatt3	0.116	0.037	3.129	*	0.108
parmon3	→	antiatt3	0.075	0.039	1.915		0.067
comdis3	→	antiatt3	-0.022	0.056	-0.397		-0.014
impulsv3	→	antipeer3	-0.029	0.023	-1.284		-0.035
parmon3	→	antipeer3	-0.012	0.024	-0.493		-0.014
comdis3	→	antipeer3	0.143	0.035	4.072	*	0.120
antiatt3	→	impulsv3	0.055	0.039	1.429		0.060
antiatt3	→	parmon3	-0.145	0.036	-4.070	*	-0.161
antiatt3	→	comdis3	0.068	0.025	2.735	*	0.105
antipeer3	→	impulsv3	0.244	0.044	5.593	*	0.204
antipeer3	→	parmon3	-0.162	0.040	-4.006	*	-0.140
antipeer3	→	comdis3	-0.006	0.029	-0.205		-0.007

Full Path Analysis results for Prosocial Attitudes (1)

			Estimate	S.E.	C.R.	P	Standardized Estimate
age	→	propeer1	-0.145	0.028	-5.210	*	-0.107
age	→	proatt1	-0.101	0.018	-5.719	*	-0.105
sex	→	propeer1	0.218	0.039	5.613	*	0.115
sex	→	proatt1	0.085	0.025	3.457	*	0.063
black	→	propeer1	-0.337	0.069	-4.896	*	-0.130
black	→	proatt1	0.097	0.044	2.187	*	0.053
hisp	→	proatt1	-0.104	0.033	-3.140	*	-0.078
hisp	→	propeer1	-0.476	0.051	-9.297	*	-0.255
other	→	proatt1	-0.023	0.038	-0.595		-0.012
other	→	propeer1	-0.225	0.060	-3.739	*	-0.087
great	→	proatt1	-0.013	0.024	-0.543		-0.010
great	→	propeer1	0.031	0.039	0.815		0.017
delinq1	→	propeer1	-0.106	0.006	-16.870	*	-0.394
delinq1	→	proatt1	-0.074	0.004	-18.162	*	-0.387
delinq1	→	delinq2	0.538	0.020	27.548	*	0.482
propeer1	→	proatt2	0.039	0.017	2.230	*	0.049
proatt1	→	propeer2	0.195	0.034	5.688	*	0.138
propeer1	→	propeer2	0.286	0.022	12.993	*	0.283
proatt1	→	proatt2	0.508	0.027	18.921	*	0.458
age	→	proatt2	0.066	0.020	3.366	*	0.062
age	→	propeer2	-0.007	0.025	-0.269		-0.005
sex	→	propeer2	0.034	0.034	1.005		0.018
sex	→	proatt2	0.044	0.027	1.622		0.030
black	→	propeer2	-0.279	0.055	-5.090	*	-0.107
black	→	proatt2	0.134	0.044	3.067	*	0.066
hisp	→	propeer2	-0.367	0.044	-8.430	*	-0.195
hisp	→	proatt2	-0.141	0.035	-4.073	*	-0.096
other	→	proatt2	-0.001	0.042	-0.030		-0.001
other	→	propeer2	-0.234	0.053	-4.447	*	-0.089
great	→	proatt2	-0.010	0.027	-0.387		-0.007
great	→	propeer2	0.003	0.034	0.077		0.001
impulsv1	→	impulsv2	0.288	0.018	15.878	*	0.285
parmon1	→	parmon2	0.271	0.018	14.958	*	0.267
comdis1	→	comdis3	0.433	0.018	23.494	*	0.458
impulsv1	→	parmon2	-0.012	0.015	-0.764		-0.013
impulsv1	→	comdis2	0.021	0.013	1.566		0.028
parmon1	→	impulsv2	-0.094	0.021	-4.440	*	-0.083
parmon1	→	comdis2	-0.023	0.016	-1.437		-0.027
comdis1	→	parmon2	-0.039	0.021	-1.898		-0.034
comdis1	→	impulsv2	0.136	0.025	5.520	*	0.105
impulsv1	→	propeer2	-0.004	0.027	-0.155		-0.003
parmon1	→	propeer2	0.115	0.031	3.700	*	0.086
comdis1	→	propeer2	-0.316	0.049	-6.482	*	-0.207
impulsv1	→	proatt2	-0.075	0.021	-3.612	*	-0.081

Full Path Analysis results for Prosocial Attitudes (2)

			Estimate	S.E.	C.R.	P	Standardized Estimate
parmon1	→	proatt2	0.042	0.024	1.750	*	0.040
comdis1	→	proatt2	-0.006	0.035	-0.163		-0.005
delinq1	→	propeer2	0.001	0.006	0.090		0.002
delinq1	→	proatt2	0.016	0.005	3.344	*	0.076
delinq2	→	propeer2	-0.091	0.006	-15.437	*	-0.372
delinq2	→	proatt2	-0.084	0.005	-18.519	*	-0.443
delinq2	→	delinq3	0.554	0.017	31.891	*	0.537
proatt2	→	propeer3	0.102	0.029	3.472	*	0.084
propeer2	→	proatt3	0.014	0.016	0.909		0.019
propeer2	→	propeer3	0.317	0.022	14.613	*	0.332
proatt2	→	proatt3	0.486	0.021	22.711	*	0.506
age	→	propeer3	0.058	0.023	2.588	*	0.045
age	→	proatt3	0.035	0.017	2.083	*	0.034
sex	→	propeer3	0.036	0.032	1.154		0.020
sex	→	proatt3	0.050	0.023	2.148	*	0.035
black	→	propeer3	-0.233	0.050	-4.643	*	-0.093
black	→	proatt3	0.093	0.037	2.500	*	0.047
hisp	→	proatt3	-0.033	0.030	-1.127		-0.024
hisp	→	propeer3	-0.247	0.040	-6.169	*	-0.137
other	→	proatt3	0.035	0.036	0.976		0.018
other	→	propeer3	-0.095	0.049	-1.951		-0.038
great	→	proatt3	0.076	0.023	3.249	*	0.053
great	→	propeer3	0.054	0.032	1.729		0.030
impulsv2	→	impulsv3	0.331	0.019	17.641	*	0.338
parmon2	→	parmon3	0.432	0.020	22.055	*	0.407
comdis2	→	comdis3	0.523	0.016	32.364	*	0.557
impulsv2	→	parmon3	0.016	0.017	0.938		0.017
impulsv2	→	comdis3	0.024	0.013	1.885		0.035
parmon2	→	impulsv3	-0.054	0.021	-2.520	*	-0.049
comdis2	→	impulsv3	0.080	0.024	3.356	*	0.060
comdis2	→	parmon3	0.026	0.022	1.180		0.020
parmon2	→	comdis3	-0.008	0.014	-0.548		-0.010
impulsv2	→	propeer3	-0.082	0.028	-2.938	*	-0.073
parmon2	→	propeer3	0.123	0.035	3.467	*	0.098
comdis2	→	propeer3	-0.153	0.052	-2.951	*	-0.099
impulsv2	→	proatt3	-0.076	0.020	-3.893	*	-0.087
parmon2	→	proatt3	0.003	0.024	0.104		0.003
comdis2	→	proatt3	0.100	0.034	2.910	*	0.083
delinq1	→	propeer3	0.000	0.005	-0.061		-0.001
delinq1	→	proatt3	0.003	0.004	0.751		0.014
delinq2	→	propeer3	0.004	0.006	0.773		0.019
delinq2	→	proatt3	0.005	0.004	1.269		0.029
delinq3	→	propeer3	-0.059	0.005	-12.417	*	-0.263
delinq3	→	proatt3	-0.035	0.004	-9.874	*	-0.195

Full Path Analysis results for Prosocial Attitudes (3)

			Estimate	S.E.	C.R.	P	Standardized Estimate
impulsv1	→	proatt1	-0.124	0.036	-3.476	*	-0.148
parmon1	→	proatt1	0.121	0.038	3.155	*	0.128
comdis1	→	proatt1	0.323	0.052	6.177	*	0.299
parmon1	→	propeer1	-0.253	0.063	-3.993	*	-0.192
comdis1	→	propeer1	-0.189	0.080	-2.350	*	-0.125
impulsv1	→	propeer1	0.303	0.059	5.103	*	0.258
proatt1	→	comdis1	-0.337	0.066	-5.085	*	-0.363
proatt1	→	parmon1	0.070	0.047	1.491		0.066
proatt1	→	impulsv1	0.131	0.068	1.910		0.109
propeer1	→	impulsv1	-0.363	0.052	-7.008	*	-0.427
propeer1	→	parmon1	0.315	0.035	8.892	*	0.416
propeer1	→	comdis1	0.057	0.046	1.239		0.087
impulsv2	→	proatt2	0.216	0.039	5.580	*	0.235
parmon2	→	proatt2	-0.129	0.041	-3.159	*	-0.126
comdis2	→	proatt2	-0.064	0.055	-1.167		-0.051
impulsv2	→	propeer2	-0.010	0.052	-0.199		-0.009
parmon2	→	propeer2	-0.129	0.056	-2.290	*	-0.098
comdis2	→	propeer2	0.460	0.083	5.538	*	0.285
proatt2	→	impulsv2	-0.508	0.051	-9.888	*	-0.467
proatt2	→	parmon2	0.318	0.039	8.239	*	0.327
proatt2	→	comdis2	0.168	0.041	4.097	*	0.212
propeer2	→	impulsv2	-0.009	0.042	-0.218		-0.011
propeer2	→	parmon2	0.183	0.032	5.635	*	0.240
propeer2	→	comdis2	-0.251	0.037	-6.853	*	-0.404
impulsv3	→	proatt3	0.104	0.033	3.125	*	0.116
parmon3	→	proatt3	0.057	0.036	1.613		0.062
comdis3	→	proatt3	-0.156	0.052	-3.004	*	-0.121
impulsv3	→	propeer3	0.003	0.051	0.060		0.003
parmon3	→	propeer3	-0.105	0.056	-1.877		-0.089
comdis3	→	propeer3	0.224	0.082	2.724	*	0.136
proatt3	→	impulsv3	-0.336	0.045	-7.397	*	-0.303
proatt3	→	parmon3	0.168	0.042	4.035	*	0.156
proatt3	→	comdis3	0.140	0.032	4.326	*	0.181
propeer3	→	impulsv3	-0.064	0.040	-1.614		-0.073
propeer3	→	parmon3	0.218	0.037	5.908	*	0.258
propeer3	→	comdis3	-0.154	0.029	-5.319	*	-0.252