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# Peer Victimization and Prosocial Behavior Trajectories: Exploring a Potential Source of Resilience for Victims

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PEER VICTIMIZATION AND PROSOCIAL BEHAVIOR TRAJECTORIES:  
EXPLORING A POTENTIAL SOURCE OF RESILIENCE FOR VICTIMS

by

Emily R. Griese

A DISSERTATION

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The Graduate College at the University of Nebraska  
In Partial Fulfillment of Requirements  
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Major: Psychological Studies in Education  
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Under the Supervision of Professor Eric S. Buhs

Lincoln, Nebraska

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PEER VICTIMIZATION AND PROSOCIAL BEHAVIOR TRAJECTORIES:  
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University of Nebraska, 2013

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The purpose of this study was to examine the developmental trajectory of a potential source of resilience, prosocial behaviors, and its association with children's peer victimization from third to sixth grade. Latent growth mixture modeling (LGMM) was employed to explore first whether there were latent classes that emerged from these associations over time, and second, if there was a latent class indicating a potentially resilient pattern for victims. That is, a class with decreasing peer victimization and increasing or high-stable prosocial behaviors. The current study examined 1091 children (540 females, 81.4% Caucasian) who were followed across several time points (birth to 9th grade) as part of the NICHD Study of Early Child Care. Data from the third phase were used for the current study, with assessments included from third to sixth grade. Findings from a parallel process LGMM indicated three latent classes (labeled normative, at-risk, and resilient) emerged from the data supporting the proposed hypotheses. Characteristics of each class are as follows: the normative class indicated a slight decrease in victimization and high-stable prosocial behaviors, the at-risk class indicated increasing victimization and decreasing prosocial behaviors, and, most notably, the

resilient class indicated high initial, but dramatically decreasing victimization and high-stable prosocial behaviors. Follow-up analyses with covariates from the family, school, and individual levels further supported the labeling of these classes. Results highlight the need for further examine potential heterogeneity among victims, in particular, examining a source of resilience the victims themselves can enact. Implications for future studies examining prosocial behaviors as a source of resilience for peer victimized children are discussed.

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## CHAPTER I

### **Introduction**

Peer victimization is a dynamic social process often associated with an increased risk for a wide array of both short- and long-term adjustment problems (e.g. Boivin & Hymel, 1997; Buhs, Ladd, & Herald, 2006). This association with maladjustment outcomes has further been linked to the potential for continued victimization (either increasing or stable victimization trajectories) over time (Biggs, Vernberg, Little, Dill, Fonagy, & Twemlow, 2010). Given the potential longitudinal effects of peer victimization, researchers and practitioners alike have continued to focus their efforts towards understanding the various factors that may place children at risk for victimization and the impact these factors may have over time. Working from a framework focused primarily on mitigating the risk factors present for victims, however, has often been to the detriment of adequately exploring and understanding potential sources of resilience that may be present among peer victimized children.

While empirical findings have provided evidence of resilient victims, indicating they appear to follow a more adaptive pattern despite the risks associated with victimization (i.e. Hoover, Oliver, & Hazler, 1992; Hanish & Guerra, 2002), relatively fewer studies have actually examined the sources of resilience that may be present among these seemingly adaptive victims. This limitation may, in part, be associated with a lack of appropriate analyses that can adequately examine resilient subgroups within the larger population. By utilizing person-centered analyses, the current study will work to shift from an almost exclusive use of deficits-based models of victims towards a resilience-based model. Further, the goal of the current study is to examine the developmental

trajectory of a potential source of resilience, prosocial behaviors, and its potential impact on the developmental trajectories of peer victimization. In order to further understand these processes, contextual consideration will also be given by examining these associations over an important transitional time period from middle childhood to early adolescence.

### **Risk and Resilience**

The body of work examining potential sources of resilience for children who are at risk for persistent maladjustment often draws upon the larger framework of risk and resilience. Though the study of risk and resilience is relatively new to the science of human development, stemming from its origin in the health sciences and its relation to psychopathology, it has continued to provide an important theoretical and empirical structure for developmental research (Keyes, 2004). Risk factors, defined as measurable characteristics of the individual, their relationships, and their contexts which generate undesirable, non-normative developmental outcomes (Keyes, 2004; Kraemer, Kazdin, Offord, Kessler, Jensen, & Kupfer, 1997), may take the form of deficits in cognitive functioning, a lack of emotional regulation, harsh or difficult parenting or family situations, living in poverty, peer rejection, and aggressive or withdrawn behavior. Individuals exposed to or in the continued presence of a known risk factor for a significant period of time are categorized as “at-risk” for potential maladjustment outcomes (Keyes, 2004). While it is often suggested that at-risk individuals are at an increased likelihood for maladjustment above those who are not exposed to risk factors, resilience theory suggests that some individuals who undergo extreme adversities may continue on normative developmental trajectories. It is in these cases that Masten and

Coatsworth (1998) suggest there is a presence of resilience – a pattern of functioning that is indicative of positive adaptation in the face of significant risk. To be defined as resilient, two critical conditions must be met (1) the individual is exposed to a significant threat (risk factor) and (2) positive adaptation occurs despite being “at-risk” (Garmezy, 1991; Masten, Best, & Garmezy, 1990; Luthar, Cicchetti, & Becker, 2000).

In the current study, peer victimization, typically defined as the negative, aggressive actions directed toward a child by his or her peers (Crick & Grotpeter, 1996; Olweus, 1993), will be examined as a potential risk factor due to its common association with maladjustment outcomes. Outcomes that are often associated with peer victimization include increased internalizing difficulties such as depression and loneliness (Boivin & Hymel, 1997, Crick & Bigbee, 1998), decreased academic engagement and achievement (Buhs & Ladd, 2001), and/or increased externalizing difficulties such as aggression (Ladd, 2006). Given these potential outcomes, peer victimization researchers have continued to focus their efforts on victimization either as a risk factor for potential maladjustment itself or on its association with various related risk factors (i.e. peer rejection, aggression, etc.; Martin, Huebner & Valois, 2008; Warden & Mackinnon, 2003). Significantly less research, however, has adequately explored factors related to the processes that may be occurring among potentially resilient victims, victims who are exposed to a significant threat (e.g. peer victimization) and yet continue to show positive adaptation despite being “at-risk” (see resilience criteria outlined above).

Empirical findings have suggested the presence of resilient victims as findings from a study of middle and high school students suggest nearly 14% of those who reported being victimized by their peers at some point in their schooling indicated these

experiences had little to no effect on their adjustment (Hoover et al., 1992). However, the analyses traditionally used to examine peer victimization and related social behaviors (i.e. direct effects, growth curve analyses, etc.) have been unable to capture potentially unique developmental processes that may assist to explain meaningful heterogeneity across victims. Using person-centered analyses that allow for the classification of individuals into statistically different subgroups appears to be an important step within peer victimization research.

Among the studies that have empirically examined peer victimization using person-centered analyses, findings have further suggested the presence of resilient victims. Longitudinal findings by Hanish and Guerra (2002) indicated that victimized children had at least eight distinct outcome patterns, patterns associated with high levels of internalizing and externalizing problems that are typically reported, but also patterns where some participants displayed high achievement and more peer acceptance scores. These findings suggest that individuals exposed to similar risk factors (e.g. peer victimization) may not only experience a variety of adjustment patterns, but that some victims may display seemingly resilient responses that could be associated with more adaptive patterns. However, a limitation for this study and others like it is their inability to explore the potential developmental processes that may be associated with these potentially adaptive patterns.

### **Current State of Research: Peer Victimization, Resilience and Adjustment**

Among the studies that have examined both the risk factors and potential sources of resilience for peer victimized children, however, there continues to be a deficits-based focus. In a study of 5th, 6th, and 7th graders, researchers examined the impact a variety

of risk and protective factors had on the developmental trajectories of peer victimization (Goldbaum, Craig, Pepler, & Conolly, 2007). Trajectory analyses suggested four groups emerged from the data: non-victims with significantly low levels of victimization, desisters who started high and then showed decreasing victimization, late onset victims with increasing victimization, and stable victims with consistently high victimization. Findings from the study suggested internalizing outcomes (i.e. anxiety, withdrawal, and somatization), low quality friendships, aggression, and a lack of overall positive social interactions were associated with the increasing and stable victimization groups. The researchers also suggested that internalizing outcomes, in particular, may have been associated with peer interactions that placed children at an increased risk for continued victimization, a finding further supported by similar, related research findings (i.e. Rubin, Bukowski, & Parker, 1998). Protective factors were also identified in the study, however, these factors primarily focused on attributes of the non-victim trajectory suggesting that low internalizing outcomes, low aggression, and high quality friendship were each predictive of the non-victim group. The desisters, or those who started as victims and showed a decreasing trajectory, were found to have only one significant protective factor, that being a decrease in aggression during this time period.

Findings from this study exemplify some common trends (and potential limitations) in the risk and resilience research within peer relations. The first is the trend towards identifying factors associated with the non-victim group as likely serving a protective function. While the presence of quality friendships and low internalizing outcomes, for example, may be predictive of a non-victim status, it is not actually associated with decreasing the risk associated with already being a victim. Focusing on

factors that are associated with the desisters group (decreasing victimization over time) may be more likely to provide insight into behaviors that could potentially serve a resilient function for victims and further be associated with a decreasing victimization trajectory over time.

The second trend is a focus on the presence of negative behaviors and outcomes as risk factors and, subsequently, the absence of these negative behaviors or outcomes as serving a protective function. In this study a decrease in aggression was the only significant protective factor identified for the desisters group (Goldbaum et al., 2007). Although this served a clear protective function for the victims, these findings were limited in their ability to inform researchers, and possibly further intervention efforts, of behaviors that could be promoted among children undergoing peer victimization. Developing sources of resilience that build upon positive peer relationships in the midst of negative ones appears to be a salient direction for current peer victimization researchers.

Examining positive social or prosocial behaviors as a source of resilience, however, has often been overlooked within the peer victimization literature (Carlo, Crockett, Randall, & Roesch, 2007). This is likely, in part, based upon findings that suggest victims are unlikely to have the opportunity to engage in prosocial behaviors (Coleman & Byrd, 2003) as well as a lack of appropriate analyses to examine this potentially complex relationship. The current study will address both the potential theoretical implications for how some seemingly resilient victims may engage in prosocial behaviors as well as the current limitations in the empirical research exploring the associations between prosocial behaviors and peer victimization.

## **Prosocial Behaviors as a Potential Source of Resilience for Victims**

Sources of resilience are characteristics of the individual or their environment that may impact or be associated with positive developmental trajectories in the face of risk. To date, a significant portion of the victimization literature has focused on resilience factors that are characteristics of the victim's social relationships, for example, the potential resilience associated with receiving peer support or having quality friendships (i.e. Bukowski, Sippola, & Boivin, 1995; Schmidt & Bagwell, 2007). Significantly less research, however, has focused on the individual-level behaviors that may serve a resilient function for victims. In an attempt to address this limitation, the current study will examine prosocial behaviors as an individual asset of the child that may serve as a source of resilience for peer victimized children.

Defined, prosocial behaviors are behaviors intended to benefit another person or persons (Eisenberg, 1986) and often take the form of helping, sharing, or other acts of kindness (Carlo, Crockett, Randall, & Roesch, 2007). Proponents of a peer socialization perspective of prosocial development suggest peer relationships provide unique opportunities for children to learn and practice their prosocial behaviors (Kohlberg, 1969). Children who are well-accepted by their peers (as opposed to rejected or victimized) are more likely to benefit from continued peer interactions, increasing the number of opportunities they have to practice their prosocial behaviors. Those who initially are not well-accepted at the peer group level are subsequently less likely to benefit from this positive socialization cycle (Wentzel & McNamara, 1999). Prosocial children are also less likely to indicate a strain on their peer relationships, and in turn, less likely to be chosen as victims by their peers (Coleman & Byrd, 2003). Together, these



findings reiterate the common correlational trends that suggest prosocial children are less likely to be victims, and victims are less likely to engage in prosocial behaviors.

Research examining the associations among peer victimization and prosocial behavior has been limited (i.e. correlational, variable-centered analyses) in its ability to examine potential subgroups of victims that may be present. As previously suggested, empirical findings have suggested the presence of resilient victims (e.g. Hanish & Guerra, 2002) yet have been unable to examine the potential impact prosocial behaviors may have for these victims. Though the empirical research has yet to support this contention, there is theoretical support suggesting it is may be plausible that some resilient victims engage in prosocial behaviors and that the presence of these prosocial behaviors may further impact the developmental trajectories of some victims.

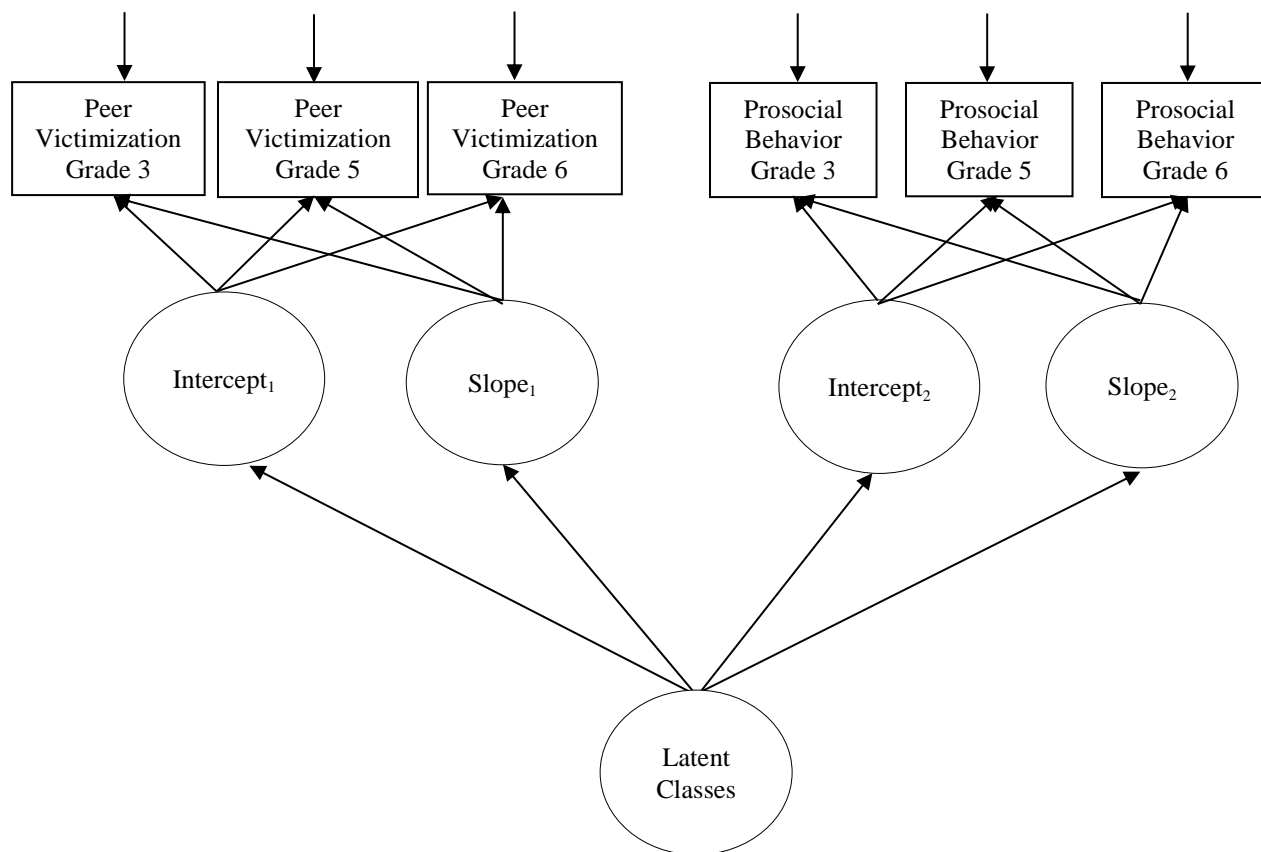
A theoretical model by Baumeister and Leary (1995) suggests that humans are innately motivated to form and to maintain social bonds, thus threats to one's need to belong (e.g. peer victimization, exclusion, etc.) should energize an adaptive response that would, at least in part, be focused on regaining (or maintaining) social acceptance and a sense of belongingness. In further fulfilling this need to belong, prosocial behaviors may serve to distract from stressors, providing individuals with feelings of purpose and meaning in difficult times (Midlarsky, 1991). Experiencing stress may also increase an individual's awareness of others' suffering which may, in turn, lead to awareness of engaging in more helping behaviors. Increased emotional sensitivity is proposed to lead to an increase in identifying with other victims and their suffering (i.e., an emotional sensitivity hypothesis; Staub, 2005).

## **The Current Study**

While there appears to be emerging theoretical support suggesting some victims may be able to engage in prosocial behaviors in the midst of social stressors, empirical studies have yet to utilize analyses that can appropriately explore these associations over time and further examine prosocial behaviors as a potential source of resilience for peer victimized children. The current model will focus in particular on the time period wherein children are undergoing important developmental transitions. Findings suggest that the frequency of peer victimization is likely to increase in middle to late childhood, similar to the time period in which the contextual change from elementary to middle school often occurs (Espelage, Bosworth, & Simon, 2000). It seems that along with this contextual shift, prior individual or social stressors (e.g. peer victimization) may be further exacerbated throughout this transition time. Further, it may be that during this time period, children are less likely to rely on social support as a potential protective factor given the considerable change that has likely occurred within their peer context. It is at this point that an individually initiated behavior (e.g. prosocial behaviors) may be more likely to serve as a source of resilience.

Based upon the lack of empirical research examining peer victimization in a model allowing for identification of various subpopulations (i.e. increasing prosocial behaviors, decreasing victimization; decreasing prosocial behaviors, stable victimization, etc.), the goal of the current study is to examine children's peer victimization and a potential source of resilience, prosocial behaviors, through the use of latent growth mixture modeling. Person-centered analyses such as latent growth mixture modeling allow for the examination of different latent classes in order to uncover potential,

meaningful heterogeneity across groups of individuals. While these analyses have often not been employed to date within developmental research, it appears they can provide important information for understanding significant differences among otherwise assumed homogeneous populations. Latent growth mixture modeling (see Figure 1 for general example) will be used in the current study to examine potentially distinct classes based on the developmental trajectories of peer victimization and prosocial behavior from middle childhood through the transition to early adolescence.



*Figure 1.* Example of a Latent Growth Mixture Model wherein  $Intercept_1$ ,  $Slope_1$ ,  $Intercept_2$ , and  $Slope_2$  together determine the latent classes. Traditional growth curve modeling allows for the estimation of a single population from the intercept and slope of each variable. Latent growth mixture modeling, seen here, will allow for the estimation of latent classes – classes that emerge from significant differences in the intercepts and slopes of subpopulations within the sample.

## CHAPTER II

### **Literature Review**

The purpose of the current study was to better understand the dynamic processes of peer victimization and prosocial behaviors and the potential source of resilience prosocial behaviors may serve for victims throughout the transition to adolescence. Prior research has often highlighted the negative adjustment patterns associated with peer victimization, focusing primarily on risk factors that predict and/or are associated with increasing or stable victimization over time. While limited numbers of studies have examined potential sources of resilience that may be associated with a decrease in the initiation or continuation of peer victimization, what remains further unexamined is the possible impact prosocial behaviors may have on children's peer victimization trajectories over time. Studies that have examined these associations have often also primarily utilized variable-centered analyses that are unable to capture potential heterogeneous subpopulations within a larger sample. For this study latent growth mixture modeling was employed to examine the possible impact prosocial behavior trajectories may have on children's trajectories of peer victimization throughout an important transition to adolescence (third through sixth grade).

The following literature review is an examination of the theoretical and empirical support for the contention that children's prosocial behavior trajectories may impact the developmental trajectories of some victims. Risk and resilience theory is examined first as a theoretical framework for examining these associations over time. Next, these associations are explored by defining and reviewing the literature on the constructs of interest, that is, peer victimization and prosocial behaviors. Specific attention is also

given to the empirical research that has modeled the developmental trajectories of peer victimization and prosocial behaviors separately over time and/or uncovered potential heterogeneity in these trajectories.

### **Risk and Resilience Framework**

Risk and resilience theory provides an important theoretical framework for examining and understanding human development. Risk factors are factors that generate undesirable, non-normative developmental outcomes (Keyes, 2004; Kraemer et al., 1997) and may be mitigated or influenced by potential sources of resilience present in a child's life. Individuals exposed to risk factors yet who indicate a positive developmental trajectory despite the presence of the risk factor or factors are labeled resilient. Within resiliency research, there is often a distinction between two ways of approaching research, either through variable- or person-focused studies (Luthar & Cushing, 1999; Masten, 2001). Variable-focused studies of resilience often occur at one time point and are meant to assess the associations between a risk factor (along with its various degrees) and a positive developmental outcome. These studies further account for factors that may impact these associations and have been the most common way of assessing risk and resilience to date. Person-centered studies of resilience, on the other hand, seek to determine how successful, resilient patterns actually occur, often by tracking individuals over several years in order to determine what may contribute to positive outcomes among at-risk individuals.

The current study examines potential resiliency among children who are victimized by their peers through the use of a person-focused risk and resilience framework. Resilience is considered as a dynamic process that should be modeled over

time in order to capture the change and constancy of the sources that may be contributing to resiliency seen among some peer victimized children. A person-centered approach is further in line with the recent shift in developmental research towards understanding underlying resilient processes (Masten & Wright, 2010). In order to examine these processes the focus is not simply to study what child, family, and environmental factors at one time point are involved in resilience (variable-centered) but rather *how* these factors impact developmental trajectories over time (Cowen, Wyman, Work, Kim, Fagen, & Magnus, 1997; Luthar, 1999). However, longitudinal analyses of the potential sources of resilience among peer victimized children using a person-centered approach have to date gone unexamined.

Resiliency-based research further suggests various avenues including prevention and intervention efforts advocate for the notion that resiliency can be promoted (Masten & Wright, 2010). That is, resiliency may not simply be something an individual has or doesn't have; rather it appears to be something that is teachable and learnable. Two important ways of promoting resiliency, as suggested by prior research findings (Masten & Wright, 2010), include increasing an individual's resources and assets as well as mobilizing and facilitating powerful protective systems. Provided these findings, the overall goal in examining victims within a risk and resilience framework should be to work towards increasing the potential range of strategies that are available to promote resiliency. A goal of the current study was to describe an unexamined potential source of resilience for victims. It is important, however, to first define and explore peer victimization as a construct, examining the various sources of risk often associated with

being a victim in order to better understand the potential resilience that may be present among some victims.

## **Peer Victimization**

### **Defining Peer Victimization**

Peer victimization is defined as the negative actions directed toward a child by his or her peers with the intention of inflicting injury or pain (Crick & Grotpeter, 1996; Olweus, 1993; Vernberg, Jacobs, & Hershberger, 1999). To date, considerable attention in the peer victimization research has focused on the detrimental effects often associated with being a victim, including lowered self-esteem (Prinstein, Boergers, & Vernberg, 2001), depressive symptoms (Crick & Bigbee, 1998; Prinstein et al., 2001), loneliness (Boivin & Hymel, 1997), social withdrawal (Crick & Bigbee, 1998), anxiety (Nishina, Juvonen, & Witkow, 2005), and decreased academic engagement and lowered academic achievement (Buhs & Ladd, 2001). Research examining peer victimization will often also focus on its association with a closely related construct, peer rejection. Although peer rejection, the negative attitude of the social group toward the child (Boivin, Hymel, & Bukowski, 1995), is a distinct construct from victimization (the actual behavioral expression of rejection), these two constructs tend to be highly correlated (e.g.  $r = .92$ , Buhs & Ladd, 2001).

It is apparent that when a child is rejected and subsequently victimized by his or her peers, the social disengagement that likely persists may increase a victim's chances of experiencing maladjustment. This cycle may be perpetuated further as maladjustment associated with victimization may, in turn, contribute to the increased likelihood of continued peer victimization (Dill, Vernberg, Fonagy, Twemlow, & Gamm, 2004). While



researchers suggest the isolated acts of victimization may cause significant harm to a child, it is evident that repeated, stable victimization may be more likely to increase the endurance and severity of subsequent adjustment problems (Kochenderfer-Ladd & Wardrop, 2001). Given the dynamic nature of peer victimization, researchers should work to examine the numerous developmental patterns that may be present among victims. In examining these various patterns, current research findings suggest attention may also be given to the form of victimization (relational or overt) that is present.

### **Relational and Overt Forms**

Relational and overt victimization have often been characterized as two distinct, yet related forms within the peer victimization literature (Crick & Grotpeter, 1996). Relational victimization is defined as damage to one's peer relationships and involves manipulation through methods such as gossip, rumors, and social exclusion (Crick & Grotpeter, 1996). Further, relational victimization is often directed towards individuals within the context of friendship (Grotpeter & Crick, 1996). On the other hand, overt victimization characterized as harm that occurs through direct, physical and/or verbal means such as hitting or kicking (Crick & Grotpeter, 1995) is often directed toward an individual outside of the context of friendship. Research findings indicate relationally victimized children often show increased levels of worry about preserving their peer relationships (Putallaz, Grimes, Foster, Kupersmidt, & Coie, 2007) relative to those overtly victimized. Conversely, children overtly victimized by peers appear less likely to show concern with maintaining social relationships and have been found to be more likely to instigate retaliatory aggression (Crick & Dodge, 1996; Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Provided these differences, it is suggested that relational and

overt victimization may pose different threats to victims, possibly leading to different adjustment outcomes.

Examination of victimization form is often further linked to differences attributable to gender group. Some evidence has suggested that, in general, girls are often (but not always) more likely to experience relational victimization while boys may be more likely to experience overt victimization (Crick & Bigbee, 1998; Ostrov & Keating, 2004). One explanation offered for these differences, in part, is the respective socialization of relationship values for girls and boys (Crick & Grotpeter, 1996). Girls typically tend to place greater value on close, more intimate relationships and therefore may be more likely to use and experience victimization via the relational form meant to directly jeopardize these relationships. Boys, on the other hand, tend to participate in larger friendship groups where there may be a tendency towards dominance-oriented goals that are more likely to be threatened by overt victimization (Degirmencioglu, Urberg, Tolson, & Richard, 1998; Maccoby, 1990).

While the above evidence suggests potential differences in peer victimization patterns and outcomes attributable to form and/or gender, other findings have suggested little to no differences in the trajectories of peer victimization associated with these factors. For example, a study examining the growth trajectories of peer victimization along with negative and positive affect found that the consistency in their study findings when examining the two forms of peer victimization suggested that form did not play a significant role in their analyses (e.g. latent growth mixture modeling; Barker, Oliver, & Maughan, 2010). Barker, Arseneault, Brendgen, Fontaine, and Maughan (2008) further found that when examining latent trajectories of bullying and peer victimization that form

of victimization was not a significant factor. Studies utilizing similar analytic techniques at various ages have also further supported these contentions (Barker, Boivin et al., 2008; Goldbaum et al., 2003).

Research regarding gender differences among victims in terms of both form and associated outcomes also continues to be mixed. Although popular conceptions (e.g. Wiseman, 2003; see Underwood, 2003) suggest relational aggression, for example, is most common among girls, researchers have recently suggested that intervention efforts that focus only on girls in terms of relational victimization or, subsequently, only boys in terms of overt victimization would be making a mistake (Smith, Rose, & Schwartz-Mette, 2009). This is because a growing number of study findings have suggested there are little to no differences between boys and girls in terms of the effects of being relationally victimized (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Osterman, Bjorkqvist, Lagerspetz, Kaukiainen, Huesmann, & Fraczek, 1994; Xie, Farmer, & Cairns, 2003; Zimmer-Gembeck, Geiger, & Crick, 2005).

In a study comparing overt and relational aggression and victimization among fourth graders, findings indicated that both boys and girls who were rated high on relational victimization also had higher reports of loneliness (Putallaz et al., 2007). Given these findings it is clear that while considering both form and gender is important within peer victimization research, studies focused on understanding the general impact of sources of resilience for victims, and in particular working to establish a relatively new, unexamined source for victims (as in the current study) may benefit from focusing on the impact it may have on children's overall peer victimization for both boys and girls.

### **Risk and Resilience among Victims**

Along with form and/or gender, there are numerous other correlates of peer victimization that have been identified longitudinally. A majority of the research examining these factors, however, has focused on characteristics of the child as well as their peer group, schools, communities, and/or families associated with risk – including increases in maladjustment and/or negative behaviors. To date, these potential risk factors continue to be the major focus within the peer victimization literature.

In examining specific risk factors for peer victimization at the individual level, a guiding assumption in much of the peer relations literature is that victimized children often behave in ways that reinforce a pattern of persistent peer victimization. The focus of these studies has primarily been on the ineffective responses enacted by victims and on differentiating between, for example, those who respond by crying or withdrawing from those who react aggressively (Kochenderfer & Ladd, 1997; Schwartz, Dodge, & Coie, 1993). Children who withdraw from their peer group may increase their likelihood of victimization in that they are more likely to be viewed as easy, nonthreatening targets unlikely to retaliate. On the other hand, aggressive children may be caught in a maladaptive cycle wherein their aggressive behavior is viewed as irritating, provoking victimization, and further perpetuating an aggression-victimization process. As for risk factors present at the social level, peer relations studies have often focused on a lack of friendship and/or social support present amongst victims. Within a maladaptive pattern, victimized children are often without significant, mutual friendships. Findings suggest that aggressive children likely target those without friends because of the lack of

retaliation that can occur in comparison to the children who have significant, mutual friendships (Hodges, Boivin, Vitaro, & Bukoski, 2011).

While the trend in peer victimization research has been to examine these risk factors, focusing particularly on victims' ineffective responses and its impact on their victimization trajectories, there is research suggesting that some victims appear to also engage in more effective responses that may potentially be associated with a decrease in the risk associated with later victimization. For example, Hanish and Guerra (2002) found that victimized children showed at least eight distinct patterns of adjustment; patterns that were associated with outcomes such as higher levels of internalizing and externalizing problems that are typically reported, but also patterns that were associated with participants who displayed higher achievement and more peer acceptance scores.

While these findings suggest the presence of seemingly resilient patterns among victims, they do not account for the change in the victimization trajectories that may be occurring as well as the factors that may, in part, be associated with these changes. There is an evident need for victimization researchers to not only examine the resilient outcomes that may be present for some victims (e.g., Hanish & Guerra, 2002), but to further utilize a person-centered risk and resilience framework wherein models examine the potential impact a source of resilience's trajectory may have on a child's peer victimization over time. Doing so would assist in further understanding a potential underlying process previously unexamined that may be occurring within children's peer relationships.

### **Prosocial Peer Support as a Protective Factor**

Studies that have examined potential sources of resilience for victims, similar to those that examine risk factors, often delineate between social and individual level factors. However, resiliency research within peer relations has in general focused primarily on the social side of resilience. A significant portion of these models for victims have attended to the receipt of prosocial support from peers (i.e. comforting, supporting, or defending victims) as a source of resilience for children undergoing social stressors (including peer victimization). Mobilizing youth to provide prosocial support for victimized or rejected peers is often a primary goal of current intervention programs (Salmivalli, Karna, & Poskipara, 2010) and has been shown to help lower levels of internalizing problems and increase levels of overall emotional well-being (Martin & Huebner, 2007) among the victims who are receive this support.

Empirical findings that emphasize the possible protective function of prosocial peer support are further present in longitudinal analyses, suggesting that as early as age six prosocial peer support may play a crucial role in mitigating the risk of being targeted for bullying (Lamarche, Brendgen, Boivin, Vitaro, Dionne, & Perusse, 2007). Findings from a recent study suggest children who reacted aggressively in stressful social interactions with peers were found to benefit from friends who provided direct, tangible help such as assisting in conflict resolution (Lamarche et al., 2007). Further, Fabes, Martin, and Hanish (2002) found that preschoolers who interacted with prosocial peers were significantly more likely, one year later, to have positive interactions with other peers and to engage in prosocial behaviors themselves.

The protective role of prosocial peer support appears to extend even further into middle and high school. Findings from a study of sixth through eighth grade students indicated that prosocial peer support was associated with increased reports of life satisfaction and positive affect across all levels of peer victimization experiences (Martin & Huebner, 2007). Storch, Brassard, and Masia-Warner (2003) further found that prosocial peer support moderated the effects of peer victimization on loneliness in a sample of ninth and tenth grade students. The students receiving the highest levels of prosocial peer support indicated an increase in their overall sense of community, and in turn, an increase in their sense of self-worth. These students showed an overall decrease in problem behavior engagement and this was associated with lower levels of provocation of peer aggression and/or rejection over time (Storch et al., 2003).

Together, these findings suggest prosocial peer support can help in the facilitation of self-esteem, social skills, and interpersonal competency development, and further serve to neutralize social stressors within children's interpersonal relationships (Schwartz, Dodge, Pettit, & Bates, 1997). It seems that as prosocial peer support increases in child and adolescent interactions, the stress often associated with these social stressors begins to diminish (Martin & Huebner, 2007). This supports a strong empirical foundation for the contention that prosocial peer support can serve as a "buffer" or protective factor for the often negative outcomes associated with peer victimization.

While prosocial peer support has continued to gain attention as a viable protective factor for victims, as previously suggested, the goal of examining victims within a risk and resilience framework should be to work towards increasing the range of strategies available to victims (Masten & Wright, 2010). It appears that a limitation of current

research and intervention efforts for victims may be the almost exclusive focus on promoting social support systems as sources of resilience for victims while often overlooking the potential resilience the victim themselves can enact. It is clear that prosocial peer support relies almost entirely on actions from the peer group and while factors located within the peer environment may be integral sources of resilience for victims, there is a need to further examine aspects of resilience that are independent of behaviors dependent entirely upon actions from the peer group. Victims, specifically those experiencing high frequencies of peer victimization experiences, may struggle to maintain adequate support from peers. Examining potential self-perpetuated skills through which victims themselves can work to engage in the peer group and foster peer support with hopes of mitigating their chances of continued peer victimization appears to be an equally important avenue of research.

Further limitations of the research examining prosocial peer support along with other possible sources of resilience at the social level (e.g. support, friendship) is that the studies examining these factors have often focused on their impact on victims at a single time point (i.e. Holt & Espelage, 2003; Tanigawa, Furlong, Felix, & Sharkey, 2011). As previously suggested, these variable-centered approaches are important within resiliency research, however, they are limited in their focus on the singular impact sources of resilience may have on the adjustment outcomes of victims.

Because of these limitations within the research examining sources of resilience for victims, the current study proposed to examine children's own prosocial behaviors as a potential individual source of resilience. Further, provided that no study has examined the developmental trajectories of both children's peer victimization and prosocial



behaviors within the same longitudinal person-centered model, the current model examined these associations. The focus was on the change in prosocial behaviors throughout this transitional time period and its potential association with decreasing victimization, suggesting its function as a source of resilience for some peer victimized children.

For the remainder of this review, therefore, it is important to examine the literature suggesting prosocial behaviors as a potential source of resilience for children. Further, the literature addressing the developmental trajectories of both prosocial behaviors and peer victimization will be addressed in order to inform how these two processes may impact each other.

## **Prosocial Behaviors**

### **Defining Prosocial Behaviors**

Much of the recent interest in examining prosocial behaviors, in particular the characteristics of individuals who engage in these behaviors, has stemmed from intervention research. It is proposed that the development of effective intervention programs aimed at reducing antisocial behaviors may hinge on understanding more clearly the complexities of how positive social behaviors develop (Carlo, Hausmann, Christiansen, & Randall, 2003; Consortium on the Promotion of Social Competence, 1994). In a similar sentiment, the current study examined prosocial behaviors as a possible source of resilience for victimized children through investigating its developmental trajectory in relation to children's peer victimization trajectories. Defined, prosocial behaviors are behaviors intended to benefit another person or persons (Eisenberg, 1986) and often take the form of helping, sharing, or other acts of kindness

(Carlo, Crockett, Randall, & Roesch, 2007). However, the characterization of prosocial behavior can vary as a function of the developmental state and social goals prominent within a particular time period (Greener & Crick, 1999). Gender and socialization related to gender groups may also have an impact on how prosocial behaviors develop.

**Gender Related Development.** While both stereotypic gender roles and empirical evidence suggest females are generally expected to be more prosocial and more likely to show prosocial tendencies than males (Spence, Helmreich, & Stap, 1974, Eisenberg, Fabes, & Spinrad, 2006), these findings appear to also be associated with age and type of prosocial behavior (Carlo, Christiansen, & Randall, 2003). In a study by Carlo and colleagues (2003) that utilized a measure of self-reported prosocial behavior, gender group differences appeared to be linked to the reported type of prosocial behaviors present. For example, findings indicated that adolescent boys were more likely to report public displays of prosociality (prosocial behaviors performed in the presence of others) while adolescent girls were more likely to report emotional (prosocial behaviors enacted in emotionally evocative situations) and altruistic (prosocial behaviors performed with little or no perceived benefit) prosociality.

Further, in studies utilizing peer report measures, girls were more likely to nominate other girls as being prosocial and boys as engaging in more negative social behaviors (Warden & Mackinnon, 2003). It appears that gender group differences in prosociality may, in part, be reflective of children's concepts of how boys and girls are supposed to act (Eisenberg et al., 2006). Girls, in general, are expected to be more empathetic while males are often expected to be more achievement oriented; findings that have been consistently found in cross-cultural research as well (Carlo, Roesch, Knight, &

Koller, 2001). For the current study, examining prosocial behavior development over time allows for a better understanding of how prosocial behaviors, regardless of gender group, may be a source of resilience for children who are victimized by their peers. To date, however, prosocial behaviors have often been overlooked as a potential source of resilience within the peer victimization literature. This may be, in part, due to the lack of a strong conceptual framework as to why victims want to and/or have the ability to engage in prosocial behaviors.

### **The Need to Belong: A Fundamental Motivation**

A possible theoretical framework to guide our understanding of why victims may be able to engage in prosocial behaviors, thus allowing it to serve a potential resiliency role, may be that of a need to belong theory. According to Baumeister and Leary (1995), humans are innately motivated to form and to maintain lasting, positive, and significant interpersonal relationships. It is proposed that in order to meet this need, two criteria should be satisfied. First, individuals should have consistent, positive interactions with at least a few other individuals. Second, these positive interactions should occur within a fairly stable and lasting relationship with a mutual concern for each other's welfare (Baumeister & Leary, 1995).

According to their theory, a lack of either of these criteria is likely to be associated with feelings of deprivation and the potential for various negative psychological outcomes, an implication that explains, in part, links to several of the outcomes often associated with peer victimization. Children who are victimized, for example, are likely to have feelings of deprivation socially (a lack of social needs being met), feelings that may lead to various maladjustment outcomes as have been previously

described (i.e. loneliness). However, a need to belong theoretical framework may further assist in explaining why some children are able to enact prosocial behaviors even as a victim. It would appear that threats to one's need to belong (e.g. peer victimization) should, theoretically, energize an adaptive response from some victims that would, at least in part, be focused on regaining social acceptance and a sense of belongingness. Blackhart, Baumeister, and Twenge (2006) suggest that when individuals experience social rejection they should subsequently want to increase their positive social behaviors (e.g. prosocial behaviors) associated with positive peer interactions and support in order to maintain adaptive levels of social contact and support in an attempt to meet their social needs.

While this makes sense theoretically, however, empirical findings have indicated this may not always be the case. Study findings suggested that social exclusion was found to be associated with a decrease in prosocial behavior engagement (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007). It was suggested that prosocial behaviors may be considered a mechanism of socially delayed gratification, wherein the current positive behavior is expected to be rewarded later. However, if the delayed reward is perceived as being unreliable or unlikely to occur, as may be the case for socially victimized children, there is increasingly less motivation to continue the positive behavior pattern. This was further supported as participants who were socially excluded experienced a substantial reduction in their prosocial behaviors. Findings by Twenge, Catanese, and Baumeister (2002, 2003) further suggested that after social rejection children may be more likely to engage in increasingly problematic social behaviors (i.e. aggression or withdrawal) rather than positive behaviors.

The majority of the studies examining prosocial behaviors and victims, however, have relied on simpler, direct effects models (e.g. Twenge et al., 2007) and/or correlational designs (e.g. Twenge et al., 2002, 2003) that do not allow for more fine-grained analyses examining the possible heterogeneity in trajectories of both peer victimization and prosocial behaviors over time. It appears that for some children the need to belong may be strong enough that even in the face of peer victimization they may continue to desire and work towards positive peer relationships in order to meet this need. Utilizing longitudinal, person-centered analyses that allow for the examination of various subpopulations of victimization and prosocial behaviors, potentially capturing a subpopulation of resilient victims, would further support these contentions. Provided the theoretical support suggesting why victims may be inclined to engage in prosocial behaviors, it is important to further explore the numerous social and individual benefits of prosocial behaviors thus informing its potential impact on children's peer victimization trajectories.

### **Prosocial Behaviors as a Source of Resilience**

At the individual level, prosocial children often indicate an overall positive self-concept and heightened self-efficacy (Laible & Carlo, 2004). Children who feel better about themselves are often less self-focused and more other-oriented, thus, as their own needs are met, more resources may be available to assist others in need (Eisenberg et al., 2006). Further, prosocial children appear to be significantly less depressed and engage in significantly less antisocial behaviors than those who are not prosocial (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999).

At the social level, findings suggest that prosocial children often display high levels of social skills including constructive coping and adequate problem-solving abilities (Cassidy, Werner, Rourke, Zubernis, & Balarman, 2003; Eisenberg et al., 1996; Warden & Mackinnon, 2003). In assisting one's peers by engaging in prosocial behaviors, Ladd and colleagues (1988) suggest prosocial youth are more likely to create a bond with their peers, increasing their overall preference for both social and academic pursuits. This preference at the peer level can further assist to create an overall more favorable academic environment (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000) and in turn improve academic engagement and academic achievement within that environment.

Together, the numerous positive correlates of prosociality have been found to further perpetuate a cycle of continued prosocial engagement. For children with behavioral vulnerabilities (those who are likely at-risk socially), engaging in prosocial behaviors may assist by helping them to learn and develop new, adaptive skills for interacting with their peers (Storch et al., 2003). Newcomb and Bagwell (1995) extend this even further to suggest that positive peer interactions that stem from prosocial behavior engagement may provide a context that can assist to eventually change problematic behaviors to more positive ones.

It is clear, therefore, that prosocial behavior and its numerous correlates would likely assist children who are victimized by their peers to either regain or instigate positive peer interactions. The overall increase in both personal and interpersonal assets related to prosociality suggests the powerful, resilient impact prosocial behaviors may have for victimized children. Victims who engage in prosocial behaviors as a way to

increase their positive interactions may be able to significantly alter their peer victimization trajectory. Examining the common developmental trajectories associated with both peer victimization and prosocial behaviors can further inform how these two trajectories may impact each other over time.

### **Developmental Trajectories**

**Age-Related Changes in Peer Victimization.** Findings suggest that the trajectories of peer victimization are closely associated with the developmental changes in the social contexts and relationships of children. In the initial transition to school, children experience a dramatic change in their social context with a shift towards increased social interactions involving their peers. By this time in early childhood, researchers suggest it becomes increasingly easier to identify children who are more or less skilled at interpersonal relationships and meeting interpersonal goals (Rubin, Bukowski, & Parker, 2006). Beginning in the earliest years of school (preschool and kindergarten), children also begin to learn important social skills such as how to maintain and build friendships, form opinions on who to like or dislike, acquire reputations, and develop a set of social skills. With the increase in peer interactions, though, comes the increased possibility for both positive and negative relationships to emerge. Empirical findings (e.g. Barker et al., 2008) further suggest that distinct trajectories of peer victimization may appear as early as preschool. In a study examining preschool aged children, findings indicated at least three distinct trajectories of peer victimization including low/increasing, moderate/increasing, and high/chronic victimization trajectories (Barker et al., 2008)

While victimization trajectories appear to develop early for some children, findings suggest that, in general, the frequency of peer victimization is likely to increase most dramatically in middle to late childhood, parallel to the contextual transition from elementary to middle school (Espelage, Bosworth, & Simon, 2000). It is suggested that this transition time is likely one of the most dramatic “normative” changes that occurs for many school-aged American children (Baltes & Nesselroard, 1979; Crockett et al., 1989). Along with the actual environmental changes that can occur throughout this transition (i.e. moving from a smaller school to a larger, more complex school system; Crockett et al., 1989), children also undergo changes in the expectations given to them both academically and behaviorally. More specifically, in terms of peer group expectations, findings suggest that children are more likely to experiment with new social roles during this time period. In doing so, some children may attempt to exert social dominance over their peers, actions that may account for part of the overall increase of both aggression and peer victimization often seen during this time (Adams, Banks, Davis, & Dickson, 2010; Pellegrini, 2002).

Children are also more likely to compare themselves to their peers at this age. The increased awareness and concern regarding social standing and relationship status may further intensify the potential for peer victimization to occur (Parker, Rubin, Price, & DeRosier, 1995). Overall, given the numerous factors that may assist to exacerbate the potential for peer victimization during this transitional period, examining the trajectories of both peer victimization as well as potential sources of resilience appears to be an important step in the risk and resilience research of victims.



**Heterogeneity in Peer Victimization Trajectories.** Because of the increased stressors that are clearly present throughout this transition, a majority of peer victimization studies that have examined risk factors and peer victimization over time have focused on middle to late childhood and early adolescence. A common trend in these studies has often been to examine the various risk factors associated with maladaptive adjustment patterns (stable or increasing patterns) for victims. In line with this trend, the following studies provide a clearer picture of the heterogeneity in victimization trajectories that may emerge throughout early to late childhood and into adolescence, however, they remain limited in their depiction of potential sources of resilience and the impact they may have on peer victimization trajectories during this time period.

In a study examining peer victimization trajectories and their association with negative affect from third to fifth grade, five distinct trajectories of victimization were identified (Biggs, Vernberg, Little, Dill, Fonagy, & Twemlow, 2010). Self-report measures of victimization indicated that children showed low, moderate, increasing, decreasing, and chronic peer victimization trajectories over this time period. Examination of the sample as a whole suggested that a majority of participants (88%) indicated low to moderate peer victimization that either remained stable or increased during this time period. However, through the use of latent growth mixture modeling (the statistical technique proposed in the current study), they were able to recognize the individual variability in level and change of victimization during late elementary school, such that 6% indicated experiencing high but decreasing victimization, 4% indicated increasing high victimization, and 2% indicated chronically high victimization. This individual

variability would likely not have been captured in longitudinal analyses that did not utilize growth mixture modeling.

Further, a study by Boivin, Petitclerc, Feng, and Barker (2010) provides a cross-sectional examination using both cross-lagged and trajectory analyses of peer victimization and related problem behaviors. Their findings suggest that for the full sample analysis, peer victimization became less related to victims' aggressive behaviors and more associated with social withdrawal from third to sixth grade. While these findings were apparent with the cross-lagged analyses, trajectory analyses suggested that 85.5% of the sample indicated a stable-low victimization trajectory from third to sixth grade, while 10% indicated a high-increasing trajectory and 4.5% indicated an extreme-decreasing trajectory. Each of the groups further indicated a distinct pattern of aggression and social withdrawal over this time period, suggesting the various trajectories differentially impacted the reactions and social patterns for each subpopulation (stable-low, high-increasing, extreme-decreasing) of victims.

Together, the above findings indicate the heterogeneity in peer victimization trajectories that is present from early to late childhood and into adolescence. It is clear there are children with various levels of victimization, including both those with stable or increasing trajectories as well as those who appear to have overall decreasing victimization trajectories. Consistent with the trend in victimization research, however, the above studies were focused almost exclusively on identifying risk factors (Baker et al., 2008) or maladjustment outcomes (Boivin et al., 2010) related to these trajectories. Although these studies are novel in their utilization of advanced longitudinal analyses to examine peer victimization, they did not account for the possible sources of resilience

that may be present for victims, and further, the potential impact these may have on children's peer victimization trajectories. The goal of the current study was to longitudinally examine a potential source of resilience, prosocial behaviors, and its association with peer victimization. Examining the various age-related and overall developmental trends in prosocial behaviors throughout childhood and into adolescence appears important for understanding how these trajectories may serve to impact one another.

**Age-related changes in Prosocial Behaviors.** Marion (2003) suggests that for young children, prosocial behaviors can often be placed into three distinct groups: sharing (e.g. dividing up one's toys), helping (e.g. acts of kindness such as helping another child get up after they have fallen), and cooperation (e.g. working towards a goal together such as with a group art project). Others have suggested expanding these categories for young children to also include signs of sympathy and perspective taking or engagement in positive verbal and physical contact with peers (Kostelnik et al., 1988). In either case it is evident that from a young age prosocial behaviors are clearly present and able to be fostered. Various avenues are also present that may assist to endorse the development of prosocial behaviors for children. This may include (but is not limited to) socialization processes such as parenting styles (Hoffman, 1982; Eisenberg & Valiente, 2002) or peer interactions (Eisenberg, Fabes, Karbon, Murphy, Wosinski, et al., 1996) as well as everyday contexts such as culture (de Guzman, Carlo, & Edwards, 2008).

Moving into middle to late childhood and adolescence, findings suggest there is often a general increase in prosocial behaviors (Fabes, Carlo, Kupanoff, & Laible, 1999). Adolescence, in particular, is a time of increased mobility as well as an expansion of how

prosocial behaviors are displayed. Late childhood and early adolescence is a time period when peer networks are likely established and maintained, moral reasoning skills are refined, and personal identities are developed (Berndt & Ladd, 1989; Brown, 1989). While prosociality in early childhood is often marked with acts of helping and sharing, it is suggested that beginning in middle to late childhood prosocial behaviors begin to expand from the more traditional view of sharing and helping to also include the maintenance of social ties and other relationally inclusive behaviors often present in peer relationships (Greener & Crick, 1999). It is during this time of development that prosocial behaviors may begin, for some children, to serve a protective function.

**Heterogeneity in Prosocial Behavior Trajectories.** Proponents of a peer socialization perspective of prosociality suggest that peer relationships provide unique opportunities for children to not only learn but also to practice their prosocial behaviors (Kohlberg, 1969). Children who are well-accepted by their peers are more likely to benefit from continued peer interactions, increasing their opportunities to practice and engage in prosocial behaviors over time. Prosocial children have been found to be less likely to indicate strains on their peer relationships, and in turn, less likely to be victimized by their peers (Coleman & Byrd, 2003). Those who initially are not well-accepted at the peer group level, though, are subsequently less likely to benefit from this positive socialization trajectory (Wentzel & McNamara, 1999). Although peer victimization and prosocial behaviors are often negatively correlated, analyses that specifically examine their potential associations over time, focusing on the heterogeneity in patterns amongst victims, may reveal the impact prosocial behaviors can have on the

developmental trajectory of peer victimization. Prosocial behaviors directed toward peers may lead to a change in these victims' developmental trajectories.

Though prosocial behaviors are often not examined exclusively within victimization growth/trajectory analyses, they have been examined in studies of proximal correlates of peer victimization. In a study by Gazelle and Rudolph (2004) employing growth curve analyses, socially anxious and withdrawn children were found to have distinct trajectories of approach or avoidance coping based upon the level of peer exclusion present. Socially anxious and withdrawn children who experienced less peer exclusion were more likely to engage in prosocial behaviors while those experiencing more peer exclusion were less likely to engage in prosocial behaviors (e.g. social avoidance; Gazelle & Rudolph, 2004). Through the use of growth-curve analyses allowing for the examination of longitudinal trajectories, this study provided unique information about the type of children who are able to engage in prosocial behaviors over time.

The study was limited, however, in its ability to examine the various developmental trajectories that may be present within the sample. For example, children with initially high social exclusion may have experienced decreasing social exclusion with the increase of prosocial behavior engagement, however, the analyses that were used to test their models were unable to capture these potential subpopulations. An important extension for research examining social stressors and their association with risk and protective factors over time is to apply analyses that allow for the examination of these potential subpopulations within their samples. That is, while the majority of children undergoing social stressors may not be engaging in prosocial behaviors, there may be a

smaller subpopulation that is. Having the ability to recognize potential groups of seemingly resilient children has important implications for intervention work.

One study that has accounted for these differences in developmental trajectories and subpopulations examined the potential role of social withdrawal (a stressor related to peer victimization) in the transition from elementary to middle school (Wonjung, Rubin, Bowker, Booth-LaForce, Rose-Krasnor, & Laursen, 2008). Wonjung et al. (2008) examined the various social withdrawal trajectories and the impact of possible risk (victimization and friendlessness) and protective factors (prosocial interactions and friendship) on these trajectories. General Growth Mixture Modeling (GGMM) was used to test whether there were distinct trajectory patterns of social withdrawal during this transition period and revealed three different developmental pathways of social withdrawal (increasing, decreasing, and low-stable). While the presence of friendship and prosocial behaviors were not significantly associated with the decreasing trajectory, having a socially withdrawn friend after the transition from elementary to middle school did appear to be predictive of increasing social withdrawal over time.

Provided the few studies in peer relations research that have used growth mixture modeling, the study by Wonjung et al. (2008) was unique both in accounting for potential protective factors and in allowing for the examination of intra-individual change over time (latent subpopulations or classes). An obvious strength of this study was its ability to predict three different developmental pathways of social withdrawal across the transition to middle school as well as examine various correlates of these classes, extending the research on social withdrawal that typically reports relatively stable withdrawal throughout this time period with often negative outcomes in adolescence for these

children. The study was limited, however, as the trajectories of the protective factors were not examined in association with the developmental trajectories of social exclusion. In using a single time point for examining prosocial behaviors, the researchers were unable to examine both trajectories together – analyses that may have revealed the impact of increasing prosociality on the developmental trajectory of social exclusion. It is clear there is a significant lack of studies utilizing advanced, person-centered longitudinal analyses that focus specifically on the trajectory of sources of resilience and their impact on the trajectory of social stressors across the transition to early adolescence.

### **Purpose of the Study**

The above studies represent an extensive body of work for both peer victimization and prosocial behaviors over time. There are, however, evident limitations that should be addressed in future studies examining these trajectories. In particular, among the victimization studies the majority continue to examine groups of victims using a range of categorization strategies (e.g., different low, moderate, and high group cut-off scores) that may potentially elevate levels of classification error. Cut-off values that are not clearly conceptually driven and carefully operationalized are most likely to misclassify cases near the determined group cut-off values. Second, several of the longitudinal studies examining victimization use data collected at only two time points. Studies where both relatively arbitrary cut-off scores are used to classify victims and only two time points are examined do not allow for determination of whether children's victimization trajectories are increasing, decreasing, or stable (or some variation) over time. This is an important step specifically when examining peer victimization in a transition time period (e.g. the transition to adolescence). While findings suggest peer victimization may, in general,

decline or stay steady throughout early and middle childhood, the transition to adolescence may be associated with an increase in frequency (Demaray & Malecki, 2003). This non-linear trend in this time period may not be detected utilizing longitudinal designs that rely on groups defined a priori and with data drawn from two time points.

Apart from the above cited studies (e.g. Boivin et al., 2008, Barker et al., 2010), studies of peer victimization have also often failed to account for the possible heterogeneity in peer victimization trajectories during this transition. The primary focus has continued to be a focus on variable-centered analyses unable to capture potentially important subgroups of victims.

### **Latent Growth Mixture Modeling**

The current study took an important step towards addressing these limitations by utilizing a person-centered approach at both the theoretical (as supported above) and empirical levels. Longitudinal analyses that allow for identification of the various, potentially distinct patterns of peer victimization and prosocial behaviors across the developmental transition from middle childhood to early adolescence were used to empirically examine these associations.

Latent growth mixture modeling (LGMM) is an extension of structural equations modeling (SEM) that is designed to overcome an important limitation of conventional latent-growth curve modeling frameworks – the assumption that all individuals are drawn from a single observed population (Wang & Bodner, 2007). The single observed population expected within latent growth curve modeling is assumed to have common population parameters including slopes, intercepts, and error variances. However, the existence of unobserved or latent subpopulations is expected in the current framework



and is of interest in the current model. Examination of the subpopulations' latent growth trajectories cannot be identified by conventional latent growth curve modeling and are thus examined through the LGMM extension of traditional growth curve modeling.

The most obvious strength of LGMM is its ability to account both for the nesting of observations within an individual, or longitudinal data, as well as the nesting of individuals within latent classes, or unobserved subpopulations (Jung & Wickrama, 2008). For example, in the current model children who are highly victimized by their peers may show a low-stable or decreasing prosocial behavior trajectory. However, other victims with high initial levels of peer victimization may actually show a decreasing victimization trajectory as prosocial behaviors remain high or increase – a pattern that appears consistent with resilience. A framework with a single-population assumption is unable to capture these nuances within the developmental trajectories of peer victimized individuals.

In other words, latent growth curve modeling alone would be insufficient for finding these possible subpopulations of decreasing, stable, and increasing victimization along with the trajectory of children's prosocial behaviors. Conversely, LGMM has the capability of relaxing the single-population assumption, allowing for growth parameter differences to vary across the unobserved subpopulations. Distinct individual growth models are thus estimated for each latent class (Muthén & Asparaouhov, 2006) and this component of LGMM allows for identification and analysis of unique subpopulations. Though the number of subpopulations and members of these subpopulations are not known beforehand (Yung, 1997), there does need to be an a priori assumption (based on theoretical support and models) that an unknown number of subgroups should exist

within the population of interest. The theoretical assumption that a sample may actually be composed of more than one latent or unobserved population is therefore a prerequisite for utilizing a LGMM framework.

As previously mentioned, a few studies have included applications of LGMM statistical techniques within their analyses. Wonjung et al. (2008), introduced previously, provides a clear example of how LGMM can be applied in a developmental context. In their study, latent growth mixture modeling was used to examine distinct trajectory patterns of social withdrawal over time. Participants completed surveys in the fall and spring of fifth and sixth grade as well as the spring of eighth grade. The goals of the study were two-fold. First, the researchers were interested in identifying factors that may predict distinct trajectory class membership, for example, whether individuals were increasing or decreasing in social withdrawal over the multiple time points. Second, they were interested in examining factors that could serve to either buffer or exacerbate these developmental pathways of social withdrawal (e.g. prosocial behaviors). Both of these questions could be answered within a LGMM framework.

In applying a LGMM approach, the researchers were able to examine the individual pathways of social withdrawal in order to determine within class membership based on estimation of individual latent intercept and slope factors. Models with a different number of classes (from one to four) were examined to see which model fit the data best. As stated previously, the number of latent classes is not determined beforehand, yet theoretical support should be provided for how many classes are likely to be included at each step of model fit. The findings for this study suggested increasing, decreasing, and low-stable trajectory classes emerged from the data. Potential predictors of the group

trajectories (e.g. correlates of withdrawal such as peer social behavior, etc.) were also examined to determine what discriminated class membership. One example from the findings was that unstable friendship in fifth grade exacerbated social withdrawal, but only for the increasing trajectory class.

Applying LGMM within studies such as the one described here suggest the power these analyses can have for understanding the heterogeneity that is often present in groups of participants in developmental research. As stated by Wonjung et al. (2008), “with the development of complex statistical procedures that allow for the examination of intra-individual change, there is growing evidence of heterogeneity in behavioral and developmental psychopathology growth trajectories” (p.343).

Overall, while identifying typical developmental trends in peer victimization and prosocial behavior is important, there is a need to recognize that not all children in this time period are likely to follow a unidirectional trajectory of victimization as supported by prior longitudinal studies (i.e. Snyder, Brooker, Patrick, Snyder, Schrepferman, & Stoolmiller, 2003; Troop-Gordon & Ladd, 2005). The variation that may be evident in children’s peer victimization trajectories in relation to their prosocial behavior development likely has important implications for future intervention work, in particular, bringing awareness to a novel, self-perpetuated source of resilience for victims.

### **The Current Model**

This review of the literature indicates that studies have, to date, often failed to examine the longitudinal associations among a potential source of resilience for victims, prosocial behaviors, and the impact its development may have on peer victimization trajectories. The model examined here allows for the description of potential linkages

between the developmental trajectory of prosocial behaviors, to examine whether or not these behaviors play a *potential* causal role in children's peer victimization experiences over time, and to see whether or not distinct patterns of linkages emerge.

**Grade/Age Level.** It was proposed that in a sample of third through sixth grade children, there would be various developmental trajectories of peer victimization. Middle childhood is a time of rapid socio-cognitive development (Shantz, 1983) thus changes in the developmental aspects of both peer victimization and prosocial behaviors are likely to occur within this time period. In general, empirical findings suggest peer victimization is less stable in early elementary school (Ladd & Kochenderfer-Ladd, 2002) but that it becomes increasingly stable after the transition to middle school (Boulton & Smith, 1994). Late elementary school and the initial transition to middle school therefore appear to be an important time period within which to study variability in the developmental trajectories of peer victimization. Beginning in middle childhood researchers also suggest that prosocial behaviors expand from a more traditional view of sharing and helping to include the maintenance of social ties and other relationally inclusive behaviors present in peer relationships (Greener & Crick, 1999). This increase in socially related prosocial goals may also increase its possible impact on peer victimization during this transitional time.

The current sample included children transitioning into middle school at various grades including fifth (11%), sixth (49%), and seventh (40%) grades. While the transition grade for each child may have varied, the current study was still able to capture a majority of the children's transition to middle school (~60%) and, further, capture an

important time period for a majority of the children as they are likely undergoing some type of transition (i.e. grade transitions, school transitions, and physical transitions).

**Teacher- and Self-reports.** Teacher reports of children's prosocial behaviors and self-reported peer victimization were used in the current study. While there are various ways to gather information on children's social behavior, each providing methodological advantages and disadvantages (see Ladd & Profilet, 1996, for a brief discussion of related issues), the current study capitalized on two common social behavioral measurement techniques for this age group. Teacher ratings, specifically for younger children, have been considered reliable indicators of social behaviors (Hartup, 1983). Teacher ratings of prosocial behaviors in particular may be valuable as observational techniques alone are more likely to capture negative, attention-provoking behaviors. Prosocial behaviors, possibly a more subtle behavior among children, may be most likely to be noticed by teachers. Coie and Dodge (1998) further suggest that teacher ratings of positive social behaviors may be most closely associated with accurate, qualitative components of children's social behaviors than observational or peer assessments.

Self-report measures were used to assess peer victimization at the third, fifth, and sixth grade levels. As suggested by Ladd and Kochenderfer-Ladd (2002), after grade two the psychometric properties of self- and peer-reports (often the gold standard) tend to be both reliable and valid in that findings suggest both forms of assessment are similarly linked with common correlates of peer victimization. These authors further suggest that victims experience abusive (e.g. victimization) interactions more directly than any other type of informant, making self-report a highly valued assessment. Together, utilizing independent, multiple informants across contexts is a strength of the current study.

**Primary research questions and hypotheses.** The main objective of the proposed study was to examine the latent classes associated with the growth trajectories of prosocial behaviors and peer victimization across the transition from middle childhood to early adolescence (from third through sixth grade; see Figure 2).

*Research question 1:* Is there an association between the slope and intercept values for the growth curves of peer victimization and prosocial behaviors?

Given findings from prior research examining the direct effects of prosocial behavior and peer victimization (i.e. Coleman & Byrd, 2003), it was hypothesized that children with high initial levels (intercept) of peer victimization will indicate low initial levels of prosocial behaviors. Further, children with high initial levels of prosocial behaviors were expected to indicate low initial levels of peer victimization.

While there is little to no empirical evidence to my knowledge testing the growth curves of peer victimization and prosocial behaviors in the same mixture model, given the above theoretical support it was hypothesized that the larger latent classes will include children with an increasing peer victimization slope indicating either low-stable or decreasing slopes of prosocial behavior, or conversely, a decreasing slope of peer victimization indicating high-stable or potentially increasing slopes of prosocial behavior.

*Research question 2:* Are there distinct, latent classes that emerge from the growth curves of prosocial behavior and peer victimization?

Given findings suggesting there is likely a range of both peer victimization trajectories (i.e. Biggs et al., 2010) and prosocial behavior trajectories (i.e. Fabes et al., 1999) among children from third to sixth grade along with theoretical support suggesting the two trajectories may impact one another, there was clear support for the use of latent

growth mixture modeling to test for potential latent classes that may emerge from these two growth curves. It was therefore hypothesized that distinct subpopulations (i.e. significantly distinct latent classes) of children would emerge from the interactions between children's peer victimization and prosocial behaviors.

At the latent class level, it was expected that the following distinct subpopulation would emerge: (a) children with an increasing slope of peer victimization with low-stable levels of prosocial behavior, (b) children with high-stable levels of prosocial behavior with low-stable or decreasing victimization, (c) children with decreasing prosocial behaviors with increasing or stable peer victimization, and (d) children with increasing prosocial behaviors and decreasing peer victimization (i.e. the resilient group).

*Research question 3:* Is there evidence indicating that prosocial behavior may be a source of resilience for children who are peer victimized?

It was hypothesized that a latent class of children (resilient group) with low initial nominations of prosocial behavior that show an increasing slope over time may also have high initial levels of peer victimization and show a significantly decreasing victimization slope. These findings, suggesting the impact of prosocial behaviors for children who are peer victimized, would be consistent with the contention that prosocial behavior may act as a source of resilience for a distinct subpopulation of peer victimized children.

### **Post-hoc Variables.**

In addition to the primary study analyses, covariates that may help describe the characteristics of the children within the latent classes were also examined. While LGMM provides information related to the association of prosocial behaviors and peer victimization for each latent class that emerges from the data, examining potential

covariates that can assist to further clarify the characteristics of the class members is an important follow-up step. It is clear, however, that post-hoc analyses will not provide information regarding the causal relationships between the covariates and latent class membership; rather, it can only assist to provide information comparing the latent classes based upon the covariates. These analyses also provide information to assist in directing future research on potential covariates to be examined within similar models.

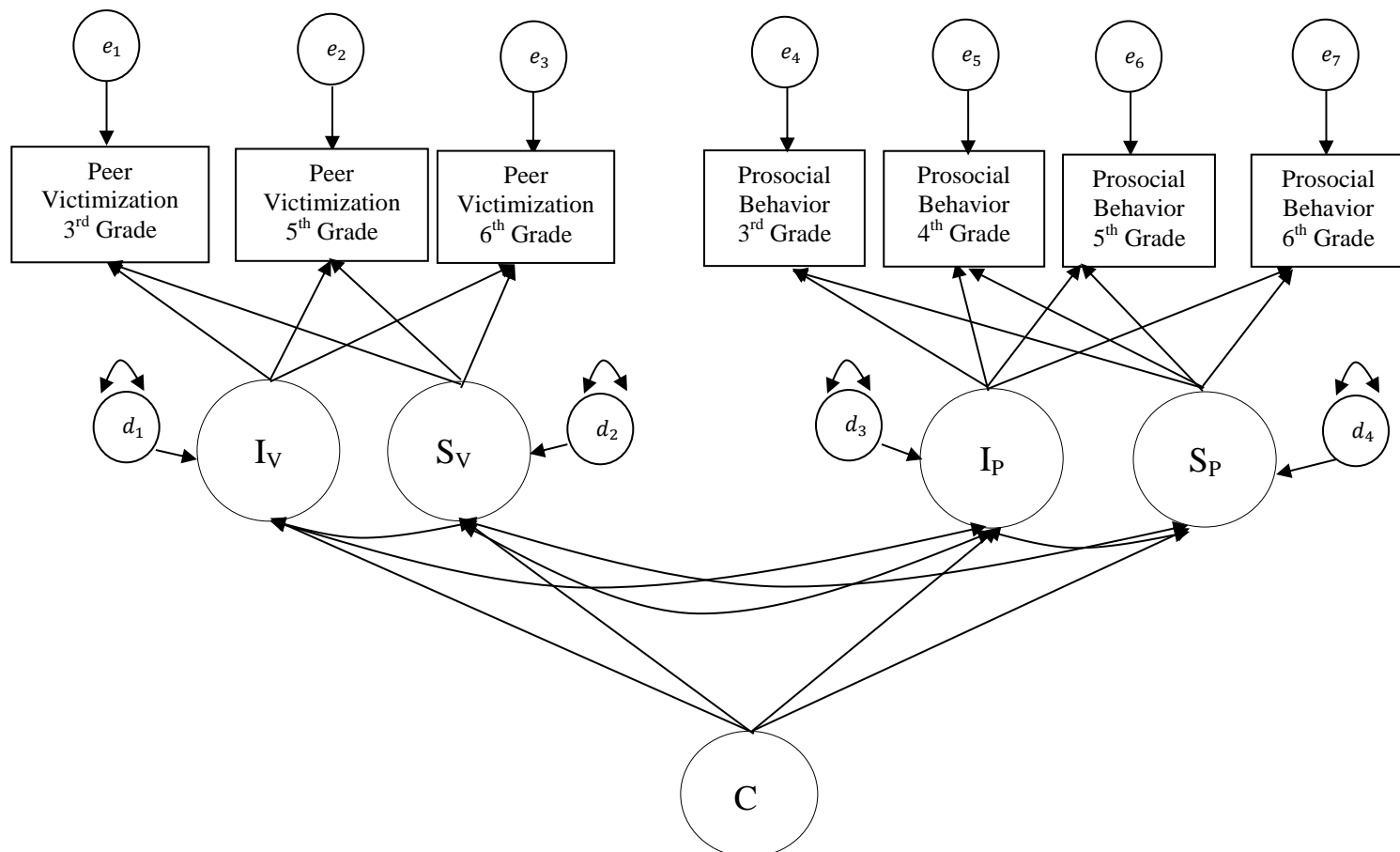
Provided the peer relations focus of the current study, covariates based on proximal factors often examined within the peer relations literature appeared pertinent. Interest in the covariates associated with prosocial behaviors, in particular, stemmed from the question asking what variables could assist in our understanding of why some victims are able and other are unable to engage in prosocial behaviors in the midst of peer victimization. Factors were therefore chosen based upon three potential categories that may be associated: family, school, and child characteristics. A potential source of risk and resilience was chosen within each of the categories.

At the family level, parental warmth and parental hostility were examined. A majority of studies have suggested that increased parental warmth (i.e. warm, supportive parenting) is positively associated with children's and adolescents' prosocial behavior development (e.g. Asbury, Dunn, Pike, & Plomin, 2003; Deater-Deckard, Dunn, et al., 2001; Eisenberg, Fabes, & Spinrad, 2006). Further, research findings have indicated that power-assertive or harsh types of parenting, related to high levels of parental hostility, are either unrelated (e.g. Janssens & Gerris, 1992; Kochanska, Forman, & Coy, 1999) or negatively related to prosocial behavior development (e.g. Deater-Deckard, Dunn, et al., 2001; Krevans & Gibbs, 1996).



At the school level, school attachment and negative attitudes towards school were examined. While school attachment has been examined less within the prosocial literature, findings have suggested that warm, supportive interactions with teachers (often a component of feeling attached to one's school) is associated with positive interactions (e.g. prosocial behaviors) among students in that classroom (Serow & Solomon, 1979; Solomon, Battistich, Watson, Schaps, & Lewis, 2000). Further, children who feel less attached within the classroom with potentially higher levels of negative attitudes towards school may be less likely to engage in or have the opportunity to engage in positive peer interactions.

Finally, at the child level self-control and aggression were examined. Prosocial children tend to be viewed by adults and other peers as socially skilled, with highly effective problem solving and other aspects often considered within self-control. This association is not surprising provided that engagement in prosocial behaviors often requires a level of self-control, associations supported by numerous study findings (e.g. Eisenberg, Fabes, Karbon, Murphy, Wosinski, et al., 1996; Rothbart, Ahadi, & Hershey, 1994). Prosocial children are also less likely to show aggression (Nelson & Crick, 1999), however, there are some findings that suggest aggression and prosocial behaviors may be more complexly related. That is, some aggressive children may also show high levels of social skills (e.g. prosocial behaviors; Hawley, 2003). It is suggested these children, termed bi-strategic controllers, employ both coercive (often aggressive) strategies as well as prosocial strategies in order to gain subsequent social power (Hawley, Little, & Card, 2007).



*Figure 2.* Parallel Process Latent Growth Mixture Model Testing for Classes of Peer Victimization and Prosocial Behaviors

*Note.* V = victimization; P = prosocial behaviors, I = intercept, S=slope, C=class

## Chapter III

### Methods and Data Analysis

#### Participants & Procedures

Participants for this study were part of a larger, four-phase longitudinal study conducted by the NICHD-funded Study of Early Child Care and Youth Development (NICHD SECCYD). Families of newborns were solicited from hospitals in ten locations throughout the U.S. (Little Rock, AR; Irvine, CA; Lawrence, KS; Boston, MA; Philadelphia, PA; Pittsburgh, PA; Charlottesville, VA; Morganton, NC; Seattle, WA; Madison, WI). Mothers who were over 18 years of age, healthy, had a single birth, and were willing to participate became part of the participant pool. Participants were then selected based on a conditional random sample to be phoned 2 weeks after the birth of the child occurred. If the families were still eligible at that time (e.g., healthy child) and desired to be part of the study, they became part of the study sample. A total of 1,364 with healthy newborns made up the final sample. Full details of the initial recruiting process can be found at the NICHD website (<http://secc.rti.org>) (NICHD Early Child Care Research Network, 2004).

For the current study, families remaining active in the study during the third phase of data collection (2000-2004) will be examined. Data in this phase were collected from the study children, families, after-school caregivers, and teachers from second through sixth grade. In the current study, the final sample included 1,091 participants (80% retention rate from birth) with 551 males (50.5%) and 540 females (49.5%). Ethnic breakdown of the sample is as follows: 81.4% Caucasian, 11.8% Black, 4.9% Hispanic,

and 1.9% Other or Mixed Ethnicity. Average maternal education at birth of the participants was 14.42 years.

### **Main Analyses Measures**

**Perceived Peer Victimization.** Study children were asked to complete the Kids at School questionnaire in third, fifth, and sixth grade (see Appendix A). The 18-item measure was a compilation of questionnaire items from Ladd and colleagues (1997) meant to assess perceptions of peer social support, bullying, and peer victimization. Items were measured on a 5-point Likert-scale where 1=*Never*, 2=*Hardly Ever*, 3=*Sometimes*, 4=*Most of the Time*, and 5=*Always*. For this study, four items were used to tap peer victimization. All items had also been used in various studies assessing children's school adjustment (Kochenderfer & Ladd, 1996a, 1996b, 1997; Ladd et al., 1997). Items included questions such as, Kids at school "pick on you", "say mean things to you", "say bad things about you to other kids", and "hit you". Reliability for the measure at each time point was adequate (alpha range = .74-.85)

**Teacher-Rated Prosocial Behavior.** At third, fourth, fifth and sixth grade, teachers were asked to complete a questionnaire designed to measure the study child's peer related behaviors (see Appendix B). A total of 43 questions were included on the questionnaire including 37 items from the Child Behavior Scale (Ladd & Profilet, 1996) that measured aggressive, prosocial, and asocial behavior with peers, exclusion by peers, bullying, and victimization. Teachers were asked to rate the study child's behavior with peers on a 3 point scale (0=*Not True*, 1=*Sometimes True*, 2=*Often True*). The total prosocial behavior with peers score was computed as the mean of nine items including "Child is kind towards others", "Child is cooperative with peers", and "Child takes turns

with play materials”. Reliability for the measure at each time point was adequate (alpha range = .82-.83)

### **Post-hoc Variables**

**Parental Warmth/Parental Hostility.** The Getting Along with My Parent questionnaire was completed by the study child in 6<sup>th</sup> grade. The measure included a total of 38 questions, with 19 for parent #1 (to be filled in by the child) and 19 for parent #2. For the current study on the response for parent #1 (primarily indicated as the mother) were used. Responses on the parental warmth/support scale and the parental hostility were measured on a 4-point Likert-scale ranging from 1 = “*Never*” to 4 = “*Always*”. The parental warmth/support scale was computed by taking the sum of 9 items (items 3, 5, 7, 9, 11, 13, 14, 17, 19; alpha=.89). Example items for this scale are “Let you know (he/she) really cares about you” and “Listens carefully to your point of view”. The parental hostility scale was computed by taking the sum of 8 items (items 4, 6, 8, 10, 12, 15, 16, 18; alpha=.75). Example items for this scale are “Gets angry at you?” and “Criticize you or your ideas?”.

**School Attachment/Negative Attitudes towards School.** The What My School is Like measure (19 total items) was completed by the study child at 6<sup>th</sup> grade to assess the child’s perception of their school climate, teachers’ behaviors, and the child’s study habits. A four point Likert-scale was used ranging from 1 = “*Not at all true*” to 4 = “*Very true*”. The current study used two subscales from this measure. The school attachment subscale was computed as the mean of items 2, 8, 10, 13, and 19; alpha = .73). Example items include “I am happy to be at my school” and “I feel close to others at my school”. The negative attitude towards school subscale was computed as the mean of 6 items

(items 6, 9, 11, 12, 14, and 15;  $\alpha=.71$ ). Example items include “There are too many kids at my school” and “There are too many kids I don’t know”.

**Aggression.** The Child Behavior Checklist (CBCL) scale was completed by the study child’s mother/alternate caregiver at 6<sup>th</sup> grade. A list of 129 items including a range of behavioral/emotional problems were presented, respondents were asked to determine how well each item describes the study child currently or within the last six months on a scale from 0 = *Not True (as far as you know)*, 1 = *Somewhat or Sometimes True*, and 2 = *Very True or Often True*. For the current study, only the Aggression subscale was used. The standardized scores for the aggression scale had a range of 50 to 100; a value of 50 represents values less than or equal to 50. A total of 20 items were included on the aggression scale (3, 7, 16, 19, 20, 21, 22, 23, 27, 37, 57, 68, 74, 86, 87, 93, 94, 95, 97, and 104). The raw items used to create this score indicated high internal reliability (20 items,  $\alpha = 0.88$ ). Example items from this scale include “Teases a lot” and “Gets in many fights”.

**Self-Control.** The Social Skills Rating System (SSRS) was completed by the study child’s mother/alternate primary caregiver. The social skills portion of the scale includes 38 items tapping social behaviors that may impact the child’s social development and functioning. Responses were measured on a scale assessing “How often” ranging from 0=*Never*, 1=*Sometimes*, and 2=*Very Often*. For the current study, the Self Control subscale was used. The subscale is the sum of 10 items (3, 6, 9, 14, 17, 22, 25, 26, 32, and 36;  $\alpha = 0.86$ ). The possible range of scores is from 0 to 20 with a higher score indicating greater self-control as perceived by the child’s mother/alternate

primary caregiver. Example items from this scale are “Responds appropriate to being hit/pushed by other children” and “Avoids situations that result in trouble”.

## CHAPTER IV

### Results

#### **Analytic Strategy**

Latent Growth Mixture Modeling (LGMM) using full information maximum likelihood estimation (FIML) and the expectation-maximization algorithm for missing data was employed to model peer victimization and prosocial behavior trajectories (Enders & Bandalos, 2001; Muthén & Muthén, 2012). Data analyses were conducted using SEM with Mplus Version 6.1 (Muthén & Muthén, 2012). Provided the complexity of these analyses, an iterative method (a procedure generating a sequence of improving approximate solutions) such as the expectation-maximization algorithm along with a Monte Carlo integration was used due to the dimensions of integration necessary for the current model along with the number of parameters that were simultaneously estimated. Follow-up logistic regression analyses to examine potential covariates of the latent classes followed the main analyses. Overall, the goal of the LGMM model was to determine optimal class membership and intra-personal growth for individuals (subpopulations) through the estimation of latent variables (intercept and slope) based upon these two factors at multiple time points. Peer victimization indicators were taken from third, fifth, and sixth grade assessments, for prosocial behaviors indicators were from third, fourth, fifth, and sixth grade assessments. A total of 1085 cases were included in the overall analyses, 71 cases had missing data patterns for all model variables. A covariance matrix reporting the percentage of complete data for variables at each time point can be found in Table 3; percentages of complete data were adequate ranging from .615-.915.



Three stages of analyses occurred. In the first stage, latent growth curves were estimated for peer victimization and prosocial behavior trajectories without mixture modeling and subsequent latent class estimation. This allowed for an initial examination of the association between the slope and intercept values for the growth curves of peer victimization and prosocial behaviors for the overall sample.

In the second stage, a parallel process latent growth mixture modeling was employed. Parallel process LGMM allows for the simultaneous estimation of class probability for each individual based on their growth processes of peer victimization and prosocial behavior. That is, latent classes were estimated that created distinct groups of individuals likely to display similar developmental trajectories for peer victimization and prosocial behaviors from third to sixth grade. The number of latent classes (i.e. one class vs. two classes, etc.) was selected by fitting a series of linear growth mixture models. The estimated models ranged from 1-class to 3-class solutions. The relative fit of the models were compared based on information criterion fit indices which provide a method of comparing fit among non-nested models. Within the current literature, there is no majority consensus as to which index is best for examining model fit (Kass & Raftery, 1995), therefore, multiple information criterion indices were reported here: the Akaike Information Criterion (AIC; Akaike, 1987), Bayesian Information Criterion (BIC; Schwartz, 1978), and Sample-Size Adjusted Bayesian Information Criterion (SSABIC; Sclove, 1987). For each of the information criterion indices listed, lower values relative to the previously estimated model indicate better fitting models. Based upon these fit indices, the best fitting model was selected.

In the final stage, post hoc logistic regression analyses followed the main analyses to examine potential covariates of the latent classes that emerged from the parallel process LGMM analyses. These covariates were intended to be viewed as potential descriptors of the latent classes that emerged from the data. As suggested by Lubke and Muthén (2005) it is useful to make post-hoc latent class comparisons that allow for the examination of potential covariates that were not included in the main analyses. Analyses examining potential covariates can investigate possible class differences that may be associated with, at least in part, by these variables and further assist in distinguishing between the latent classes. As previously suggested, potential covariates included in the post hoc analyses were variables describing family, school, and child characteristics. Given the goal of the current study focusing on the transitional period covering middle childhood into early adolescence, covariates included in the post-hoc analyses were taken from assessments at the latest possible time point (6<sup>th</sup> grade) in hopes of capturing the salient features of the social processes represented throughout the transition for this sample.

## **Main Analyses**

### **Descriptives**

Means, standard deviations, and ranges for the primary model variables are included in Table 1. Overall bivariate relations were examined among the model variables to determine if correlations were in the expected directions (see Table 2). As expected, prosocial behavior measurements were positively correlated at each time point (range of  $r=.338-.481$ ,  $p < .001$ ). Similarly peer victimization measurement were positively correlated across time points (range of  $r=.342-.548$ ,  $p < .001$ ). Further, prosocial behaviors

and peer victimization showed the expected negative correlation across the various time points (range of  $r=-.096$  to  $-.176$ ,  $p <.05$ ).

### **Growth Curves without Mixture Modeling**

Growth curves were estimated using SEM to examine the overall sample intercept and slope associations for peer victimization and prosocial behavior without estimating latent classes. There was good model fit for the two growth curves ( $\chi^2 = 10.98$  (14),  $p <.05$ , RMSEA=.00, CFI=1.00, SRMR=.023). The overall sample displayed relatively low initial values of peer victimization (intercept  $M=1.84$ ,  $p <.001$ ) and a slightly decreasing slope (slope  $M=-.04$ ,  $p =.001$ ). The intercept and slope were significantly, negatively associated ( $\beta=-.39$ ,  $p <.001$ ) suggesting higher intercept values were associated with a significant decrease in peer victimization from third to sixth grade for the overall sample.

On the other hand, the overall sample displayed relatively high initial values prosocial behaviors (intercept  $M=1.51$ ,  $p <.001$ ) and a slightly decreasing slope ( $M=-.01$ ,  $p =.076$ ). The intercept and slope were significantly, negatively associated ( $\beta=-.43$ ,  $p <.001$ ) suggesting higher intercept values were associated with a significant decrease in prosocial behaviors from third to sixth grade for the overall sample.

Together, peer victimization and prosocial behavior intercepts were significantly, negatively ( $\beta=-.51$ ,  $p <.001$ ) associated suggesting higher initial values of prosocial behavior were associated with lower initial values of peer victimization and vice versa. There was no statistically significant link, however, between the two slopes ( $\beta=-.11$ ,  $p =.293$ )

### **Parallel Process LGMM**

As previously described the BIC, AIC, and SSABIC fit statistics were compared across models to determine the number of latent classes providing the best model fit. Further, entropy which is a standardized statistic indicating the likely accuracy of class membership was also examined for each model (1- to 3-classes). An entropy statistic of .80 or higher suggests a model with statistically significant (likelihood of accurate) classification.

Fit statistics for each of the models tested are presented in Table 4. Models were tested beginning with a one-class model and proceeding through a four-class model. The four-class model indicated a non-positive definite matrix and no appropriate constraint was identified that could be used to modify the model to correct this issue. The four-class model was therefore determined to be a poor fit for the data, indicating the three-class model was the model of best fit. The three-class model also provided the best fit as suggested by comparing the BIC, AIC, SSABIC, and entropy statistics between the two and three-class models. The fit statistics for the three-class model were as follows: BIC (24852.966), AIC (24688.318), and SSABIC (24748.151). These fit statistic values were also lower than the two-class model (fit statistics for the two class model: BIC: 24951.442, AIC: 24951.442, SSABIC: 24865.684) and this suggested a better fitting, more parsimonious three-class model.

The likelihood of accurate estimation of class membership also improved between the two- and three-class models. Entropy increased from .864 for the two-class to .891 for the three-class model. Average posterior probabilities were also adequate for the three-class model. Classes with average posterior probabilities above .80 reflect a high degree

of confidence in the assignment of each participant to the correct class. For the three-class model, the average latent class probabilities were as follows: Class 1=.857, Class 2=.970, Class 3=.855. See Table 5 for the full matrix of class probabilities for the three-class model.

**Overall Class Estimates.** Parameter estimates were provided for the relationship between the prosocial intercept and slope and between the peer victimization intercept and slope, however, this was only estimated for the total dataset rather than for each latent class. These parameters were not allowed to vary by class due to the large number of parameters that were already being estimated by the parallel process model (estimating the simultaneous growth of victimization and prosocial behaviors over multiple time points). Similarly, cross variable slope and intercept (victimization slope and prosocial intercept; prosocial slope and victimization intercept) were estimated for the total sample and not at the class level. Cross variable slopes, however, were estimated (victimization slope and prosocial slope) for each latent class.

Parameter estimates for the prosocial behavior slope and intercept for the entire dataset were significantly, negatively associated. Independent of class membership, initially high levels of prosocial behaviors significantly decreased from third to sixth grade ( $\beta=-.01, p=.001$ ). Conversely, there was not a significant relationship between the peer victimization intercept and slope ( $\beta=-.01, p=.579$ ) suggesting no link between the level of the intercept and the degree of the slope across the four time points. Cross variable intercepts were significantly, negatively associated, such that participants with higher initial prosocial behaviors had significantly less initial victimization ( $\beta=-.22, p=.003$ ).

**Distinct Latent Class Estimates.** Separate means for the intercept and slope of both peer victimization and prosocial behaviors were estimated for each latent class. Separate plots depicting these means by class are provided, see Figures 3-5. Below are descriptions of the latent classes (distinct groups of individuals displaying similar developmental trajectories) that emerged from the data.

The first class consisting of 6.8% of the sample displayed moderately high levels of prosocial behavior (range 0-2; intercept  $M=1.32$ ) that remained relatively stable over the four time points (slope  $M = .01$ ,  $p = .832$ ). The initial peer victimization value for this class was high (range 1-5; intercept  $M = 3.59$ ) and significantly decreased over time (slope  $M = -.72$ ,  $p < .001$ ). Together the first class showed high, stable prosocial behavior with initially high peer victimization that dramatically decreased over this time period. This class was labeled the “resilient” group.

The majority of the sample (87.7% of the sample) was placed in the second class. Class 2 displayed high prosocial behaviors (intercept  $M = 1.54$ ) that remained relatively stable over this time period (slope  $M = -.004$ ,  $p = .435$ ). Initial peer victimization levels were moderate (intercept  $M = 1.67$ ) and significantly decreased over time (slope  $M = -.03$ ,  $p = .020$ ). Together the second class indicated high, stable prosocial behaviors with a decrease in peer victimization. The relative stability of both constructs, with a slight decrease in peer victimization, represents a common finding for adolescent groups within this time period and was thus labeled the “normative” group.

The third class (5.4% of the sample) displayed high prosocial behaviors (intercept  $M = 1.34$ ) that significantly decreased over this time period (slope  $M = -.10$ ,  $p < .001$ ). Initial peer victimization levels were moderately high (intercept  $M = 2.14$ ) and

significantly increased over time (slope  $M = .64$ ,  $p < .001$ ). The third class shows two potential sources of risk in that there is both a relatively large increase in peer victimization along with a relatively steep decrease in prosocial behavior engagement over this time period. Provided this significant decrease in prosocial behaviors and increase in victimization, potentially suggesting multiplicative risk, class three was labeled the “at-risk” group.

### **Post-hoc Analyses**

Post-hoc analyses examined potential covariates of the three latent classes (resilient, normative, and at-risk). Variables describing family-, school- and child factors were included to assist in further describing potential the characteristics of participants assigned to the above latent classes. Multinomial logistic regression analyses were conducted to test whether each specific covariate was likely to discriminate between children assigned to different class memberships. In order to run these analyses, one class was set as a reference group and used to predict class membership probability between the given group and the reference group. For the current study, the resilient group was chosen as the reference group provided the study goal of examining the distinct characteristics of this group in comparison to the normative and at-risk groups.

**School-level.** School characteristic variables included School Attachment and Negative Attitude towards School. Relative to the resilient group, it was more probable that members of the at-risk group would display lower levels of School Attachment ( $\beta = -1.04$ ,  $p < .001$ ). The two groups did not have significantly different probabilities, however, with regards to their level of Negative Attitudes towards School ( $\beta = -.47$ ,  $p = .295$ ). Conversely, relative to the resilient group, it was more probable that members

of the normative group would indicate lower levels of Negative Attitudes towards School ( $\beta = -.86, p < .001$ ) as well as indicate higher levels of School Attachment ( $\beta = .31, p = .017$ ).

**Family-level.** Family characteristic variables included Parental Warmth and Parental Hostility. Relative to the resilient group, it was more probable that members of the at-risk group would display lower levels of Parental Warmth ( $\beta = -1.07, p < .001$ ). The two groups did not have significantly different probabilities in their levels of Parental Hostility ( $\beta = -.206, p = .606$ ). Relative to the resilient group, it was more probable that the normative group would indicate lower levels of Parental Hostility ( $\beta = -1.07, p < .001$ ). The two groups did not have significantly different probabilities in regards to their level of Parental Warmth ( $\beta = -.21, p = .376$ ).

**Child-level.** Child characteristic variables included Self Control and Aggression. Relative to the resilient group, it was more probable that members of the at-risk group would display lower levels of Self Control ( $\beta = -1.16, p < .001$ ). The two groups, however, did not have significantly different probabilities in their levels of Aggression ( $\beta = -.54, p = .106$ ). Relative to the resilient group, it was more probable that the normative group would show lower levels of Aggression ( $\beta = -.87, p < .001$ ). The two groups did not have significantly different probabilities regarding their level of Self Control ( $\beta = .22, p = .478$ ).



## CHAPTER V

### **Discussion**

The present study examined an often overlooked area of research by focusing on the parallel developmental processes of peer victimization and prosocial behaviors. More specifically, the analyses employed a person-centered approach that allowed for the investigation of potential heterogeneity associated with both constructs simultaneously and over an important developmental period from middle childhood to early adolescence. Findings from the current study illustrate an important developmental relationship that a potential source of resilience, prosocial behaviors, may have with children's peer victimization. In order to more fully examine these associations several strategies were employed. First, a model examining the association between the trajectory of prosocial behavior and peer victimization for the overall sample was examined. Next, LGMM was employed to simultaneously examine the potential heterogeneity (e.g. distinct latent classes) in the developmental trajectories for these two constructs. Finally, potential covariates were examined via post-hoc analyses that allowed me to better understand characteristics of the latent class members. Results from the study are discussed below along with its implications for peer relations and broader developmental research. Finally, study limitations and potential directions for future research will also be addressed.

#### **Overall Developmental Trajectory of Peer Victimization and Prosocial Behaviors**

The first question posed in the current study was whether or not there was an association between the slope and intercept values for the growth curves of peer victimization and prosocial behaviors. Findings indicated there was a significant

relationship between the estimated intercept values of peer victimization and prosocial behavior, such that children with higher prosocial behaviors had lower levels of peer victimization in third grade. These findings were consistent with my hypothesis as well as prior findings within direct effects models (Coleman & Byrd, 2003) supporting the contention that there is typically an inverse relationship between peer victimization and prosocial behaviors.

There was not, however, a significant association between the slopes of peer victimization and prosocial behavior. As previously discussed, it is unlikely that all or even a majority of victims are consistently engaging in prosocial behaviors and makes it unlikely that these two slopes would be associated within data drawn from the total sample. Further, when viewed alongside the findings supporting distinct class trajectories (further discussion below), this finding further reiterates the need to employ a person-centered model that allows for the examination of potentially different patterns of adjustment when examining parallel processes of peer victimization and prosocial behaviors over time. While at the total sample level there was no association between the two slopes, examining the latent classes emerging from the sample indicated significant, interpretable patterns of association.

Another potential explanation for the non-significant associations may be that engaging in prosocial behaviors was not a singular source of resilience for these children. A more complete description of the resilience process, therefore, may include other constructs more strongly associated with victimization than those accounted for in the current model (i.e. different aspects of social support or social behavior, self-regulation, etc.). Estimates from the total sample for both the peer victimization and prosocial

behavior slopes were also relatively stable. In further examining the variance of each slope, it was clear there was little variability within the overall estimate of the prosocial behavior trajectory. While it may be that the sample was overall highly prosocial with little room to increase over time, consideration should also be given to the way in which prosocial behaviors were measured in the current study. Prosocial behaviors were assessed on a zero to 2 point Likert scale which may have truncated variability and thus the potential for seeing important variations of prosociality that may be present within the population.

If the children in the study were highly prosocial in general, with little room to increase, this findings may have been due, in part, to the demographic characteristics of the sample; primarily European-American, middle-class families and children. Children with these demographic characteristics are likely to have higher levels of support, potentially making it easier or more likely that these youth would engage in prosocial behaviors. They may also have more opportunities to engage in prosocial behaviors. Further, for this sample the transition from middle childhood to early adolescence and the potential associated stressors (i.e. transition to middle school) often thought to contribute to higher levels of peer victimization, may not be as prominent.

Conversely, if the sample were to consist of children with relatively lower SES it may be less plausible that they would be able to engage in prosocial behaviors as a potential source of resilience. Lower SES children may be more likely to indicate stress across numerous contexts (including school, home, and neighborhood) while children at higher SES statuses may be more likely to indicate stress (e.g. peer victimization) in only one context (i.e. school), if at all. The higher overall stress and potentially fewer

resources for support in a lower SES sample may make it more difficult for these children to engage in prosocial behaviors in the midst of being victimized.

### **Heterogeneity Among Latent Classes**

This study also examined the hypothesis that distinct latent classes would emerge from the parallel process model examining prosocial behaviors and peer victimization. Further, it was hypothesized that there would be at least one class that would show a resilient pattern by indicating high prosocial behaviors and significantly decreasing peer victimization. Both hypotheses were supported as three latent classes emerged from the data with one group displaying resilient characteristics. The following is a description of the three groups.

**Normative Group.** The largest group (87.7% of the sample) was referred to as the normative group. Given the overall estimates for the sample (without the mixture modeling), it was expected that a majority of participants would show similar characteristics to results drawn from the overall sample. That is, members of this class indicated high-stable prosocial behaviors and moderate initial levels of peer victimization that decreased slightly over time.

This finding is contrary to prior research findings that have suggested a general increase in peer victimization across the transition from middle childhood to early adolescence, due in part to the potentially exacerbated stress associated of the often parallel transition into middle school. However, there is increasing evidence that suggests children show a general decline in peer victimization throughout this time period (Kokko, Tremblay, Lacourse, Nagin, & Vitaro, 2006; Smith, Shu & Madsen, 2001). This decline has been attributed, in part, to most children's increasing repertoire of coping skills that

may assist to divert harassment as they get older. Further, provided the demographic make-up of the current sample (primarily middle-class Caucasian), these children are likely to have fewer coinciding stressors (i.e. low SES) that often further exacerbate difficulties that can be associated with this developmental period.

This group also indicated high-stable levels of prosocial behaviors. Findings from studies examining middle childhood into adolescence suggest a general increase in prosocial behaviors. There may however, given the general characteristics of the current sample, be more opportunities for these children to be exposed to prosocial models and subsequently engage in more prosocial behaviors themselves. Overall, it appeared fitting to describe this class as a normative class given its similarity with the trajectories seen for the overall sample.

**At-risk Group.** The second class (5.4% of the sample) was labeled the at-risk group. Findings indicated that the relationship between the slope of peer victimization and prosocial behavior for members in this class was significant. That is, members in this class tended to display a decreasing prosocial behavior trajectory that was significantly related to their increasing peer victimization trajectory. Given the independent risk likely associated both with increasing peer victimization and with decreasing prosocial behaviors, members of this class appear to have at least two notable risk factors present. However, as risk and resilience models suggest, there is often a multiplicative effect for risk factors in that displaying both increasing victimization and decreasing prosocial behaviors together likely places these children at an increased overall risk for concurrent and future maladjustment.

One potential explanation for the process occurring at the social level for this group may be that provided their increasing levels of peer victimization, members of this group are also withdrawing from their peer groups. Withdrawing from the peer group may lead to increased isolation and, subsequently, to fewer opportunities to socially engage with their peers. Without consistent engagement with their peer group, opportunities for prosocial behavior engagement significantly decline (Eisenberg, Fabes, & Spinrad, 2006) assisting to explain the decreasing levels of prosocial behaviors for these children.

The proportion of children in this group is also fairly consistent with findings that suggest highly victimized children comprise approximately 10% of the school population (NICHD Early Child Care Research Network, 2001; Olweus, 1984). While the percentage of seemingly at-risk children showing increasing rates of peer victimization may be slightly lower for the current sample consideration, as previously discussed, should be given to the overall characteristics of the given sample.

**Resilient Group.** Perhaps the most notable set of findings addressed the third hypothesis and supported the presence of a group that appeared to display a resilient pattern (6.8% of the sample). Children in this group indicated high-stable prosocial behaviors. The slope estimate for this group indicated a non-significant increase in prosociality perhaps due to the often inflated nature of prosocial behavior nominations (teacher-reported prosocial behaviors in particular). While teachers are considered adequate informants, due in part to their ability to monitor a large range of student behaviors (Ladd & Profilet, 1996), they may also display a slight bias towards reporting higher levels of prosocial behavior engagement. Teachers are likely to both endorse and

therefore potentially report prosocial engagement among their students. Children also become increasingly better throughout this time period at hiding their negative behaviors, therefore teachers may be less likely to see negative behaviors and more likely to notice and remember prosocial behaviors. Thus, while this group did not show significant increases in prosocial behaviors as hypothesized, they were still engaged in high, stable levels of prosocial behaviors from third to sixth grade.

This group further reported the highest initial values of peer victimization in third grade however this was coupled with dramatically decreasing rates of victimization over the four year time period. It is clear that the current model only examined a potential source of resilience at the behavioral level, potentially overlooking numerous other sources of resilience (or changes in peer characteristics) that could be contributing to this group's drop in peer victimization. However, children in this group were experiencing the highest levels of peer victimization (initial value) *while continuing to engage in high levels of prosocial behaviors*. These findings provide preliminary evidence of a potential resilient process occurring for some youth experiencing relatively high levels of peer victimization. It may be that for this group of children continued engagement in prosocial behavior, even amidst these high initial levels of peer victimization, allowed them to remain engaged with their peer group. Over time, they may have continued to develop their prosocial skills, allowing them to maintain or regain their status within the peer group, thus contributing to a decrease in their peer victimization levels. This finding may be critical for us to further understand the potentially important resilient processes that may occur in victimized youth.

Although labeling this group “resilient” is limited in that the focus of the current study was on the association between two potential developmental, peer relationship processes, it is clear these children showed, at least in this realm, resilient tendencies. Provided the findings from this group as well as the others, it was clear further examination of characteristics that may assist in interpreting group membership was needed.

### **Follow-up Comparisons of Groups**

As previously suggested, interpreting the latent classes that emerge from the data is an important step both empirically and theoretically. Empirically, the means for both the slopes and intercepts of each variable within each latent class can be directly interpreted in comparison to the overall mean for the total sample. It is also important, however, that these interpretations have strong theoretical support (see Muthén, 2003). One step the current study took to make sure interpretations were consistent both empirically and theoretically in class interpretation was to use a set of post-hoc analyses. The variables included in the post-hoc analyses were expected, theoretically, to be additional descriptors of children who might display at-risk, resilient, or normative adjustment patterns and the associated peer victimization and prosocial behavior trajectories. The following is a discussion of the comparisons between the resilient group (the comparison group) and the normative and at-risk groups.

**Normative vs. Resilient.** When examining the probabilities of the two groups based on each post-hoc variable, the normative group (stable prosociality, slightly decreasing victimization) was less likely than the resilient group to report all of the potential “risk” covariates. This included a lower probability of reporting parental



hostility, negative attitudes toward school, and aggression. Children in the normative group were also more likely than the resilient group to indicate higher levels of school attachment. Overall, these findings were consistent with the conception that resilient individuals are often exposed to higher levels of risk yet still display fewer negative adjustment patterns. In particular, the notion of resilience is suggested as children in this group had higher probabilities of each of the “risk” factors than the normative group yet they remained highly prosocial and had dramatically decreasing levels of peer victimization across this time period.

One finding of particular interest is the resilient group’s higher probability of aggression than the normative group. One potential explanation for this finding is in line with prior research findings that have suggested some children employ both prosocial and aggressive strategies (Hawley, Little, & Card, 2007; Cillessen, 2011). Theoretical support of this finding suggests that some children employ a dual-component strategy of aggressive/prosocial behavior wherein they have a goal of developing relationships through engagement in prosocial behaviors as well as a goal of demonstrating their status or popularity through engagement in aggressive behaviors (Cillessen, 2011). Particularly for children with very high initial levels of peer victimization, using both strategies including engaging consistently in prosocial behaviors and showing some level of aggression (at least higher than the normative group), may be the most adaptive strategy for dramatically decreasing their peer victimization over time.

Another possible explanation for the higher probability of aggression seen in the resilient group vs. the normative group may be that levels of aggression in the normative group were fairly low to begin with. While the resilient group may have a higher

probability of being aggressive than the normative group, their aggression rates may still be relatively low in an absolute sense. This is further supported by the finding indicating the resilient group had a lower probability of acting aggressively than the at-risk group.

**At-risk vs. Resilient.** When examining the probabilities of the at-risk and resilient group members displaying each post-hoc variable, the at-risk group (decreasing prosocial behaviors and increasing peer victimization) was less likely than the resilient group to report all of the potential “positive” covariates (school attachment, parental support, and self-control). Further, the at-risk group had a higher probability of indicating aggression than the resilient group. Overall, these findings reiterated labeling the two groups *at-risk* and *resilient*. The at-risk group not only indicated two potential sources of risk, increasing peer victimization and decreasing prosocial behaviors, members in this group also indicated an increased risk (higher probabilities than both the normative and resilient groups) with regards to the characteristics at the family, school, and individual levels measured in this study.

The increased probability of aggression for the at-risk group supports prior findings that suggest children who are at a greater risk for peer victimization often have elevated scores of aggression (Hanish & Guerra, 2004; Hodges, Malone & Perry, 1997). Children in the at-risk group were also less likely to indicate parental support than the resilient group. Findings have suggested that the role of parental warmth is highly important in socializing children towards appropriate, positive behavioral standards (e.g. prosocial behaviors). Negative feelings towards parents or a lack of parental warmth has been associated with a child’s ability to develop self-regulation, further impacting how the child interacts with his or her peers (Eisenberg, Pidada, & Liew, 2001). A study by Zhou

et al. (2002) further suggests that parental warmth is vital in the development of empathy, often associated with increased prosocial behaviors and decreased aggressive behaviors.

Children in the at-risk group were also less likely to indicate feelings of school attachment than the resilient group. Children who do not feel attached to their classroom or larger school may be less likely to engage in school and teacher supported behaviors such as prosocial behaviors (Wentzel & McNamara, 1999). Children in the at-risk group may also have less opportunity to engage in prosocial behaviors (above), potentially impacting their feelings of attachment/engagement within their classroom and at the larger school level.

Taken together these findings bring awareness to what is likely a fine line between at-risk and resilient adjustment. Though this study is limited in its examination of what are likely a number of different processes that may be impacting youths' tendency to display either at-risk or resilient adjustment, it is clear that children who had increasing levels of peer victimization and decreasing prosocial behaviors clearly had numerous other risk factors that were present. On the other hand, while the resilient group had evident risk indicated by both their high initial levels of peer victimization and their higher probability of risk factors in comparison to the normative group, they also displayed at least two important areas of potential protective factors that were higher than the at-risk group. It is clear that there may be a multiplicative effect of risk present for members in the at-risk group.

### **Limitations and Future Directions**

Although this study addressed an important gap in the literature, there are some important limitations that should also be addressed. Though using a large, nationally-

representative sample allowed for adequate sample size and included high quality, longitudinal data, using existing data was limiting in terms of the available measures.

**Measure of Prosocial Behaviors.** The measure assessing prosocial behaviors in the current study was broadly defined. Prior research findings have suggested important distinctions can be made based upon one's motivation to engage in prosocial behaviors (e.g. Prosocial Tendencies Measure, Carlo & Randall, 2002). In particular, when examining peer victimized children, some children may simply be motivated to engage in prosocial behaviors in front of their peers (e.g. public prosocial behaviors; Carlo & Randall, 2002) in order to regain their social status rather than for truly altruistic reasons. For other victims, as suggested by the emotional sensitivity hypothesis (Staub, 2005), experiencing stress (e.g. peer victimization) may increase their awareness of others' suffering which may in turn lead to engagement in more helping behaviors. These victims would be more likely to endorse altruistic or emotional prosocial tendencies (Carlo & Randall, 2002). Given that there are likely distinct processes associated with each of these types of prosocial tendencies, using a measure that can discriminate between these important distinctions should be used.

In the current study, I did attempt to distinguish between types of prosocial behaviors for the reasons provided above. To examine the premise that there may be two different types of prosocial behaviors present in the current measure I conducted exploratory factor analyses, but the findings suggested that all of the items on the prosocial measure loaded on one factor. Distinguishing between types of prosocial behaviors was therefore not a part of the current study but may be considered in future studies.

**Demographic Characteristics.** Another important limitation to address with the current sample was the relative homogeneity in terms of race and SES as the children/youth in the current sample were primarily Caucasian and middle-class. Provided these characteristics, children in this sample may have had fewer stressors over this time period and this may, in part, explain the overall stable levels of both victimization and prosocial behaviors for the total sample. Further, prior findings suggest that children who are at less risk in terms of both ethnicity and SES may have more overall opportunities to engage in prosocial behaviors perhaps afforded by their higher status. Further, some findings suggest cross-cultural differences based on both the socialization of and engagement in prosocial behaviors (i.e. de Guzman, Carlo, & Edwards, 2008). Further research should consider controlling for the prosocial opportunities available within a more diverse sample.

The current study did not examine the overall model in terms of two potentially important characteristics; gender and form of peer victimization. Related theoretical considerations were previously provided, and suggested that, since associations between peer victimization and prosocial behaviors have not been empirically examined within the same models, it was important to establish their initial associations before testing by gender group or form of victimization. Future research, however, could expand the current study by examining potential differences based upon gender groups and/or form of victimization. Prior findings have suggested the potential protective function of prosocial behaviors may be dependent upon the form of victimization present. Findings by Griese and Buhs (under review) suggest that children who are relationally victimized appear to be more likely to engage in prosocial behaviors than those experiencing overt

forms, perhaps serving a greater protective function against later loneliness. These findings were found for both boys and girls however differences did emerge based on gender group in terms of the strength of these associations (controlling for prosocial support received from peers).

**Latent Growth Mixture Modeling in Developmental Research.** There is also a need to address hesitation among some developmental researchers regarding the application of growth mixture modeling. In particular, Bauer and Curran (2003) highlight important considerations that should be made when applying mixture modeling in developmental research. In one particular study in which they applied growth mixture modeling, follow-up tests of a non-normal dataset suggested that although population heterogeneity may have well existed within the data, it was equally plausible that the trajectory classes that emerged from the data simply allowed the model to more optimally capture non-normal, yet ultimately homogenous, patterns within their data. These findings suggest the importance of initially examining the data without the mixture modeling (as was done in the current study). Further, they suggest that, provided the numerous parameters estimated in growth mixture modeling, there is an increase in susceptibility to spurious relationships being identified or important relationships being obscured (Bauer & Curran, 2003). These suggestions further support the need for sound theoretical support when using these types of analyses.

In a follow-up comment to the Bauer and Curran (2003) article, Muthén (2003) suggests that, while their findings reiterated the important considerations needed to help protect against the poor application of LGMM techniques, when these analyses are used with the appropriate checks in place (i.e. checking for non-normal data, etc.) LGMM is

able to meet the long-standing need for more developmentally meaningful analyses of longitudinal data. Overall, it is clear that there should be consideration both at the theoretical and empirical level as to whether LGMM is the appropriate analyses for longitudinal data. If these considerations are properly made, LGMM can provide unique and important information not available with the use of other SEM based models.

Another limitation of these analyses was that, given the complexity of the parallel process modeling in the current study, I was unable to test for potential covariates and outcomes within the main analyses. While follow-up analyses were employed to this end, the post-hoc analyses were unable to provide stronger causal information regarding the potential role the covariates tested may have had on the developmental processes potentially depicted within each latent class. In determining whether resilience is present, an important step to consider is whether the source of potential resilience is actually impacting later developmental outcomes. Though the current study examined the developmental processes of prosocial behaviors and its association with peer victimization it did not, for example, capture whether or not these parallel processes were then associated with later internalizing or externalizing outcomes. Because this was a preliminary test of the association between prosocial behaviors and peer victimization it was important, however, to focus primarily on the two processes of interest. Provided knowledge of the current findings, future research should examine potential predictors and outcomes of the various latent classes.

### **Implications of the Current Study**

Together, findings from the current study provide novel information regarding an important potential source of resilience for some victims; a source that has often been

overlooked within the peer victimization literature. Findings supported the presence of a group of children who engaged in a potential source of resilience concurrent with a decline in their peer victimization over an important developmental period. While resilience was limited to a narrow range of social behaviors, these findings are innovative in that they focused on a potential source of resilience and support that victims themselves may be able to enact. These empirical findings are also consistent with the contention that victims should, given an innate need to belong (Baumeister & Leary, 1995), want to reinstate themselves within the peer group through the use of acceptable and positive social behaviors. Further support was also found for the notion that not all victims will likely engage in positive social behaviors. Some victims are likely to engage in negative social behaviors, and may be unable to employ appropriate strategies to regain more positive social interactions (the at-risk group). These victims may also display low levels of a need to belong, potentially increasing their likelihood of withdrawing from the peer group rather than working to become a part of it.

Overall, these findings suggest a significant level of heterogeneity among children who are victimized by peers that should be considered in future studies of social processes and adjustment associated with peer victimization. Second, findings from this study support the potential existence of a subgroup of children who engage in high levels of prosocial behaviors and also show dramatically decreasing peer victimization rates. Understanding the process of prosocial behaviors as a source of resilience for victims would not be possible, however, without the statistical analyses that allowed for the detection of potential subgroups and sets of trajectories within the larger group. Previous findings, of course, suggest that not all victims are likely to be energized to engage in



prosocial behaviors or display resilient patterns of reaction to victimization, thus analytic techniques that allow for the examination of these distinct sets of trajectories may play a key role in identifying resilient subgroups.

Given the complexity of these and other developmental processes, researchers have become increasingly aware of the need for more complex longitudinal analyses (Preacher, 2008). One way in which the current study extended the current state of literature is through the use of latent growth mixture modeling. LGMM is an extension born from an important limitation of the conventional latent-growth curve modeling framework; that being the assumption that all individuals are drawn from a single observed population (Wang & Bodner, 2007). While traditional latent growth curve models assume a single observed population with common population parameters (i.e. slopes, intercepts, and error variances) unobserved or latent subpopulations may be present and are of interest within developmental research. It is clear, particularly in the current study, that not all children are likely to follow the same developmental trajectory and that examining potential developmental trajectories of distinct subgroups of children is necessary in understanding the underlying process of development.

Using a person-centered approach is further in line with the recent shift in developmental research towards understanding underlying resilient processes (Masten & Wright, 2010). In order to examine these processes the focus is not simply on what child, family, and environmental factors at one time point are involved in resilience (variable-centered) but rather *how* these factors impact developmental trajectories over time (Cowen, Wyman, Work, Kim, Fagen, & Magnus, 1997; Luthar, 1999).

This is clearly an important direction for peer relations research. As suggested by Kochenderfer-Ladd and Troop-Gordon (2010) we are entering a second generation of peer victimization and peer relations research wherein understanding the larger context within which developmental processes are occurring is of utmost importance. Context is not limited to physical location but rather is open to include developmental periods, social environs, and individual's strengths and weaknesses (Kochenderfer-Ladd & Troop-Gordon, 2010). The current study addresses this call by examining peer victimization and prosocial behaviors as potentially associated processes within an important context and time period. It further considers individual strengths in examining an important potential source of resilience and its association with children's peer victimization trajectories over time.

Peer victimization research has often highlighted the negative adjustment patterns associated with being victimized and the current study made an important contribution towards future examination of potential resilient processes for victims. In line with working towards increasing the range of strategies available to victims (Masten & Wright, 2010), the variation evident in children's victimization trajectories associated with their prosocial behavior development may also have important implications for future research and intervention work by bringing awareness to a novel, self-perpetuated source of resilience for victims.

Table 1

*Descriptive Statistics for Main Study Variables*

	N	Min	Max	Mean	SD
Prosocial G3	962	0	2	1.52	.40
Prosocial G4	903	0	2	1.51	.41
Prosocial G5	912	0	2	1.50	.41
Prosocial G6	808	0	2	1.49	.41
Victimization G3	994	1	5	1.85	.79
Victimization G5	987	1	5	1.80	.77
Victimization G6	990	1	5	1.76	.72

*Note.* Prosocial = Prosocial Behaviors; Victimization = Peer Victimization

Table 2  
*Bivariate Correlations among the Main Study Variables.*

	1.	2.	3.	4.	5.	6.	7.
1. Prosocial G3	-						
2. Prosocial G4	.48	-					
3. Prosocial G5	.41	.47	-				
4. Prosocial G6	.35	.41	.44	-			
5. Victim G3	-.15	-.17	-.15	-.11	-		
6. Victim G5	-.12	-.17	-.17	-.11	.43	-	
7. Victim G6	-.11	-.11	-.12	-.09	.34	.55	-

*Note.* All correlations are significant at the 0.05 level.

Prosocial = Prosocial Behavior; Victim = Peer Victimization, G = Grade

Table 3

*Proportion of Complete Data at Each Time Point*

	1.	2.	3.	4.	5.	6.	7.
1. Prosocial G3	.89						
2. Prosocial G4	.76	.83					
3. Prosocial G5	.76	.74	.84				
4. Prosocial G6	.67	.65	.67	.75			
5. Victim G3	.83	.78	.78	.69	.92		
6. Victim G5	.81	.77	.81	.71	.84	.91	
7. Victim G6	.81	.78	.80	.72	.85	.87	.91

*Note.* Prosocial = Prosocial Behavior; Victim = Peer Victimization, G = Grade

Table 4

*Parallel Mixture Model Fit Indices for 1- to 3-Class Models*

<b>Information Criterion Fit Index</b>				
<b>Model</b>	<b>AIC</b>	<b>BIC</b>	<b>SSABIC</b>	<b>Entropy</b>
1-class	24995.99	25100.77	25034.07	
2-class	24951.44	24951.44	24865.68	.87
3-class	24688.32	24852.97	24748.15	.89

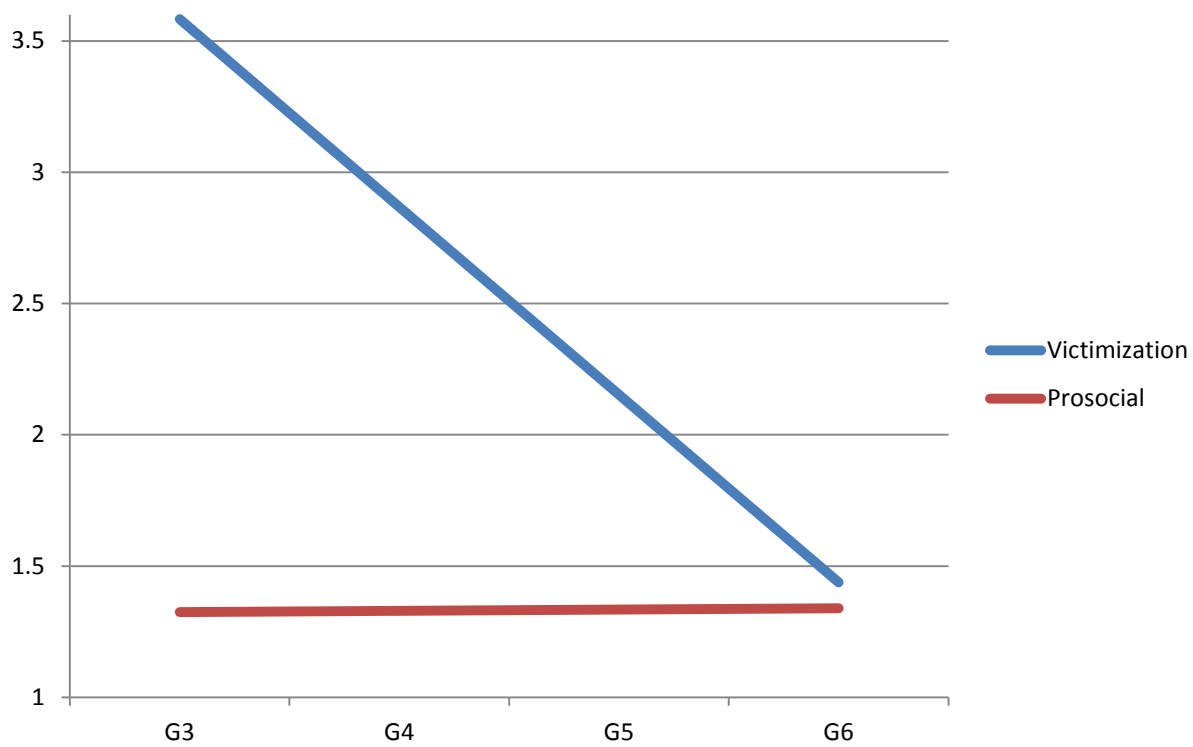
*Note.* AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; SSABIC = Sample-Size Adjusted Bayesian Information Criterion. Smaller values indicate better fit.

Table 5

*Average latent class probabilities for most likely latent class membership for three-class model*

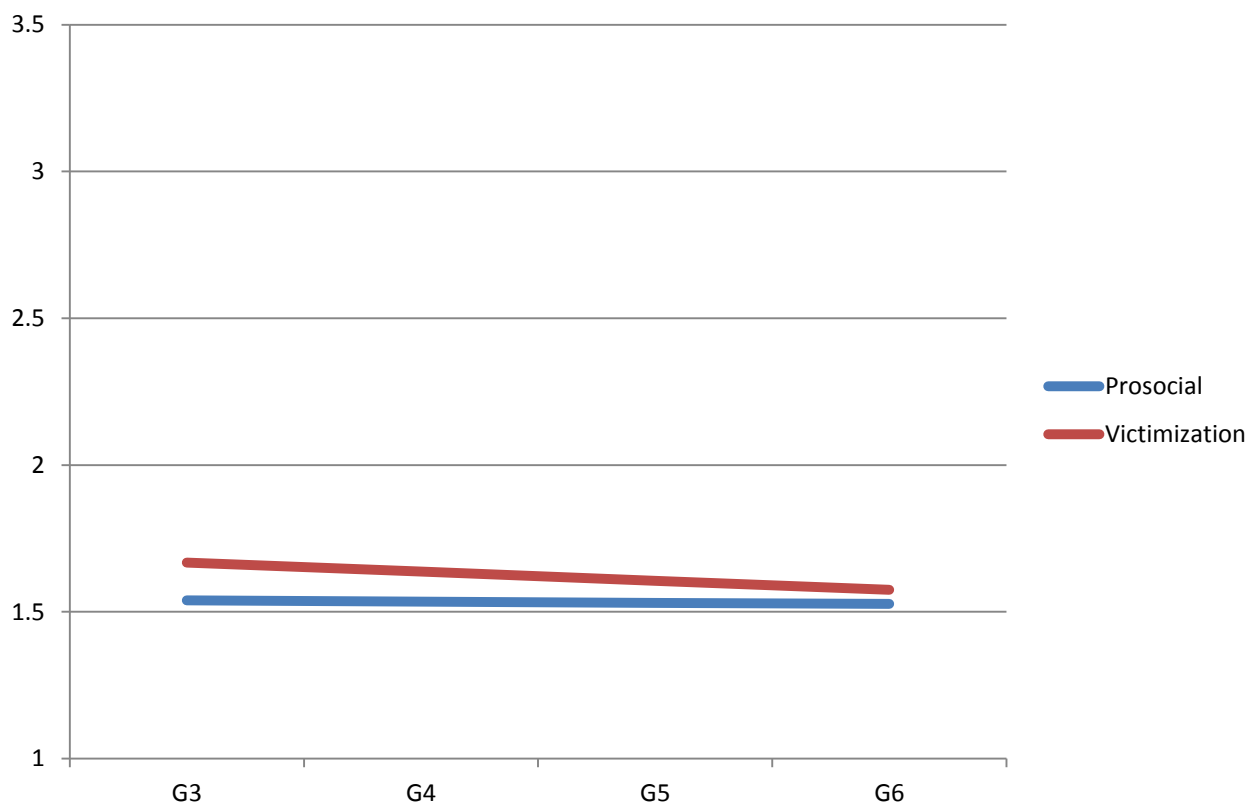
	<b>Class 1</b>	<b>Class 2</b>	<b>Class 3</b>
<b>Class 1</b>	.86	.12	.02
<b>Class 2</b>	.02	.97	.01
<b>Class 3</b>	.02	.12	.86

*Note.* Values above .80 for class by class membership are considered adequate.

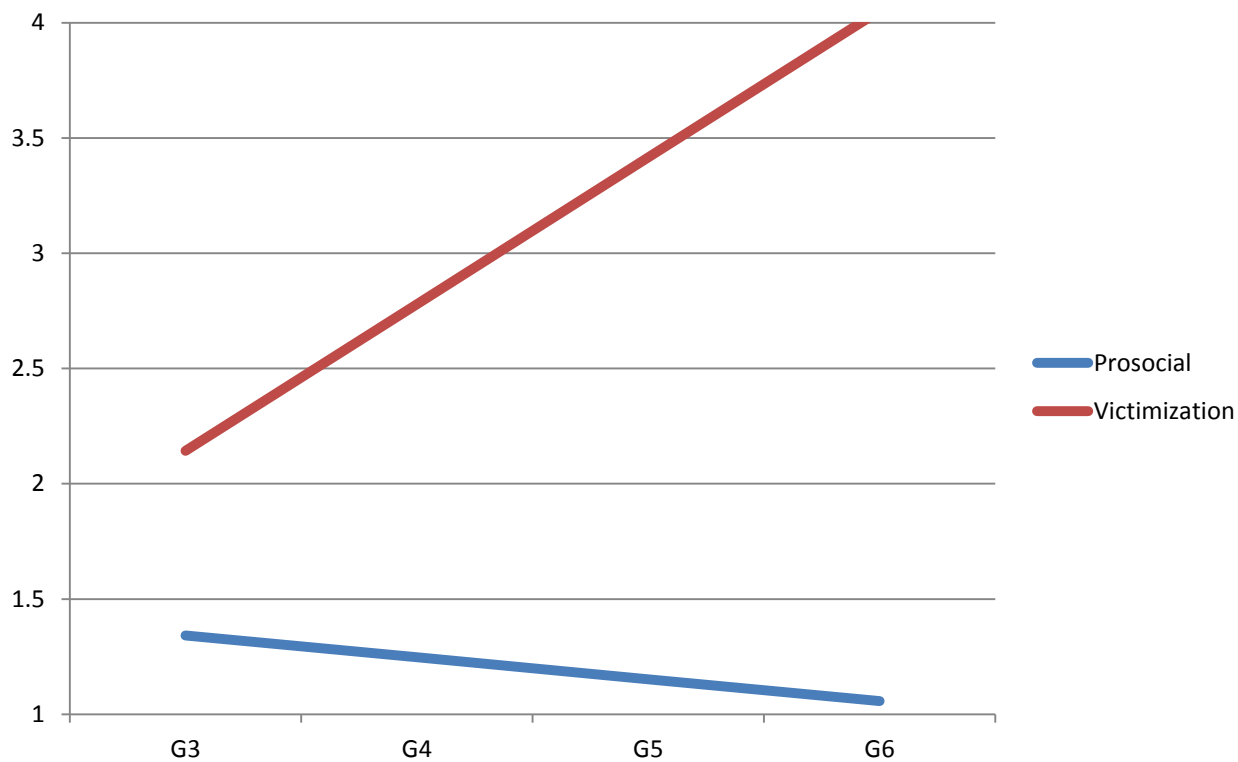


*Figure 3.* Resilient latent class. Steady, high prosocial behaviors and initially high, with a steep decline in peer victimization. Note that prosocial behaviors are on a 0-2 scale; peer victimization is on a 1-5 scale.





*Figure 4.* Normative latent class. Steady, high prosocial behaviors and steady, slightly decreasing peer victimization. Note that prosocial behaviors are on a 0-2 scale; peer victimization is on a 1-5 scale.



*Figure 5.* At-risk latent class. Decreasing prosocial behaviors and increasing peer victimization. Note that prosocial behaviors are on a 0-2 scale; peer victimization is on a 1-5 scale.

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## Appendix A

### Kids at School: Self-Report

*These questions are about the kids in your school.*

	Never	Hardly ever	Sometimes	Most of the time	Always
Do any of the kids at school:					
1. Pick on you?	1	2	3	4	5
2. Say mean things to you?	1	2	3	4	5
3. Say bad things about you to other kids?	1	2	3	4	5
4. Hit you?	1	2	3	4	5

*(Peer victimization items only)*



## Appendix B

### Relationships with Peers: Teacher Version

#### Part E. Interactions with Other Children

*We would like for you to describe the study child's behavior with peers. Ratings should be based upon your observation of the child in your classroom, on the playground, at lunch, or anywhere else you have observed this child interacting with peers. Circle the number of the description that best applies.*

	Not True	Sometimes True	Often True
7. Seems concerned when other children are distressed	0	1	2
13. Takes turns with play materials	0	1	2
14. Kind towards peers	0	1	2
16. Listens to classmates	0	1	2
19. Compromises in conflict with peers	0	1	2
21. Is cooperative with peers	0	1	2
24. Friendly toward other children	0	1	2
29. Shows concern for moral issues (e.g., fairness, welfare of others).	0	1	2
32. Offers help or comfort when other children are upset	0	1	2

*(Prosocial Items only)*

### Appendix C

#### Getting along with My Parent (Parental Warmth/Hostility)

**This set of questions is about your relationship with:** (will be filled in from what is entered at the beginning i.e. mother, father, grandmother).

When you and (parent #1) spend time talking or doing things together, how often does (parent #1)....

	Never	Sometimes	Often	Always
3. Help you do something that is important to you?	1	2	3	4
4. Get angry at you?	1	2	3	4
5. Let you know (he/she) really cares about you?	1	2	3	4
6. Criticize you or your ideas?	1	2	3	4
7. Listen carefully to your point of view?	1	2	3	4
8. Shout or yell at you because (he/she) is mad at you?	1	2	3	4
9. Act supportive and understanding toward you?	1	2	3	4
10. Threaten to hurt you physically?	1	2	3	4
11. Act loving and affectionate toward you?	1	2	3	4
12. Push, grab, hit, or shove you?	1	2	3	4
13. Have a good laugh with you when something is funny?	1	2	3	4
14. Let you know that (he/she) appreciates you, your ideas, or the things you do?	1	2	3	4
15. Strike or hit you with (his/her) hands or an object?	1	2	3	4
16. Boss you around a lot	1	2	3	4
17. Tell you (he/she) loves you?	1	2	3	4
18. Insult or swear at you?	1	2	3	4
19. Understand the way you feel about things?	1	2	3	4

## Appendix D

### What My School is Like

**These questions are about what your school is like.** (This form is skipped for those who are home schooled)

	Not at all true	Not very true	Sort of true	Very true
2. I am happy to be at my School	1	2	3	4
6. There are too many kids at my school	1	2	3	4
8. Teachers at my school treat students fairly				
9. I have too many different classes	1	2	3	4
10. I feel close to others at my school	1	2	3	4
1. There are too many kids that I don't know	1	2	3	4
12. The work is too hard	1	2	3	4
13. I feel safe at my school				
14. I feel lost at my school	1	2	3	4
15. Teachers ask me to do things that I don't know how to do	1	2	3	4
19. I feel like I am a part of my school	1	2	3	4

*Note.* Only Negative Attitudes towards School and School Attachment items are included.

## Appendix E

### Child Behavior Checklist: Aggression Subscale

	Not True	Somewhat or Sometimes True	Very True or Often True
Argues a lot	0	1	2
Bragging, boasting	0	1	2
Cruelty, bullying, meanness toward others	0	1	2
Demands a lot of attention	0	1	2
Destroys his/her own things	0	1	2
Destroys things belonging to family	0	1	2
Disobedient at home	0	1	2
Disobedient at school	0	1	2
Easily jealous	0	1	2
Gets in many fights	0	1	2
Physically attacks people	0	1	2
Screams a lot	0	1	2
Showing off or clowning	0	1	2
Stubborn, sullen, or irritable	0	1	2
Sudden changes in mood or feelings	0	1	2
Talks too much	0	1	2

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Teases a lot	0	1	2
Temper tantrums or hot temper	0	1	2
Threatens people	0	1	2
Usually loud	0	1	2

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*(Aggression Items only)*

## Appendix G

### Social Skills Rating Scale

Mothers/Alternate Caregivers were asked “How often” the study child showed the following characteristics.

	Never	Sometimes	Very Often
3. Speaks in appropriate tone of voice when at home.	0	1	2
6. Responds appropriate to being hit/pushed by other children.	0	1	2
9. Politely refuses unreasonable requests.	0	1	2
14. Avoids situations that result in trouble.	0	1	2
17. Receive criticism well.	0	1	2
22. Controls temper when arguing with other children.	0	1	2
25. Ends disagreements with you calmly.	0	1	2
26. Controls temper in conflict situations with you.	0	1	2
32. Response appropriately when teased by a friend.	0	1	2
36. Cooperates with family members without being asked.	0	1	2

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*(Self control items only)*