Child-Level Predictors of Boys' and Girls' Trajectories of Physical,

Verbal, and Relational Victimization

by

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#### ABSTRACT

For some children, peer victimization stops rather quickly, whereas for others it marks the beginning of a long trajectory of peer abuse (Kochenderfer-Ladd & Wardrop, 2001). Unfortunately, we know little about these trajectories and what factors may influence membership in increasing or decreasing victimization over time. To address this question, I identified children's developmental patterns of victimization in early elementary school and examined which child-level factors influenced children's membership in victimization trajectories using latent growth mixture modeling. Results showed that boys and girls demonstrated differential victimization patterns over time that also varied by victimization type. For example, boys experienced more physical victimization than girls and increased victimization over time was predicted by boys who display high levels of negative emotion (e.g., anger) towards peers and low levels of effortful control (e.g., gets frustrated easily). Conversely, girls exhibited multiple trajectories of increasing relational victimization (i.e., talking about others behind their back) over time, whereas most boys experienced low levels or only slightly increasing relational victimization over time. For girls, withdrawn behavior lack of positive emotion, and displaying of negative emotions was predictive of experiencing high levels of victimization over time.

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# INTRODUCTION

For most young children, the beginning of elementary school offers an exciting opportunity to meet new peers, make friends, and engage in learning activities within a highly social milieu (e.g., small work groups, collaborative activities, and structured and unstructured play time). While presenting exciting opportunities for meeting other children, beginning elementary school (e.g., 1<sup>st</sup> grade) is clearly a socially-challenging time as young children learn to navigate new social groups and negotiate their place in the classroom. In fact, researchers have shown that peer victimization is more prevalent at this stage than at any other (Côte, Vaillancourt, Barker, Nagin, & Tremblay, 2007; Vaillancourt, Hymel, & McDougall, 2003) because when new peer groups form, children with a propensity toward aggression may try to establish their position in the peer group by indiscriminately targeting their classmates. However, as children learn the reactions of their targets and other peers, they begin to narrow their field of victims to those who pose no serious threat, and who provide them with tangible rewards (Hanish, Ryan, Martin, & Fabes, 2005; Kochenderfer & Ladd, 1997; Perry, Kusel & Perry, 1988). Thus, although many children may be targeted for peer victimization early in their schooling, for some victimization stops rather quickly, whereas for others it may mark the beginning of a long trajectory of peer abuse (Kochenderfer-Ladd & Wardrop, 2001).

Unfortunately, although evidence suggests that peer victimization is most prevalent when children begin school, we really know very little about the trajectories of victimization. For example, does peer victimization continue to decrease over time for most children? Are some children targeted at later grades? Also, we know very little about what influences young children's victimization trajectories, such as why some children seem particularly vulnerable to chronic bullying while others experience decreasing victimization over time. Thus, the purpose of this study is two-fold. The first goal is to identify trajectories of peer victimization from 1<sup>st</sup> grade to 4<sup>th</sup> grade by assessing children's peer victimization at the beginning and end of each school year (8 waves of data). The second goal is to examine potential child-level risk factors that predict chronic or increasing victimization. For each goal, gender differences will be examined by looking at boys' and girls' separate trajectories and predictors of victimization trajectory membership.

# Etiology of Victimization Trajectories: Identifying Trajectories in

#### **Elementary School**

Peer victimization occurs when a child is targeted by another child with the intent to harm, harass, or even injure (Schäfer, Werner, & Crick, 2002). There are several forms that victimization can take, including physical (e.g., hitting, pushing), verbal (e.g., teasing, calling others names, taunting), and relational (e.g., saying mean things behind someone's back, trying to turn others against the target, social exclusion) victimization. Chronic victimization, regardless of its form (e.g., physical, verbal, etc.), is distinguished by the repeated frequency or duration of aggression towards one child, and is often accompanied by a power differential between the aggressor and the victim (Schäfer et al., 2002; Olweus, 1993).

Chronic victimization has been shown to predict both concurrent and longitudinal negative outcomes into adulthood (Hawker & Boulton, 2000; Ladd & Troop-Gorden,

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2003). Therefore, it is important to understand the etiology of young children's victimization trajectories, as such understanding may help inform interventionists' efforts to stop peer victimization before such patterns become established. However, there is little research on the early identification of longitudinal victimization patterns from school entry through mid-elementary school, as most studies focus on the developmental pathways of children who are victimized in middle childhood through adolescence (e.g., Boulton & Smith, 1994; Nylund, Bellmore, Nishina, & Graham, 2007). Yet, there are several reasons why early-emerging trajectories should be identified. Victimization typically emerges in early childhood when children are introduced to large groups of peers upon school entry, such as preschool or kindergarten. Although children's victimization certainly begins at this young age, entry into elementary school typically introduces even more exposure to victimization, as children are entering bigger classrooms with more peers, and are also exposed to more children in a wide range of ages (e.g., at recess or lunch with children in  $2^{nd}$ ,  $3^{rd}$ , or even higher grades). As many children are experiencing an increasing number of negative social interactions, it is an opportune moment to teach appropriate strategies for dealing with aggressive peers and providing a solid basis for social skills development in later life. Also, this is the time that children are thought to be most receptive to adult intervention, as they are particularly interested in learning the "rules" of social behavior and are in the process of learning positive behaviors and changing negative behaviors that are not yet ingrained (Coie et al., 1993). In addition, the structure of elementary school is also conducive to such intervention, given the relatively high teacher to child ratio, teachers' focus on social

interactions among students (e.g., circle time, class rules, etc.), and the consistency of children having one teacher throughout the day.

Once a child has developed the reputation as a "victim" among his or her peers, it is difficult to change other children's perceptions, even if the child is less victimized than before his or her peer status as a victim was solidified (Hodges & Perry, 1999). Therefore, intervention before children become a chronic bully or victim is ideal, both for future behavior and avoidance of negative outcomes (Pellegrini & Blatchford, 2000). From a research perspective, victimization in early childhood is an ideal period in which to study the risk factors associated with chronic victimization and how changes in victimization are related to changes in their behaviors (Kochenderfer & Ladd, 1996a). Thus, researchers should examine the variability in the intensity and duration of children's victimization experiences over time, as understanding these developmental processes can better inform our understanding.

# **Prevalence and Stability of Victimization**

Although children in elementary school tend to be victimized more frequently than older children (Boulton & Underwood, 1992; Kochenderfer & Ladd, 1996b; Whitney & Smith, 1993), their victimization is usually more transient (Hanish & Guerra, 2000; Hanish et al., 2005; Kochenderfer & Ladd, 1997). In other words, young children are less likely to experience targeted or chronic victimization than older children. However, it is unclear when children move from experiencing intermittent victimization to chronic, stable victimization (Côte et al., 2007; Kochenderfer-Ladd & Wardrop, 2001). Therefore, although children may initially experience low or high rates of victimization when starting elementary school, this does not necessarily remain stable over time. For instance, Kochenderfer-Ladd and Wardrop (2001) found that 60% of the children in their study experienced victimization at one point or another, but only 14% were classified as chronic victims over time (i.e., victims at three or more time points). Hanish and Guerra (2000) similarly found that the stability of victimization in first grade was significantly lower than the stability of victimization in second or fourth grade. Hanish and colleagues (2005) also found that victimization can change even within one school year, as preschoolers in their sample experienced more transient and less stable forms of victimization than kindergarteners. Thus, although children's average victimization, such that some are victimized continuously, some are not victimized at all, and others might experience increased or decreased victimization over time.

# **Trajectories of Victimization**

The instability of early childhood victimization indicates that there may be varying experiences of victimization; that is, children experience differential levels of victimization over time. Although there are very few studies that have examined the trajectories of very young children, those that have report three to five distinct trajectory groups, ranging from chronic low to chronic high victimization. For example, in their sample of preschoolers, Barker and colleagues (2008) found three trajectory groups, all of which showed increasing levels of victimization throughout the year, regardless of what level of victimization they started with at the beginning of the school year (e.g., low, moderate, or high). Moreover, at follow-up in first grade, children who belonged to the

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increasing to high and moderate victimization trajectory groups in preschool were rated higher in victimization by teachers and peers than children who belonged to the low increasing victimization group in preschool. Although this study is the only study to look at trajectories in early childhood, the authors examined physical victimization, verbal, and relational together as one construct, and did not look at potential sex differences in victimization trajectories. Ignoring sex differences in victimization and/or classifying all forms of victimization together may distort the actual trajectory of children's victimization (see the following section for more details).

In studies with older students in middle childhood (mid- to late-elementary school), researchers tend to find both increasing and decreasing trajectories. For example, Boivin, Petitclerc, Feng and Barker (2010) followed children from 3<sup>rd</sup> through 6<sup>th</sup> grade and identified three trajectories: (1) low-stable or rarely victimized, (2) moderate, then increasing victimization and (3) high, then decreasing victimization. Similarly, Biggs, Vernberg, Little, Dill, Fonagy and Twemlow (2010) followed children from 3<sup>rd</sup> through 5<sup>th</sup> grade and identified five trajectories: (1) low-stable, (2) moderate chronic, (3) decreasing, (4) increasing and (5) high chronic victimization.

It is rare for researchers to have studied the trajectories of children as they begin elementary school and advance during the first few formative years (i.e., kindergarten or 1<sup>st</sup> through 3<sup>rd</sup> grade). What little is known is reported in a study conducted by Kochenderfer-Ladd and Wardrop (2001) who identified numerous groups of children using cut-off scores to identify victims at 4 time points from kindergarten to 3<sup>rd</sup> grade. In this study, each child was classified as either a "victim" or "not a victim" based on mean scores either above or below a particular cut-off point (i.e.,  $\pm 1$  SD) at the spring of each year of school. In all, 16 groups were identified that could be further classified as either (1) later onset of victimization (e.g., three groups of children who were not initially victims in kindergarten, but became so in either first, second, or third grade); (2) cessation of victimization (e.g., three groups of children who were identified as victims, but stopped being victimized in either first, second, or third grade); (3) chronic victims who were victimized at all four time points; (4) never victimized children who were identified as victims; and (5) intermittent victimization (e.g., children who were identified as victims off and on across all grades). This final group of intermittent victims indicates that there may be children for whom bullying may be an ongoing concern; yet there seem to be periods of reprieve from their persecutors. It is likely that children with these patterns of victimization may identify as a single group of chronic moderate victims using latent class models.

Taken together, then, these studies suggest that there may be at least four victimization trajectory possibilities from kindergarten through 3<sup>rd</sup> grade: (1) chronic victimization (e.g., high constant victimization); (2) desisting victimization (e.g., high initial victimization, decreases over time); (3) late onset victimization (low/moderate initial victimization that increases to high victimization); and (4) stable, non- or low levels of victimization. Of these, desisting, chronic, and late onset trajectory groups would replicate what is found in the studies looking at children from middle childhood and beyond (e.g., Nylund et al., 2007). What may be different about early childhood trajectories is in the inclusion of an intermittent category, such as described by

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Kochenderfer-Ladd and Wardrop (2001). This category includes children who experience victimization on and off over the course of several years, before settling into stable victimization or no victimization. Such patterns of victimization are unlikely to be detected by current statistical methods which capture more general trends and patterns across a larger group of children; thus, as previously mentioned, these children may be identified using current statistical practices (e.g., LPA, LCA) as stable, moderate victims. Therefore, although it is unclear exactly the number of groups and what their trajectories might be, based on previous research in early and middle childhood, I hypothesize that five distinct trajectories can be detected: (1) High chronic victimization (2) non- or low victimization (3) high-decreasing victimization and (4) moderate chronic victimization and (5) low-increasing (late onset) victimization.

**Types of victimization: Distinct trajectories?** Compared to previous studies, this study contributes unique information to our knowledge of peer victimization by (1) including three distinct forms of victimization in the identification of trajectories and (2) identifying trajectories separately for each form of victimization. Researchers may inadvertently overlook distinct trajectories of victimization by focusing on physical aggression and ignoring more covert forms of victimization. For example, the few studies that estimate victimization trajectories in elementary school focus on physical victimization (e.g., hitting and pushing), and exclude verbal (e.g., calling someone names) or relational victimization (e.g., saying mean things about someone behind his/her back). However, this assumes that children's trajectories of victimization do not vary at all by type of victimization. In fact, longitudinal research indicates that, on average, physical victimization declines in elementary school (e.g., Côte et al., 2007; Tremblay et al., 2004; Vaillancourt, et al., 2003), whereas verbal and relational victimization appears to increase over this period (e.g., Leadbeater, Hoglund, & Woods, 2003; Salmivalli & Kaukiainen, 2004; Underwood, 2003). In addition, excluding verbal and relational victimization developmental patterns precludes studying social effects that can be just as detrimental to children's life outcomes (Crick & Grotpeter, 1996). Consequently, our understanding of the trajectories of victimization would benefit from examining physical, verbal, and relational victimization trajectories separately. This information would be particularly useful to inform both prevention and intervention efforts, as different types of victimization often benefit from more targeted intervention (Leadbeater & Hoglund, 2009; Ostrov et al., 2009).

The few studies that have looked at other types of victimization typically group physical and relational victimization trajectories together into a total victimization score (e.g., Barker et al., 2008; Kochenderfer-Ladd & Wardrop, 2001). This is partly because physical victimization is moderately positively correlated with other types of victimization (Card, Stucky, Sawalani, & Little, 2008). Although this tells us something about children who experience all forms of victimization, it may mask the developmental trajectory of specific types of victimization. For example, children who experience high levels of all types of victimization (e.g., combination of direct and indirect aggression) may have different trajectories than children who experience a high level of only one type of victimization (e.g., only physical or only relational aggression). Also, it is possible that combining all victimization types together might mask findings in a different way: one type of victimization may have such a strong trajectory, that it might influence the other trajectory groups, making them look different, or even non-existent. In other words, grouping all types of victimization together may give us different information than looking at each type of victimization separately. Thus, the current investigation improves on previous research by comparing victimization trajectories of children who experience all types of victimization to trajectories of each type of victimization.

Boys' and girls' victimization: Distinct trajectories? In addition to inadvertently overlooking distinct trajectories of victimization, some research suggests that peer victimization differs for boys and girls, such that boys experience more overall victimization than girls (Furlong, Sharma, & Rhee, 2000; Hanish & Guerra, 2002). In further support of this, some research shows that boys' and girls' victimization can also differ by the subtype of victimization (Crick & Bigbee, 1998; Crick, Casas, & Ku, 1999; Crick & Grotpeter, 1996). For instance, Crick, Bigbee, and Howes (1996) found that boys are more likely to experience physical victimization and girls are more likely to experience relational victimization, and these differences become particularly salient as children move through elementary school. However, these gender differences are by no means conclusive: other researchers have found no differences between boys' and girls' victimization, regardless of victimization type (Kochenderfer & Ladd, 1996b; Pellegrini, Bartini, & Brooks, 1999; Perry et al., 1988). Researchers do generally agree that boys tend to be more victimized than girls, and they are also more physically victimized than girls.

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Given these gender differences, it is likely that there are differences in boys' and girls' patterns of victimization over time. However, it is difficult to predict specific trajectory differences, given the lack of previous research. In previous studies, trajectories are typically reported as combined for boys and girls, as many studies have assumed that there are no differential processes and have modeled trajectories for boys and girls together (e.g., Barker et al., 2008; Giesbretch, Leadbeater, & Macdonald, 2011; Kochenderfer-Ladd & Wardrop, 2001). A few studies have modeled the trajectories separately and have found that there are no differences between boys and girls in victimization patterns (Goldbaum, Craig, Pepler, & Connelly, 2007; Haltigan & Vaillancourt, 2014). However, these non-findings may be due to the age of the children, and differences in cutoffs/thresholds. For example, girls may be less victimized in preschool and kindergarten, as girls may be less likely to be recipients of physical aggression, which is more common at that age (Crick et al., 1996; Crick, Ostrov, & Werner, 2006). As children get older and relational victimization becomes more common, and girl's friendships intensify, girls may become just as likely to be victimized as boys, or even more so (Crick & Grotpeter, 1996).

Therefore, based on the gender differences between boys' and girls' victimization, it is possible that resulting trajectory differences may be masked by looking at boys and girls trajectories combined. For example, although physical victimization generally decreases over time (see previous section), it is possible that boys experience consistent physical victimization, while girls may experience decreasing physical victimization, as they transition to less active forms of play, which may result in what may look like an overall decrease in victimization.

# Child Behaviors and Characteristics: Risk Factors for Victimization

After identifying developmental victimization trajectories, a next logical step is to examine predictors of the identified victimization trajectories to determine which behaviors put children at risk for each developmental pathway. Children are not equally at risk for victimization: there are characteristics related to a child's increased probability of developing negative outcomes (Coie et al., 1993). Prominent risk factors for peer victimization are often behaviors exhibited by the victimized child (e.g., social behaviors; Perry et al., 1988). In the following section, I will discuss the risk factors likely to predict membership in high, decreasing, and increasing victimization trajectories.

## **Theoretical Framework**

Children who are victimized by peers often have characteristics and behaviors that contribute to their continued victimization. To identify characteristics and behaviors that predispose children to victimization, I used the child-by-environment framework articulated by Kochenderfer-Ladd and Ladd (2010; see Figure 1). In this framework, these characteristics and behaviors are both theoretically and empirically related to development and maintenance of victimization. This includes social behaviors (e.g., aggressive, withdrawn, and submissive behavior), emotional reactions (e.g., anger, impulsivity), and coping responses (e.g., strategies for dealing with peers). When targeting risk factors to address in interventions, it is important to focus on these characteristics, which can help us to identify which behaviors interventions should target for change. Of the risk factors presented in the framework, three potential risk factors may discriminate among the different trajectories: (1) children's own propensity to physically aggress against peers, (2) the use of effective or ineffective coping strategies when dealing with victimization, and (3) children's effortful control. In addition, a child's gender is a risk factor that may increase or decrease the risk of victimization depending on the type of victimization.

# **Predictor 1: Physical Aggression**

Most research has focused on children's social behaviors as risk factors for peer victimization. For young children, aggressive behavior is the most highly predictive of peer victimization (Hanish & Guerra, 2004; Alsaker & Valkanover, 2001; Barker et al., 2008; Boivin, Hymel, & Hodges, 2001; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1998; Garner & Lemerise, 2007). For example, Alsaker and Valkanover (2001) reported that kindergartners who were victimized had higher rates of aggressive behavior than passive behaviors. Barker and colleagues (2008) also found that physical aggression in preschool was the best predictor of moderate and high increasing victimization trajectory groups in kindergarten.

Several possible mechanisms may link children's aggression to chronic victimization. First, children who are aggressive are likely to be disciplined by teachers and may be victimized by other children who do not want to be associated with them (Ladd, 2006; Leadbeater & Hoglund, 2009). Second, as children get older, fewer are aggressive toward their peers as a strategy; therefore, those who still do use physical aggression towards peers as a frequent strategy may make themselves of target of aggression as a side-effect (Hanish & Guerra, 2004; Ladd, 2006; Schwartz, 2000). Third, a victim's retaliatory aggression may perpetuate an aggressive relationship with another child (Schwartz, 2000; Veenstra, Lindenburg, Zitsta, DeWinter, Verhulst, & Ormel, 2007). This also includes children who misinterpret peers' intentions in social situations and view interactions as hostile even if there is no indication of the peer's intent (e.g., accidently running into them, knocking over books, etc.; Crick & Dodge, 1994; Schwartz et al., 1998). This often leads to aggressive responses towards a perceived bully, even if the peer was not purposefully targeting them. Altogether, children who display aggressive behaviors may be putting themselves at risk for both current and chronic victimization.

Sex differences in physical aggression. Most studies focusing on gender-specific aggression prevalence have found that boys are more physically aggressive than girls, while girls are more relationally aggressive (e.g., Crick & Grotpeter, 1996). For example, Giesbrecht and colleagues (2011), among others, found that boys showed higher average physical aggression at all grade levels than girls. However, few studies have examined sex differences in aggression as a predictor of victimization. There is some evidence that highly aggressive girls are more victimized than highly aggressive boys in kindergarten (Snyder, Brooker, Patrick, Snyder, Schrepferman, & Stoolmiller, 2003). Another study found a slightly higher proportion of males in high victimization trajectories, but no sex specific differences in predictor of physical aggression (Barker et al., 2008). Giesbrecht and colleagues (2011) also found that sex did not moderate the association between victimization and physical aggression.

# **Predictor 2: Coping Strategies**

Children who experience continued victimization tend to use strategies that lead to continued bullying. These strategies include withdrawal from the situation, use of friends for help and coping, crying/emotional reactions, and aggression (see above for discussion of aggression; Coie & Dodge, 1998; Kochenderfer & Ladd, 1997; Mahady-Wilton, Craig, & Pepler, 2000). Researchers find that victimized children tend to use passive, ineffectual strategies, and withdrawing behavior, which may increase their risk for further—presumably because such responses indicate that they are unlikely to retaliate against their attackers (Hodges & Perry, 1999; Perry et al., 1998; Schwartz, Doge, & Coie, 1993). In addition, these children typically show signs of distress, such as crying, which may further encourage the bully to target that child in the future (Perry et al., 1998). Telling a bully to stop, or fighting back is related to increased victimization (Kochenderfer & Ladd, 1997; Smith, Shu, & Madson, 2001). However, even strategies that are effective for children who are occasionally victimized, such as asking a friend for help, tend not to be successful for children who are chronically victimized (Kochenderfer & Ladd, 1997; Pepler, Craig, & O'Connell, 1999). Thus, I expect that while the presence of effective coping strategies may differentiate between children in low and desisting trajectories, effective coping skills will not predict chronic victimization, as strategies that work for most children will not work for highly victimized children.

**Sex differences in use of coping strategies.** There is some evidence that there are sex differences in the efficacy of coping with victimization. For example, boys who cry in response to aggressive peers are further victimized by other boys, whereas girls are not

penalized for this response (Kyratzis, 2001). In another study, Schmidt and Bagwell (2007) found that girls who received help from friends reported fewer negative outcomes, whereas boys showed the opposite relation; that is, help from friends exacerbated the negative effects of victimization. On the other hand, victimized girls tend to belong to the same social networks or friendship group as their bully, and thus may experience a high incidence of aggression from girls within their social circle (Crick & Grotpeter, 1996; Owens, Shute, & Slee, 2000; Salmivalli, Huttunen, & Lagerspetz, 1997). Consequently, girls may not be able to turn to their friends for help with victimization if their friends are the ones who are victimizing them. Given these mixed findings, it is important to explore boys' and girl's predictors of victimization separately.

# **Predictor 3: Temperament**

Temperament is defined as "constitutionally based individual differences in reactivity and self-regulation" (Rothbart & Bates, 2006). Thus, children show individual differences in level of emotional display, attention, and activity, including reactivity to stimuli and ability to self-regulate one's responses (e.g., effortful control; Rothbart & Bates, 2006). Children who are victimized tend to display intense negative emotions and a lack of effortful control (Hanish & Guerra, 2004; Perry, et al. 1993; Schwartz et. al, 1998). The ability to regulate one's emotions appears to be particularly important, as children who experience emotional reactivity but have self-control in their emotional displays tend to be less victimized than children with similar reactivity, but less ability to control their emotions (Rubin, Bukowski, & Parker, 1998). This is probably due to the nature of bullying interactions; that is, children who bully may be looking for children who will respond with anger or emotional displays, and therefore these behaviors increase the likelihood that certain children might be continuously victimized (Perry, Willard, & Perry, 1990). Findings of several studies indicate that higher levels of emotional dysregulation tend to be associated with higher levels of victimization—even after accounting for the child's aggressive behavior (Giesbrecht et al., 2011; Miller, Gouley, Seifer, Zakriski, Equia, & Vergani, 2005). As other studies have shown, it is more common for young children to be impulsive and have trouble regulating their behaviors and emotions, and as such, I expect that these behaviors will predict high victimization trajectories.

In addition to aggression, and other negative behaviors (e.g., limited self- control and ineffective coping strategies) that increase propensity to be bullied, it is also important to examine whether low levels of positive behaviors are related to chronic or increasing trajectories of victimization. Previous research has focused on negative characteristics associated with victimization and has widely ignored how low levels of positive characteristics may increase victimization, or predict more chronic victimization. Much of the focus in the literature is on identifying high levels of negative behaviors related to trajectories, but it is important to identify what positive skills might differentiate low and high trajectories of victimization, in order to identify what skills might be helpful for intervention and positive development.

For example, children who are prosocial and demonstrate a positive, easy-going manner towards peers may be less likely to experience high or increasing victimization. Although these children may be targeted by aggressive classmates, these victimized children with their easy-going nature may not give the aggressors the reaction they are looking for, thus, decreasing the likelihood that they will be targeted in the future. In addition, their sociability skills may help them make and maintain friends and to garner support from classmates, and generally use more effective coping strategies. Also in support of this, several studies have found that children's levels of social competence are negatively related to their victimization (Garner & Lemerise, 2007; Hodges & Perry, 1999). Therefore, I hypothesize that children who display low levels of positive emotion and prosocial behavior will experience either chronic or increasing victimization.

**Sex differences in temperament.** There is not much evidence, either for or against, sex differences in emotional regulation as it relates to victimization. Although boys tend to show more emotional reactivity and a lack of effortful control, there is no indication that there are differential consequences for boys and girls and victimization. For example, Giesbrecht and colleagues (2011) found that boys showed higher emotional dysregulation than girls in early elementary school, but that sex did not moderate the association between emotional reactivity and victimization. In addition, Kochenderfer - Ladd (2004) found that both boys and girls reported the same levels of anger in response to victimization. Although these findings indicate that there are no sex differences, the lack of a robust number of studies in this area preclude coming to this conclusion.

There is also little research to indicate whether or not boys' or girls' sociability may differentially affect trajectories of victimization. However, there is some indication that boys who display positive emotion and are prosocial may be considered leaders in the class, and therefore less likely than girls to be protected from victimization. Gender non-normative negative behaviors (e.g., physically aggressive females or passive males) tend to have more serious consequences for children (Crick, 1997; Hess & Atkins, 1998), it may be the case that gender non-normative positive factors provide an increased benefit for these children. Since prosocial skills are more commonly associated with females, this may not lead to less victimization.

### **Summary of Study Goals**

The first aim of the study was to identify subgroups of peer victimization (e.g., decreasing, increasing, chronic, etc.) by victimization type (e.g., physical, relational, and verbal victimization). In addition, I examined boys', girls', and all children's trajectories to investigate potential sex differences. The second aim of the study was to examine child-level factors (e.g., physical aggression, effortful control, coping responses, sociability, and negativity) as predictors of the identified trajectories. A sub-goal was to investigate potential sex differences by comparing boys' and girls' predictors of chronic, increasing, and decreasing victimization.

### METHODS

# **Participants**

Data for the study came from the ClassAct Project (Kochenderfer-Ladd, 2003), a longitudinal study of two cohorts of children followed for four years beginning in 1st and 3rd grade (n= 583). Children were recruited from four schools in an urban, southwestern city, with participants from each school ranging from 72 – 147 children. For this study, only data from the 1<sup>st</sup> grade cohort of children were used, resulting in a final sample of

230 children (105 girls) from four schools (*range* = 40 - 76). Over the course of the study, there was attrition each year due to children moving out of participating schools. Attrition from Year 2, Year 3, and Year 4 of the study ranged from 28%, 51%, and 61%, respectively (i.e., n = 66, 101, 129 respectively).

The average age of at the beginning of the study was 6.5 years (*range* = 5.38 - 7.98 years; *sd* = 5.59 months). The children were primarily Mexican American (42%) and Caucasian (44%). Fourteen percent of the children represented the following racial/ethnic groups: 4% African American, 3% Native American, 1% Asian American, and 6% multiracial.

# Procedures

Four schools were selected as representative of the southwestern communities from which they were drawn. The recruitment strategy involved first obtaining the permission of the school administration and targeted teachers. After permission was received from administration and teachers, parents in the participating classroom were informed of all aspects of the study and asked to provide permission for their children's participation. Parents who did not respond to the initial letter were sent a follow-up reminder a few weeks after the initial letter.

Once parental permission was granted, letters were sent to the participating teachers to schedule convenient times for graduate research assistants to visit the classroom each year in the Fall and Spring to administer the child-report measures (in either English or Spanish). Due to the reading level required by the questionnaires, trained graduate research assistants administered the self-report measures in smaller groups of three or four in the 1<sup>st</sup> and 2<sup>nd</sup> grade classrooms. When students were in 3rd and 4th grade, the questionnaires were administered in a class-wide format (i.e., questionnaires were passed out and children completed the measures on their own), proctored by trained graduate research assistants. At each wave of data collection, verbal assent was obtained from children and data collection sessions lasted about 45 minutes. Upon completion, children were given small gifts, such as water bottles, backpacks, or ball caps, as a token of appreciation for their participation. Teachers also completed sets of questionnaires for each of their participating students in the Fall of Year 1. Teachers received monetary compensation in the amount of \$5 per set of questionnaires for each participating student.

# **Child Report Measures**

**Peer victimization.** Self-reports were used to assess the frequency of children's peer victimization in fall and spring of each academic year using the measure developed by Kochenderfer and Ladd (1996a). For this measure, children are asked to rate how often they experience peer victimization in school. For this study, three items reflecting three different types of peer victimization were used: physical (i.e., "Do kids hit or push you?); verbal (i.e., "Do kids call you names or say other hurtful things to you?"); and relational (i.e., "Do kids say mean things or lies about you to other kids?"). The child rated the frequency of each type of victimization on a four point scale (1 = "Never"; 2 = "Rarely"; 3 = "Sometimes"; 4 = "A lot").

**Coping strategies.** Children's behavioral coping strategies in response to peer victimization were assessed with Kochenderfer-Ladd and Pelletier's (2008) revision of

Causey and Dubow's (1992) Self-Report Coping Scale in the Fall of first grade (Year 1). Children rated the likelihood with which they would enact 20 different specific behaviors "when kids are being mean to [them]". Specifically, each child is asked to "imagine what you would do if a kid were being mean to you. Would you...?" Their responses were rated on a three-point scale (no = 1, maybe = 2, yes = 3). Ten items described seeking help from a parent, teacher, or friend (e.g., "Would you ask a parent what you should do?";  $\alpha = .81$ ), four items described retaliation strategies (e.g., "Would you hurt the kid?  $\alpha = .65$ ), and four items described problem solving strategies (e.g., "Would you tell the kid to stop"  $\alpha$ = .70). Each subscale was created by averaging the scores across the relevant items for each time point.

# **Teacher-rated Measures**

**Physical aggression.** In the Fall of Year 1, teachers answered two questions assessing children's frequency of physical aggression towards peers. For each child, teachers rated how often each child "acts aggressively towards peers" and "threatens or bullies others" on a 4-point scale (1 = "Never"; 2 = "Rarely"; 3 = "Sometimes"; 4 = "A lot"). Both aggression items were averaged to create a total aggression score (Cronbach  $\alpha$  = .91).

**Temperament.** To obtain a measure of children's sociability/positive emotionality and negative emotionality, relevant items from the *Child Behavior Questionnaire* (CBQ; Rothbart, Ahadi & Hershey, 1994) were used. In the Fall of Year 1, teachers used a 5-point scale (1 = "Definitely not true"; 3 = "Not sure/Neutral"; 5 = "Definitely true") to rate how often each statement applied to each child's interactions with peers. Children's combined sociability and positive emotional behaviors were assessed using five items for sociability, such as "seems concerned when others are distressed", and positive emotionality was captured by two items (e.g., "Smiles and laughs during play"). Negative emotionality was assessed with 4 items (e.g., "Gets mad when provoked by other children). Sociability and positive emotion were averaged to create a total positive emotion scale (for a total of 7 combined items) and all four items measuring negative emotion were averaged to create a total negative display of emotion score (Cronbach  $\alpha s = .87$ ).

Effortful control was assessed using three subscales of the *Child Behavior Questionnaire* (CBQ; Rothbart et al., 1994). Again, in the Fall of Year 1, teachers used a 5-point scale (1 = "Really untrue"; 3 = "Neither true nor untrue"; 5 = "Really true") to rate how true each statement was of each of their students' interactions with peers. The effortful control scale included a four-item inhibitory control scale including descriptors such as "Can lower his/her voice when asked to do so."; a three-item attention-shifting scale (e.g., "Can easily quit working on a project if asked"), and a three-item attentionfocusing scale (e.g., "When picking up toys or doing other jobs, usually keeps at the task until it is done"). All ten items were averaged to create an effortful control score ( $\alpha$  = .89).

# Results

The first goal of the study was to identify peer victimization trajectories (e.g., decreasing, increasing, stable, etc.) by victimization type (e.g., physical, relational, verbal). In addition to examining the trajectories for the overall sample, boys' and girls'

trajectories were examined separately to determine whether different patterns described girls' and boys' experiences of victimization. The second goal of the study was to examine child-level factors (e.g., aggression, effortful control, coping responses, sociability, and negativity) as predictors of the identified trajectories for boys and for girls.

# **Missing Data**

Over the course of the study, attrition occurred due to children moving out of participating schools, which led to missing data on victimization variables in Years 2 through 4 of the study (28%, 51%, and 61% missing data, respectively). In order to use missing data techniques to analyze incomplete cases, missing data must be either missing completely at random or missing at random (Enders, 2010; Little & Rubin, 2002). Analyses were conducted at each time point to assess whether children who participated differed from children who did not participate. To do this, *t*-test and chi square tests were conducted to determine whether children's sex, ethnicity, age, or school differed between children who were missing data and children who were not missing data. None of the tests were statistically significant, showing minimal differences between the two groups. Therefore, it was unnecessary to use auxiliary variables when using missing data techniques to account for attrition in the data set.

In order to use all available data (i.e., incomplete cases), analyses for *Aim 1* were conducted using Full Information Maximum Likelihood (FIML) in SAS 9.4. FIML uses observed data to predict values for the missing data on the variables of interest. As its name suggests, FIML uses an estimation procedure that maximizes the likelihood

function, assuming a multivariate normal distribution. This provides parameter estimates that are similar to a full data set, even with data over 50% missing on longitudinal variables (Enders, 2010).

Prior to performing the analyses for *Aim 2*, multiple imputation procedures were used to deal with missing data, as FIML is not an appropriate method to use for data analyses missing data on predictors (Enders, 2010). Multiple imputation creates many copies of the data set, each using different estimates in place of the missing data, by using a regression-based procedure (PROC MI in SAS 9.4). This procedure was used to generate 20 imputed data sets as recommended by Graham, Olchowski, and Gilreath (2007). The imputation process included the predictor variables that were used in the subsequent analyses. After creating the complete data sets, the analyses were completed on each data set, and pooled to combine the parameter estimates and standard errors into a single set of results. FIML and multiple imputation are viewed as the gold standard of missing data techniques because they are more accurate and provide more power than other missing data techniques (Schafer & Graham, 2002).

# **Preliminary Analyses**

Descriptive analyses were conducted to examine measures of central tendency and variability of all study variables. Peer victimization, coping strategies, temperament, physical aggression, and effortful control at each time point were all relatively normally distributed (i.e., skew and kurtosis were in normal range of two standard errors; Tabachnick & Fidell, 2007). Means and standard deviations for all Time 1 variables are reported in Table 1 (total sample) and Table 2 (separately for girls and boys). For the total sample, the mean scores of teacher-rated frequency of physical aggression and withdrawn behavior were relatively low (M = 1.81 and 2.14, respectively) whereas children were rated as showing high levels of positive behavior and moderate levels of negative behavior (M = 3.87 and 2.79, respectively). In addition, teachers rated children as generally high on effortful control (M = 3.64). Children's ratings of their own use of multiple coping skills showed that they were most likely to used seeking help and problem solving and strategies (M = 2.11 and 2.27, respectively), but less likely to report using retaliation strategies (M = 1.45). For physical, verbal, and relational victimization, children indicated that they were infrequently victimized by their peers in first grade (Ms on a 4-point scale = 1.79, 1.95 and 2.14, respectively).

Table 3 presents the means for each form of peer victimization at each time point for boys and girls separately. Paired *t*-tests, comparing each time point of victimization with the next consecutive time point were run for each type of victimization, by sex (e.g., boy's physical victimization at Time 1 compared to Time 2, and then Time 2 compared to Time 3). There were no significant differences in victimization from one time point to the next, with a few exceptions. Specifically, as shown in Table 3, girls' verbal and relational victimization significantly decreased from Time 2 to Time 3, ts(76) = 2.77 and 2.43, ps <.05, respectively. Boys' relational victimization significantly decreased from Time 1 to Time 2, t(114) = 2.159, p < .05

Prior to identifying boys' and girls' separate trajectories, I also examined mean differences between boys and girls on all measures obtained in the Fall of Year 1 with independent samples *t*-tests. As seen in Tables 2 and 3, boys and girls, on average, show

the same mean patterns as the total sample in Table 1. However, Table 2 also shows theoretically expected differences between boys and girls on several study variables. In particular, teachers reported that boys displayed significantly more aggressive behavior than girls, t(183) = 2.21, p < .05, and girls showed significantly more withdrawn behavior and effortful control, ts(183) = 2.28 and 2.62, ps < .05 and .01 respectively. There were no significant differences in the frequency of coping skills used, with the exception of retaliation coping strategies, which boys reported using significantly more frequently than girls, t(183) = 2.28, p < .05. For both boys and girls, help-seeking strategies were the most frequent coping skills used. In addition, independent *t*-tests were run to compare boys' and girls' mean levels of victimization at each time point. As Table 3 shows, there were no significant differences between boys and girls, with two exceptions: In Spring of Year 1, girls experienced significantly more verbal and relational victimization than boys, ts(214)=2.07, 3.21, ps < .01.

Bivariate correlations among the study variables at Time 1 are presented for the total sample (see Table 1), boys and girls separately (see Table 2), and for physical victimization (Table 4), verbal victimization (Table 5), and relational victimization (Table 6) over time. Correlations for all forms of victimization computed separately for boys and girls showed that, in general, victimization was more strongly correlated within academic years than across years. However, there were exceptions (i.e., Years 1 and 4 girls' physical victimization; Year 3 for boys' physical victimization; Year 1 girls' verbal victimization; and Year 2 girls' and boys' relational victimization). The instability of victimization is not surprising given that I expected variability in children's victimization

trajectories. Specifically, I had hypothesized that some children would evidence stable victimization trajectories, whereas others would report decreasing or increasing victimization frequencies.

Many of the predictor variables (Time 1 risk factors) for Aim 2 analyses were significantly correlated. Because sex differences were found, only correlations conducted separately by sex will be discussed here (see Table 2). For example, for both boys and girls, physical aggression was positively correlated with negative emotions and negatively correlated with effortful control; moreover negative emotions were negatively correlated with effortful control. In addition, for both boys and girls, withdrawn behavior was negatively correlated to positive emotion.

However, sex differences revealed that, for boys only, withdrawn behavior was also positively correlated with negative emotion whereas for girls, withdrawn behaviors was positively associated with retaliation. For boys, seeking help was positively correlated with problem solving strategies, whereas for girls, it was positively correlated with negative emotion. For boys only, displays of positive and negative emotion were negatively correlated, and positive emotion was positively correlated with effortful control. In contrast, for girls only, retaliation was positively correlated with negative emotion and negatively with effortful control.

# **Identification of Children's Victimization Trajectories**

The first goal of the study was to identify children's trajectories of victimization in early elementary school (1<sup>st</sup> through 4<sup>th</sup> grade). This analysis model used measures of both boys' and girls' victimization to identify trajectories for each type of victimization
(e.g., physical, verbal, relational). To address the two sub-goals, separate trajectories for boys and girls were identified, and the number and form of the resulting trajectory groups for boys and girls are described.

Latent growth mixture modeling. Over the past 20 years, methodological advances in analyzing longitudinal data have allowed for the identification of one or more classes or groups of children's developmental trajectories within a sample. One method for analyzing such trajectories is latent growth mixture modeling, or LGMM (Jones, Nagin, & Roeder, 2001; Nagin, 1999; Roeder, Lynch, & Nagin, 1999). LGMM uses a semi-parametric, group-based modeling approach that allows for the identification of multiple trajectories simultaneously (Nagin & Land, 1993), in contrast to other growth curve analyses, which assume that the sample population has only one group mean and developmental trajectory. Thus, LGMM is the most appropriate growth curve analysis to use for the identification of unique growth trajectories for subgroups of a sample. LGMM assumes that each class represents a homogenous growth trajectory and allows for unique variance and covariance estimates for each growth factor, permitting each group to model its own unique trajectory. In order to achieve this, the latent intercept and slope factors are regressed onto a latent classification variable that allows the curve of the trajectory to differ across classes (e.g., one trajectory can be linear and one cubic).

To determine the number of heterogeneous trajectories in the sample, I identified the number and form of the trajectories for each type of victimization by following the steps recommended by Jones and colleagues (2001) and Andruff, Carraro, Thompson, Gaudreau, and Louvet (2009). For each victimization trajectory, I conducted a growth curve model specifying two trajectory groups, then conducting additional analyses with increasing number of groups to the maximum number of theoretical possible trajectory groups (i.e., two groups, then three groups, etc. up to five groups), based on my hypothesis about the minimum and maximum number of theoretically relevant groups (please see literature review). Thus, a total of 36 models were initially analyzed: 4 models (i.e., two, three, four, and five subgroups) for each of the 3 types of victimization (e.g., physical, verbal, and relational), and separately for the total sample, boys only, and girls only. Next, I determined the appropriate trajectory curve for each model by allowing for a cubic, quadratic, and linear function for each subgroup, and then selecting the highest-order, statistically-significant parameter. Although it is commonly recommended that researchers retain a linear slope, at minimum, for each subgroup, an intercept slope was allowed as the lowest function, as I hypothesized that some groups would show a stable, non-changing slope (i.e., chronic low or high victimization; Nagin, 1999). Finally, each revised model was re-analyzed, resulting in a final BIC value for each of the 36 models.

To choose the number of trajectory groups that demonstrated the best model fit, I used a combination of factors: fit indices (e.g., BIC), conceptual parsimony, and theoretical motivation. First, I compared each model's fit indices, using the adjusted Bayesian Information Criteria (BIC), which is commonly used with models using maximum likelihood estimation and is recommended as the exclusive fit indices to compare models in SAS (Jones et al., 2001; Tofighi & Enders, 2008). Statistically, when comparing models (e.g., two-group trajectories, three-group trajectories, etc.) the one with the lowest BIC is considered the best-fitting model. However, there is some discussion about how much of a difference is needed between each model in order to move to the next most complicated model (i.e. model with more trajectory groups). To provide a standardized way to analyze the fit of each model, Jones and colleagues (2001) have proposed comparing the BIC values within each nested model. To adopt a model with a larger number of trajectories, a difference of at least 2 BIC values between models is recommended; over 10 BIC values indicates very strong evidence for adding another trajectory group. For example, for boys' physical victimization, I started by comparing the BIC value for the two-trajectory model to the three-trajectory model, then comparing the three-trajectory model to the four-trajectory model, until there is no substantial evidence for improvement in model fit. Occasionally, two models will have the same BIC fit indices. If this occurs, adoption of the model with the smaller number of groups is recommended for parsimony, with all other factors being equal (e.g., theoretical motivation; Jones et al., 2001).

Fit indices and parsimony, however, are only two criteria for assessing model fit. It is important to also use theory to ascertain that each statistically identified model is appropriate for the research question. For example, if a there are two models with the same BIC, it may be appropriate to choose the model with more trajectories based on our theoretical understanding of victimization. For boys' physical victimization, the BIC fit indices revealed identical values for the 3-group and 4-group model. In this case, the 4group model was chosen, as it added a high, decreasing trajectory group consistent with the hypothesis that for some children, physical victimization is high in early elementary school, but decreases over time. Similarly, for children's relational victimization, adding a 4<sup>th</sup> subgroup allowed for the identification of a trajectory of increasing relational victimization over time, which is consistent with my hypothesis and previous research.

Finally, although boys and girls trajectories were run separately to determine the number, type, and group membership of the trajectories for each subgroup, formal tests of sex differences are not statistically possible within the LGMM framework; therefore comparisons between boys' and girls' trajectories remain at a descriptive level.

**Children's victimization trajectories.** Using the above procedure, I determined the number of trajectories for each type of victimization (i.e., physical, relational, verbal) for all children in the sample. Then, this procedure was repeated, first with only boys and then with only girls, to explore whether there were differences between boys' and girls' trajectories. All reported trajectory slopes are significant to at least p < .05, as non-significant slopes are eliminated in the model determination process described in the previous section. For ease of interpretation, children's victimization scores were characterized as low (scores of 1.00 - 1.49), moderate (scores of 1.50 - 2.49), and high (scores of 2.50 - 4.00). This description was chosen taking into consideration the range of observed scores, and the descriptive responses associated with the victimization measure (i.e., 1 = never; 2 = once or twice; 3 = sometimes; 4 = a lot).

The number of children's victimization trajectories for the total sample ranged from 2 to 4 trajectory groups per victimization type (see Table 7 for fit indices of all trajectory models, and Table 8 for intercept and slope estimates for the final models). For physical victimization (see Figure 2a), there were two subgroups identified: a decreasing, linear victimization trajectory (50% membership) and chronic, moderate victimization group (50% membership). For verbal victimization (Figure 2b), three trajectories were identified, two of which were intercept-only trajectories (low/non-victimization and chronic/moderate), and one linear trajectory of decreasing victimization over time (47%, 42%, and 12% group membership, respectively). Four trajectories were identified for relational victimization (shown in Figure 2c), which showed a similar pattern to verbal victimization, with two intercept-only trajectories representing low/non-victimization and chronic/moderate groups (16% and 56% membership, respectively), and then a decreasing, quadratic trajectory (11% membership). In contrast to verbal victimization, relational victimization also had a chronic, high victimization group (17% membership).

**Boys' and girls' victimization trajectories.** LGMM revealed different trajectories for boys and girls (see Table 7, Table 8, and Figures 3-5). For boys, 4 trajectories were found for physical victimization and 3 trajectories for verbal and relational victimization, whereas for girls, 2 trajectories were found for physical and verbal victimization and 3 trajectories for relational victimization.

When looking at these trajectories, it is clear that overall, boys and girls show different patterns of victimization over time. Figure 3 shows the trajectories of physical victimization for boys (3a) and girls (3b). Overall, boys' experience of physical victimization was more frequent and complex than girls' experience of physical victimization. Four linear trajectory groups were identified: low victimization (49% membership), linear increasing (27% membership), chronic/moderate (19% membership), and high and then linear decreasing (5% membership). For boys in the high/decreasing group, there was a sharp decrease in physical victimization after first grade. As expected, most girls experienced little physical victimization across all time points, and what physical victimization did occur dropped off quickly after first grade, with an overall slight quadratic trajectory (74% membership). The rest of the girls in the sample (26% membership) experienced chronic/moderate physical victimization over time.

Verbal victimization trajectories (Figure 4) also differed for boys (4a) and girls (4b), but not in expected directions: most boys (82%) belonged to a low victimization group (cubic slope), with 11% following a decreasing linear trajectory, and 6% following a sharply increasing linear trajectory. For girls, verbal victimization had only 2 identified groups: moderate, then decreasing trajectory (cubic slope; 78% membership), and a chronic/moderate trajectory (22% membership). As Figure 5 shows, boys (shown in 5a) experienced less relational victimization: 72% of boys showed a low, quadratic trajectory; 21% showed a high, then decreasing victimization trajectory. However, the majority of girls (shown in 5b) belonged to a low, then increasing linear victimization group (70%), and the remaining girls belonged to a high, chronic victimization group (17%) or a high, then linear decreasing group (14%).

### Predictors of Children's Victimization Trajectories

The second goal of the study was to examine the relation of child-level risk factors to the test whether child behaviors and characteristics at one time point (i.e., timestable covariates) predict membership in the trajectory groups. LGMM allows for the inclusion of risk factors directly into the trajectory model, accounting for possible uncertainty in group assignment that can lead to bias when using other growth curve modeling methods (Roeder et. al, 2001). Risk factors are entered directly in the LGGM model as time-stable covariates, and a multinomial logistic regression model is estimated. Then, a *t*-test is used to compare the strength of the coefficients compared to the reference group, to identify significant differences between each group and the reference group.

For each trajectory, I tested whether children's report of their own coping skills (e.g., retaliation, problem solving, and seeking help) and teacher reports of physical aggression, withdrawn behavior, effortful control, negative emotional display and positive emotional displays predicted the likelihood of classification in a specific subgroup. In this analysis, the low/stable group is coded as the reference group; therefore the analyses are run comparing regression estimates for each group in comparison to the low/stable trajectory group. The exception to this is the model comparisons run for girls' relational victimization trajectories: in this model there is no low/stable victimization group, so the analysis compares the normative (i.e., majority) group, a low/increasing trajectory, to the other two trajectory groups. Due to the clear differences in boys' and girls' victimization trajectories, I was interested only in whether boys' and girls' risk factors for victimization differed (as opposed to examining risk factors for the entire sample). Therefore, findings are reported separately by sex.

Boys displayed a number of risk factors that predicted membership in their identified victimization trajectory subgroups. Analyses for physical victimization trajectories showed that, compared to children who experience low levels of victimization over time, children who are likely to belong to a high, and then decreasing/linear trajectory of victimization show low scores of positive emotion and high scores on negative emotion (see Table 9). Similarly, high scores on negative emotion and low scores on positive emotion, in addition to low scores on effortful control, predicted membership in the increasing/linear victimization group relative to the low victimized group. For verbal victimization, high scores on negative emotion predicted likelihood of membership in both the increasing/linear victimization group and the high, then decreasing/linear group, compared to the low victimization group (see Table 10). For relational victimization groups, high levels of negative emotion and low levels of positive emotions predicted membership in the increasing/linear victimization group (see Table 11). Additionally, high scores on physical aggression and high scores on retaliation coping strategies were also predictive of membership in the high, then decreasing/quadratic victimization group.

In general, girls had fewer trajectory groups for victimization. For the girls who experienced high or moderate decreasing victimization, or chronic victimization, there were some risk factors that predicted membership in their identified victimization groups. For physical victimization trajectories, low displays of positive emotion were related to the chronic/moderate victimization group relative to the group with decreasing victimization (see Table 12). Similarly, chronic/moderate verbal victimization was predicted by low levels of positive emotion and problem solving strategies relative to the decreasing victimization trajectory (see Table 12). Unlike the other types of victimization, relational aggression for girls did not have a low and stable trajectory of consistent non-victimization over time. Therefore, analyses were run to compare both the chronic and decreasing trajectory groups to the increasing trajectory group (see Table 13). When compared to the increasing victimization group, low levels of withdrawn behavior predicted membership in the high, then linear decreasing trajectory group. For the chronic/high victimization trajectory group, low use of problem solving strategies were predictive.

### Discussion

Little is known about children's peer victimization trajectories and what factors may influence increasing or decreasing victimization over time. To address this gap, I investigated whether boys and girls in early elementary school demonstrated distinct longitudinal patterns of physical, verbal, and relational victimization (*Aim 1*). In addition, I used children's behaviors in the fall of first grade to predict the likelihood of membership in the identified subgroups of victimization (*Aim 2*).

Results showed that boys and girls experience differential victimization patterns over time that also varied by victimization type (see Table 14 for a comparison of all trajectories by sample and victimization type). I expected that children with a high probability of experiencing high chronic victimization, or increasing victimization, would have more risk factors in first grade. There is partial support for this hypothesis, as some boys' and girls' behaviors did predict trajectory membership in those groups. Risk factors varied by gender, type of victimization, and trajectory of victimization.

### **Children's Varying Trajectories of Victimization**

Previous studies of elementary school children have focused on a single victimization trajectory (i.e., one trajectory of physical victimization) that describe all children's victimization patterns over time. These studies have found that physical victimization decreases over time (Côte et al., 2007; Tremblay et al., 2004; Vaillancourt et al., 2003) while verbal and relational victimization increases over time (Leadbeater et al., 2003; Salmivalli & Kaukiainen, 2004; Underwood, 2003). In this study, however, when looking at all types of victimization, the majority of children's identified trajectories for the total sample were intercept-only models (i.e., stable low and chronic moderate, or chronic high victimization trajectories). In other words, when looking at all children together, the identified trajectories revealed a stable trajectory that did not change over time. There were a few exceptions: physical victimization exhibited a slight negative linear slope for 50% of the children (from moderate physical victimization to low victimization), while both verbal and relational victimization contained an additional high/decreasing linear subgroup. When comparing these groups to the boys' and girls' subgroups of each victimization type separately, it appears that the competing trajectories for boys and girls may be "evening out" many of the trajectories, resulting in the identification of mostly intercept-only models for the total sample. Thus, interpretation of the trajectories for the total sample could lead to a different interpretation of the data compared to boys' and girl's separate trajectories: to look only at the total sample one might conclude that, with a few exceptions, a child's level of victimization remains stable from 1<sup>st</sup> through 4<sup>th</sup> grade. This highlights the importance of examining boys' and girls'

victimization separately, as looking at all children together hides the variability we see in the gender-specific trajectories.

As expected, there were also distinct patterns for victimization that varied by gender. Boys, for the most part, demonstrated three trajectories for all types of victimization: (1) stable, non-victimization, (2) high, and then decreasing victimization, and (3) increasing victimization. In addition to these three trajectories, physical victimization contained an additional trajectory of moderate, chronic victimization. This shows that boys have similar patterns for verbal and relational victimization, and those types of victimization may be grouped together (for boys only) in future studies. Girls' trajectories, overall, displayed a more straight-forward picture of victimization than boys' trajectories. For example, girls had fewer trajectory subgroups for each type of victimization than boys. Thus, for physical and verbal victimization, the majority of girls experienced low victimization, with the remainder moderately victimized over time. The exception to this was relational aggression, where the majority group exhibited low/increasing victimization over time. This supports previous research that for girls only, relational victimization increases over time (Crick et al., 1996). In addition, girls' relational victimization differs from boys' experience of relational victimization in this study, as most boys reported low levels or only slightly increasing relational victimization over time. This demonstrates that relational victimization is much more prevalent for girls, which may be driving the increase in relational victimization over time in previous research.

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Although differences between boys' and girls' victimization patterns was expected, the lack of a high, chronic group of boys' victimization was surprising. This may indicate that boys' victimization is more changeable; that is, boys may not be as likely to experience chronic victimized consistently over time as previously thought. However, girls did exhibit a chronic (although moderate) victimization group for each type of victimization. It is well documented in the victimization literature that there are a small percentage of children are consistently victimized over time (e.g., Kochenderfer-Ladd & Wardrop, 2001; Perry et al., 1998). This study suggests that girls' victimization may be the driving force for chronic victimization, and not boys' victimization. Or, boys who report chronic victimization may be on different trajectories of victimization at different points in time. For example, a boy with a trajectory of high/decreasing verbal victimization might also have a trajectory of low/increasing relational victimization, which, when measured together, might look like a chronic total victimization. Future research should explore possible gender differences in chronic victimization, and across victimization type.

Although the majority of boys in the sample experienced low or no verbal and relational victimization over time (82% and 73% respectively), 51% of boys reported experiencing some kind of physical victimization trajectory over time. This supports previous research that identifies physical victimization as a more common problem for boys than other types of victimization (Crick et al., 1996). It also lends support to the idea that some types of victimization patterns are more complex than others: for boys this is physical victimization. This finding refutes previous research that has found that physical

victimization becomes less of an issue after early elementary school, as 46% of boys were still likely to experience moderate physical victimization in the spring of 4<sup>th</sup> grade. In addition, these findings contradict previous research that both boys and girls generally experience an increase in relational victimization as they get older. Only 7% of boys showed a significant increase in relational victimization over time, and 21% exhibited a cubic trajectory of high initial relational victimization, with a steep decrease, and then only a slight increase over time. Again, these findings demonstrate the importance of examining boys' and girls' separate experiences of victimization over time.

### **Children's Risk of Victimization**

The second goal of the study was to identify which groups were associated with different risk factors that predicted membership in varying trajectory groups of victimization. Results showed that predictors varied by gender, such that boys' behaviors predicted the probability of membership in increasing and moderate/high decreasing victimization subgroups more often than for girls. In addition, boys' and girls' showed different risk factors for chronic and high victimization trajectories.

As expected, displays of negative emotion in the fall of first grade were consistently predictive of boys' concurrent and/or increasing victimization over time, regardless of victimization trajectory or type of victimization, when compared to the low/stable victimization reference group. For girls, however, this association was not found, even though boys and girls exhibited similar mean levels of negative emotion (see Table 2). This supports research that children who display high levels of negative emotions experience more victimization (Hanish & Guerra, 2004; Perry, et al., 1998; Schwartz et al., 1993; Schwartz et. al, 1998). However, previous research has not found any gender differences in the relation of emotional reactivity and victimization, although the scant research on this topic does not allow for a conclusive comparison (Giesbrecht, et al., 2011; Kochenderfer-Ladd, 2004). This finding suggests that further studies should examine why boys' negative emotions are such as strong predictor for victimization, whereas girls' are not.

Similarly, low scores of effortful control were predictive of boys' increasing victimization, but only for physical victimization trajectories. Previous research has identified effortful control as a fairly strong predictor of victimization (Hanish & Guerra, 2004; Perry, et al., 1998; Schwartz et al., 1993; Schwartz et. al, 1998) but these studies different from the current investigation by grouping types of victimization together. When looking at victimization type separately, it makes sense that effortful control is related primarily to physical victimization, as children who have low effortful control may get frustrated and lash out physically at others, causing them to be on the receiving end of physical victimization.

In contrast to my hypothesis, physical aggression was not predictive of victimization for either boys or girls, with the exception of boys' high/decreasing relational victimization subgroup. It is possible that physical aggression may not be predictive of victimization because it is more normative behavior at this age, particularly for boys, and may occur most frequently during the course of rough and tumble play. Therefore, in these situations, children may not be interpreting themselves as victims. As previously mentioned, high physical aggression and the high use of retaliation coping

strategies were predictive of a high/decreasing trajectory of relational victimization for boys. High physical aggression and retaliation strategies, while normative during play, may affect relationships among boys, such that its use in more calm environments leads to more relational aggression (i.e., being talked about).

Unlike my hypothesis, coping strategies were only predictive of boys' and girls' relational victimization. Specifically, membership in the high/decreasing relational victimization subgroup (boys) and chronic victimization subgroup (girls) was predicted by high scores of retaliation (boys), and low scores on problem solving (girls), compared to the low, slightly increasing victimization subgroup. Retaliation strategies may be more important for determining relational victimization for boys, as striking back against peers' rumors may reinforce social dominance, and decreasing the likelihood of future victimization (i.e., decreasing victimization over time). These strategies may be particularly effective with boys because victimization is likely to occur outside their peer group, so boys do not need to fear the repercussions of getting back at friends. Girls, however, are more likely to be relationally victimized by someone in their peer group (Crick & Grotpeter, 1996; Owens et al., 2000; Salmivalli et al., 1997) so a lack of problem solving strategies understandably related to continued victimization, as girls would need to successfully use these types of strategies in order to stop relational victimization, but without alienating the friends who are probably responsible.

It is interesting that for both boys and girls, coping strategies were generally not predictive of trajectory membership, with the exception of relational victimization. Although previous research posits that coping strategies are related to victimization, it is possible that coping strategies in first grade have less predictive power, as the level of emotion that accompanies these strategies might affected how they are enacted. For example, for a child who demonstrates high levels of negative emotion, this display might override the use of appropriate specific strategies. It is also conceivable that coping skills in first grade are not as predictive of future victimization, as strategy use in first grade will likely develop and change over time, whereas behaviors such as a lack of effortful control, high negative emotion, and low sociability may be more consistent over time, without intervention.

It is possible that in our attempts to find developmentally similar or common underlying developmental models, that researchers are somewhat over-simplifying developmental frameworks. Currently, the child by environment framework suggests that all children's behaviors and characteristics have a somewhat equal influence on the likelihood of victimization. However, the findings of this study indicate that some predictors are more instrumental in predicting victimization than others. For example, displays of negative emotion were a consistently strong predictor across several types of victimization (for boys). It would be helpful to depict factors are more directly related to victimization in a way that demonstrates their importance to chronic victimization. In addition, some predictors appeared to be associated with only one type of victimization (e.g., effortful control with physical victimization). Perhaps a more specific model that differentiates victimization type is called for. In addition, this study showed clear differences in girls' and boys' predictors of victimization. For example, while high levels of negative emotion and low levels of effortful control were a strong predictor for membership in high victimization groups for boys, overall this was not the case for girls. This indicates that boys and girls, may experience different pathways to victimization, which should be reflected in separate victimization models for boys and girls.

### **Implications for Intervention**

Overall, these findings support the hypothesis that boys and girls experience different patterns of victimization, and that these patterns are associated with some of the same, but also different risk factors. Broadly speaking, this indicates that interventions should ideally target those who are currently experiencing different types of victimization, and prevention efforts should focus on risk factors that are likely to end up as predictors of future victimization, such as high levels of negative emotion and lack of effortful control, particularly for boys. For example, as effortful control is only a risk factor for boys' physical victimization, interventions should focus teaching strategies for effortful control to children who are currently targeted for boys who are experiencing physical victimization, whereas reducing displays of negative emotion would be more effective to be taught to most boys, given the prevalence of its prediction to victimization. Interventions that broadly address these issues have shown effectiveness in improving self-regulation (i.e., effortful control) and socio-emotional skills (McClelland, Acock, Piccinin, Rhea, & Stallings, 2013), and targeting boys for this type of intervention might increase intervention efficacy.

In addition, as boys reveal similar patterns for verbal and relational victimization, perhaps those types of victimization may be grouped together for intervention purposes. Similarly, girls' verbal and physical victimization trajectories were also similar. Boys'

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physical victimization and girls' relational victimization, however, showed more complex patterns of victimization. This information would be particularly useful to inform both prevention and intervention efforts, as different types of victimization often benefit from more targeted intervention (Leadbeater & Hoglund, 2009; Ostrov et al., 2009). For example, the majority of girls in this study experienced increasing relational victimization over time, as opposed to boys' non-victimization or slightly increasing relational victimization. Thus, an increased focus on relational victimization for girls is warranted.

Girls, however, might need different coping strategies when experiencing relational victimization, as girls are likely to be victimized by someone within their peer group, and boys are more likely to be victimized outside their peer group (as discussed in the previous section). Given this, as well as girls increased risk of experiencing relational victimization over time, it is important that intervention focus on coping skills that deals with strategies for dealing with victimization from one's friends, as opposed to dealing with other's talking behind your back that are not your friends (as may be the case with boys). Clearly different strategies would be needed for these situations, particularly if a girls' goal is to stay friends with the person who is victimizing her. This may be why, for girls, low problem solving strategies were significantly predictive of chronic relational victimization, but not for other types of victimization. For boys, it is easier to adopt a strategy to ignore, minimizing, or deflect attacks if they are coming from someone outside their social circle.

### **Limitations and Future Directions**

Although there were many common trajectories identified, particularly for boys, this type of analysis does not explicitly test the probability of children's belonging to the same subgroups regardless of type of victimization. In other words, it is uncertain whether children who are likely to belong to a non-victimization group for one type of victimization (e.g., physical victimization) are also likely to belong to the nonvictimization group for another type of victimization (e.g., verbal). Because statistically significant predictors are quite similar across victimization types, particularly for boys (e.g. high levels of negative emotion), children who are in the high and increasing victimization groups may be the same children across victimization types; however, no conclusion can be definitively drawn given that this was not tested statistically. Future studies should investigate whether children who are likely to show a chronic trajectory in one type of victimization are also likely to display chronic levels of other types of victimization, or whether there is a subset of children who are not victimized in one way, but show high or increasing victimization by a different type of victimization. This is particularly in question given the relatively low intercorrelation of the three types of victimization.

Although this study indicates that children's' behaviors in first grade are predictive of long-term victimization, it is likely that changes in victimization over time are also related to concurrent changes in the risk factors, so that changes in these behaviors over time would also predict changes in victimization over time. Future studies should consider using a panel design to look at both concurrent and longitudinal changes in risk factors over time can also influence trajectories.

This is one of the few studies that has identified increasing or decreasing/intermittent victimization. Further study of these trajectories is needed, to see what causes these decreases or increases over time. For example, physical victimization decreases over time could be considered the developmental norm, as is an increases of relational victimization over time. It is important to look at the trajectories that don't fit this norm, so we can see how children vary and what may cause this variation.

### Conclusion

This is the first study to specifically compare differences in young boys' and girls' victimization, and by type of victimization using LGMM. Previous longitudinal studies that estimate victimization trajectories in elementary school either focus on physical victimization (e.g., hitting and pushing) or rely on composites of victimization types (e.g., physical, verbal, relational), which may oversimplify the nature of victimization over time. In addition, research suggests that boys and girls are not only subject to different rates of victimization, but also to different forms of victimization; thus, examining boys' and girls' trajectories together obscures the specific experience of victimization that varies by gender. By identifying risk factors for a particular type and trajectory of victimization, we can more effectively intervene with children and prevent chronic victimization (e.g., using different strategies with boys vs. girls, or by type of victimization.

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Measure	1	2	3	4	5	6	7	8	9	10	11
1. Physical Victimization	—	.40**	.34**	.08	.05	.13	.20**	.13	20**	.18*	19*
2. Verbal Victimization		_	.45**	.09	05	.01	.02	.11	05	.17*	13
3. Relational Victimization			_	.13	03	.09	.09	.10	09	.23**	21**
4. Physical Aggression				_	.18*	.10	.06	07	02	.64**	66**
5. Withdrawn					_	.12	.14	.01	56**	.12	.09
6. Retaliation						_	.05	.14*	10	.21**	20**
7. Seek Help							_	.16*	.03	.03	03
8. Problem Solve								_	07	.05	.07
9. Positive emotion									_	11	.12
10. Negative Emotion										_	68**
11. Effortful Control											_
М	1.79	1.95	2.14	1.81	2.14	1.45	2.11	2.27	3.87	2.79	3.64
SD	1.08	1.18	1.30	1.04	.89	.44	.50	.40	.76	.86	.93

Means, Standard Deviations, and Correlations for Victimization and Predictor Variables for the Total Sample in Fall Year 1

*Note. Ns* range from 185 to 225. \**p* < .05. \*\**p* < .01.

Measure	1	2	3	4	5	6	7	8	9	10	11
1. Physical Vict.	_	.41**	.44**	.13	.11	.09	01	.15	24*	.30**	27**
2. Verbal Vict.	.38**	_	.52**	.27**	.06	.14	.05	.16	19	.32**	27**
3. Relational Vict.	.23*	.35**	_	.26*	.01	.15	.08	.12	19	.33**	28**
4. Physical Agg.	.02	08	02	_	15	.06	16	14	05	.64**	63**
5. Withdrawn	04	22	09	17	_	.10	06	.05	44**	.23*	.02
6. Retaliation	.21*	14	.02	.10	.23*	_	01	.09	09	.14	11
7. Seek Help	.09	.03	.01	.15	02	.15	_	.18*	.04	13	01
8. Problem Solving	.11	.05	.07	.03	.09	.22	.12	_	10	01	.09
9. Positive emotion	16	.11	.06	.01	67**	13	.02	03	_	25*	.27**
10. Negative Emotion	.02	02	.10	.66**	.00	.33*	.25*	.14	.05	_	69**
11. Effortful Control	09	.00	14	69**	.10	28*	06	.05	.06	69**	_
Μ	1.73	1.85	2.08	1.95 <sup>a</sup>	1.99 <sup>a</sup>	1.51 <sup>a</sup>	2.42	2.28	3.91	2.78	3.50 <sup>a</sup>
	(1.86)	(2.06)	(2.21)	$(1.63)^{b}$	(2.34) <sup>b</sup>	(1.37) <sup>b</sup>	(2.46)	(2.27)	(3.83)	(2.79)	(3.81) <sup>b</sup>
SD	1.05	1.16	1.33	1.03	.83	.47	.44	.42	.71	.87	.91
	(1.10)	(1.20)	(1.26)	(1.03)	(.93)	(.40)	(.39)	(.38)	(.81)	(.85)	(.93)

Means, Standard Deviations, and Bivariate Correlations for Victimization and Predictor Variables for Boys and Girls in Fall Year 1

*Note.* Ns range from 80 - 125. \*p < .05. \*\*p < .01. Girls' correlations are located in the lower diagonal and their means and standard deviations are in parentheses. Means denoted by different letters differ significantly at p < .05.

	Physical Victimization		Verbal Vic	etimization	Relational Victimization		
	Boys	Girls	Boys	Girls	Boys	Girls	
-	M (SD)	M (SD)	M (SD)	M(SD)	M (SD)	M(SD)	
Grade 1 Fall	1.73 (1.05)	1.86 (1.10)	1.85 (1.16)	2.06 (1.20)	2.08 (1.33)	2.21 (1.26)	
Grade 1 Spring	1.69 (1.10)	1.93 (1.19)	1.89 (1.21) <sup>a</sup>	2.23 (1.15) <sup>b</sup>	1.74 (1.12)* <sup>a</sup>	2.25 (1.20) <sup>b</sup>	
Grade 2 Fall	1.45 (.92)	1.64 (.99)	1.53 (.94)	1.70 (1.10)*	1.66 (1.10)	1.81 (1.09)*	
Grade 2 Spring	1.44 (.88)	1.51 (.89)	1.43 (.94)	1.56 (.87)	1.55 (.98)	1.62 (.98)	
Grade 3 Fall	1.65 (1.02)	1.56 (.96)	1.49 (.88)	1.61 (1.01)	1.83 (1.12)	1.88 (1.16)	
Grade 3 Spring	1.48 (.81)	1.37 (.67)	1.70 (.91)	1.68 (1.04)	1.89 (1.14)	1.93 (1.18)	
Grade 4 Fall	1.42 (.82)	1.62 (.84)	1.52 (.95)	1.62 (.90)	1.67 (1.00)	1.85 (1.05)	
Grade 4 Spring	1.43 (.76)	1.46 (.72)	1.70 (1.00)	1.70 (.83)	1.75 (1.01)	1.63 (.85)	

# Means and Standard Deviations by Victimization Type and Sex

*Note. Ns* for boys 40 to 120; *Ns* for girls 43 to 101. Means denoted by different letters differ significantly at p < .001. \*indicates an significant decrease in victimization from the previous time point at p < .05

### Bivariate Correlations for Physical Victimization at All Time Points for Girls and Boys

Physical Victimization	1	2	3	4	5	6	7	8
1. Grade 1 Fall	_	.32**	.02	.04	.18	09	.10	.17
2. Grade 1 Spring	05	_	.00	.09	.03	03	.46**	.28
3. Grade 2 Fall	.12	$.28^{*}$	_	.58***	.16	.24	.08	.54***
4. Grade 2 Spring	.09	.23	.40**	_	.20	04	07	.30
5. Grade 3 Fall	.06	.06	.18	.12	_	.18	.27	.12
6. Grade 3 Spring	.16	05	.30*	.05	.35**	_	.45**	.49**
7. Grade 4 Fall	.19	.15	.30*	.18	.25	.52**	_	.37*
8. Grade 4 Spring	01	20	07	.35*	.13	.30*	.16	_
М	1.73 (1.86)	1.69 (1.93)	1.45 (1.64)	1.44 (1.51)	1.65 (1.56)	1.48 (1.37)	1.42 (1.62)	1.43 (1.46)
SD	1.05 (1.10)	1.10 (1.19)	.92 (.99)	.88 (.89)	1.02 (.96)	.81 (.67)	.82 (.84)	.76 (.72)

*Note.* Correlations for boys are above the diagonal, *ns* range from 40 to 120; correlations for girls are below the diagonal, *n*'s range from 43 to 105. Means and SD's for girls are in parentheses. \*p < .05. \*\*p < .01. \*\*\*p < .001.

Measure	1	2	3	4	5	6	7	8
Verbal Victimization								
1. Grade 1 Fall	_	.33**	.17	.16	.05	.14	.09	.01
2. Grade 1 Spring	.13	_	.23*	.09	.19	.12	$.40^{**}$	.24
3. Grade 2 Fall	.15	.17	_	.37**	.23	.37**	.32*	.33*
4. Grade 2 Spring	.24*	.15	.32**	_	.05	.23	.16	.13
5. Grade 3 Fall	.19	.08	.43**	.36**	_	.45**	.21	09
6. Grade 3 Spring	.08	.05	.17	.05	$.30^{*}$	_	.64***	$.48^{**}$
7. Grade 4 Fall	09	$.30^{*}$	.16	.36*	.07	.39**	—	.62***
8. Grade 4 Spring	01	.13	.21	$.40^{**}$	.47**	.41**	.53**	_
	1.85	1.89	1.53	1.43	1.49	1.70	1.52	1.70
Μ	(2.06)	(2.23)	(1.70)	(1.56)	(1.61)	(1.68)	(1.62)	(1.70)
	1.16	1.21	.94	.94	.88	.91	.95	1.00
SD	(1.20)	(1.15)	(1.10)	(.87)	(1.01)	(1.04)	(.90)	(.83)

Bivariate Correlations for Verbal Victimization at All Time Points for Girls and Boys

*Note.* Correlations for boys are above the diagonal, *n*'s range from 40 to 120; correlations for girls are below the diagonal, *n*'s range from 43 to 105. Means and SD's for girls are in parentheses.\*p < .05. \*\*p < .01. \*\*\*p < .001.

Measure	1	2	3	4	5	6	7	8
Relational Victimization								
1. Grade 1 Fall	_	.27**	.03	.10	15	.11	03	.06
2. Grade 1 Spring	.26*	_	.01	.06	.04	.03	.37*	.38*
3. Grade 2 Fall	.15	.16	_	.15	.18	.05	.37*	09
4. Grade 2 Spring	12	.03	.16	_	.30*	.14	.34*	.39*
5. Grade 3 Fall	.19	.25*	.31*	.47**	_	.44**	.13	01
6. Grade 3 Spring	.30*	07	.25	.17	.42**	_	.39**	.09
7. Grade 4 Fall	10	32*	06	.31*	.22	.26*	_	.37*
8. Grade 4 Spring	.00	36*	.07	.19	.34*	.39**	.44**	_
M	2.08	1.74	1.66	1.55	1.83	1.89	1.67	1.75
	(2.21)	(2.25)	(1.81)	(1.62)	(1.88)	(1.93)	(1.85)	(1.63)
SD	1.33	1.12	1.10	.98	1.12	1.14	1.00	1.01
	(1.26)	(1.20)	(1.09)	(.98)	(1.16)	(1.18)	(1.05)	(.85)

Bivariate Correlations for Relational Victimization at All Time Points for Girls and Boys

*Note.* Correlations for boys are above the diagonal, *n*'s range from 40 to 120; correlations for girls are below the diagonal, *N*s range from 43 to 105. Means and SD's for girls are in parentheses. \*p < .05. \*\*p < .01. \*\*\*p < .001.
	То	tal	Во	ys	Girls	
_	Groups	$BIC^{a}$	Groups	$BIC^{a}$	Groups	BIC <sup>a</sup>
Physical Victimization	2*	1280*	2	695	2*	723
	3	1287	3	694	3	725
	4	1289	4*	694*	4	729
	5	1313	5	704	5	739
Verbal Victimization	2	1395	2	729	2*	782*
	3*	1389*	3*	725*	3	802
	4	1390	4	733	4	794
	5	1402	5	784	5	789
Relational Victimization	2	1475	2	765	2	900
	3	1467	3*	760*	3*	858*
	4*	1467*	4	787	4	860
	5	1485	5	799	5	862

Model Fit Indices for Victimization Trajectories for the Total Sample, Boys, and Girls

Note. *Ns* for boys 125; *Ns* for girls 105 \*Designates the best fitting model, taking into account BIC fit indices, theory, and group membership criteria (e.g. >5%)

	Total Sample		Boys	s Only	Girls Only		
	Est.	SE	Est.	SE	Est.	SE	
Physical Victimization							
Intercepts							
Low/non-victims			-5.69	.82			
Chronic moderate victims	1.22	.22	2.50	.47	3.04	.86	
Chronic high victims							
Increasing victims			-4.29	.72			
Decreasing victims	54	.44	6.64	1.86	-5.83	.61	
Slopes							
Low/non-victims			.51 <sup>b</sup>	.13			
Chronic moderate victims	$0.00^{a}$	N/A	26 <sup>b</sup>	.11	$0.00^{a}$	N/A	
Chronic high victims							
Increasing victims			1.06 <sup>b</sup>	.16			
Decreasing victims	.30 <sup>b</sup>	.10	-3.04 <sup>b</sup>	1.02	-1.60 <sup>c</sup>	.17	
Verbal Victimization							
Intercepts							
Low/non-victims	-1.06	.34	-6.36	.75			
Chronic moderate victims	1.99	.27			1.59	.17	
Chronic high victims							
Increasing victims			6.10	1.65			
Decreasing victims	6.07	1.63	4.89	.80	-6.55	.84	
Slopes							
Low/non-victims	$0.00^{a}$	N/A	.11 <sup>d</sup>	.02			
Chronic moderate victims	$0.00^{a}$	N/A			$0.00^{a}$	N/A	
Chronic high victims							
Increasing victims			1.98 <sup>b</sup>	.39			
Decreasing victims	-2.12 <sup>b</sup>	.73	63 <sup>b</sup>	.18	.27 <sup>d</sup>	.04	
<b>Relational Victimization</b>							
Intercepts							
Low/non-victims	-2.18	1.28	-7.40	.91			
Chronic moderate victims	.46	.49					
Chronic high victims	3.17	.57			3.32	.51	
Increasing victims			-7.82	2.26	-5.05	.56	
Decreasing victims	9.32	2.22	8.28	1.28	3.94	.79	
Slopes							
Low/non-victims	$0.00^{a}$	N/A	28 <sup>c</sup>	.04			
Chronic moderate victims	$0.00^{a}$	N/A					
Chronic high victims	$0.00^{a}$	N/A			21 <sup>b</sup>	.11	

Estimates for Peer Victimization Trajectory Class by Type of Victimization

Increasing victims			5.87 <sup>b</sup>	1.44	.99 <sup>a</sup>	.10
Decreasing victims	-3.47 <sup>b</sup>	.94	.36 <sup>c</sup>	.08	-1.10 <sup>b</sup>	.31

*Note.* All reported slopes are significant to at least p < .05. <sup>a</sup> = intercept only; <sup>b</sup> = linear; <sup>c</sup> = quadratic; <sup>d</sup> = cubic

Time 1 P	redictors	of Pl	hysical	Victimization	Trajeci	tories foi	r Boys
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Trajectory	Parameter	Std. Est.	Error	t-Test	p Value
High decreasing/linear	Physical Aggression	8.02	14.18	.56	.57
	Withdrawn	.66	.42	1.57	.12
	Retaliation	77	.68	1.12	.26
	Seek Help	.14	1.24	.12	.91
	Problem Solving	83	1.35	.61	.54
	Positive Emotion	-1.48	.70	2.11	.04*
	Negative Emotion	2.08	1.08	1.98	.05*
	Effortful Control	-1.09	.82	1.46	.15
Increasing/linear	Physical Aggression	-7.17	9.23	.01	.39
	Withdrawn	-11.00	11.98	.92	.36
	Retaliation	.41	1.34	.31	.76
	Seek Help	-6.18	5.48	1.13	.26
	Problem Solving	-1.43	3.41	.10	.95
	Positive Emotion	-1.48	.70	2.24	.03*
	Negative Emotion	2.60	1.24	2.10	.04*
	Effortful Control	-1.35	.48	2.82	.00*
Moderate decreasing/linear	Physical Aggression	64	1.41	.45	.65
	Withdrawn	.07	.77	.09	.93
	Retaliation	9.79	8.11	.01	.90
	Seek Help	.14	1.24	.12	.91
	Problem Solving	.53	.80	.67	.50
	Positive Emotion	21	2.55	.08	.93
	Negative Emotion	-3.75	6.27	.60	.55
	Effortful Control	-1.12	.68	1.64	.11

Lifetime Control-1.12.081.64.11Note: The low/non-victimization trajectory group for each model serves as the reference group for each<br/>analysis \*p < .05

Trajectory	Parameter	Std Est.	Error	t- Test	p Value
Increasing/linear	Physical Aggression	1.48	2.25	.66	.51
	Withdrawn	.27	.61	.45	.65
	Retaliation	26	.99	.27	.79
	Seek Help	.39	.99	.39	.69
	Problem Solving	-1.07	1.17	.91	.36
	Positive Emotion	3.51	2.30	1.53	.13
	Negative Emotion	4.01	.97	4.32	.00*
	Effortful Control	-3.70	5.83	.64	.53
High decreasing/linear	Physical Aggression	2.03	2.25	.91	.37
	Withdrawn	99	1.18	.84	.40
	Retaliation	.33	.92	.36	.72
	Seek Help	.54	.96	.57	.57
	Problem Solving	.82	1.18	.69	.49
	Positive Emotion	2.48	2.19	1.13	.26
	Negative Emotion	7.25	1.25	5.79	.00*
	Effortful Control	-4.96	5.94	.83	.40

Time 1 Predictors of Verbal Victimization Trajectories for Boys

*Note:* The low/non-victimization trajectory group for each model serves as the reference group for each analysis. \*p < .05

Time 1 Predictors of Relational Victimization Trajectories for Boys

Trajectory	Parameter	Std Est.	Error	t-Test	p Value
Increasing/linear	Physical Aggression	1.03	.63	1.64	.10
	Withdrawn	-1.42	1.39	1.03	.31
	Retaliation	.42	.72	.59	.56
	Seek Help	30	.83	.37	.71
	Problem Solving	78	.68	1.15	.25
	Positive Emotion	-1.46	.78	1.97	.05*
	Negative Emotion	1.33	.64	2.06	.04*
	Effortful Control	66	.92	.72	.47
High decreasing/quadratic	Physical Aggression	5.26	2.32	2.27	.02*
	Withdrawn	.51	.61	.84	.40
	Retaliation	4.45	1.86	2.39	.02*
	Seek Help	-4.82	3.58	1.34	.18
	Problem Solving	1.66	1.37	1.21	.23
	Positive Emotion	-2.72	1.15	2.36	.03*
	Negative Emotion	1.39	.79	2.71	.02*
	Effortful Control	-9.53	8.41	1.13	.26

*Note:* The low/non-victimization trajectory group for each model serves as the reference group for each analysis. \* p < .05

Trajectory	Parameter	Std Est.	Error	t-Test	p Value
Physical Victimization					
Chronic/moderate	Physical Aggression	08	.34	.23	.82
	Withdrawn	-2.71	7.16	.38	.70
	Retaliation	.85	.80	1.06	.29
	Seek Help	.66	.94	.70	.48
	Problem Solving	.33	.83	.40	.69
	Positive Emotion	-2.33	.59	2.43	.02*
	Negative Emotion	20	.54	.37	.71
	Effortful Control	.05	.47	.10	.92
Verbal Victimization					
Chronic/moderate	Physical Aggression	.30	.55	.54	.58
	Withdrawn	31	.32	.97	.33
	Retaliation	17	.74	.23	.82
	Seek Help	.14	.77	.18	.86
	Problem Solving	-1.47	.75	1.97	.05*
	Positive Emotion	-2.23	.47	2.43	.02*
	Negative Emotion	14	.39	.35	.73
	Effortful Control	.02	.36	.05	.96

Time 1 Predictors of Physical and Verbal Victimization Trajectories for Girls

*Note:* The low, stable trajectory group for each model serves as the reference group for each analysis. \* p < .05

Time 1 Predictors of Relational Victimization Trajectories for Girls

Trajectory	Parameter	Std Est.	Error	t -Test	p Value
Chronic/high	Physical Aggression	13	.40	.32	.75
	Withdrawn	.22	.43	.51	.62
	Retaliation	34	.98	.35	.73
	Seek Help	.37	.99	.37	.71
	Problem Solving	-2.52	.84	2.70	.05*
	Positive Emotion	08	.53	.15	.88
	Negative Emotion	.55	.44	1.25	.21
	Effortful Control	40	.44	.92	.36
High decreasing/linear	Physical Aggression	12	.49	.25	.80
	Withdrawn	-2.43	1.06	2.30	.03*
	Retaliation	43	1.17	.34	.71
	Seek Help	.69	1.15	.60	.55
	Problem Solving	-2.38	1.67	1.43	.15
	Positive Emotion	18	.66	.28	.78
	Negative Emotion	.27	.55	.50	.62
	Effortful Control	60	.48	1.26	.21

*Note:* The low, stable trajectory group for each model serves as the reference group for each analysis. \*p < .05

Table 14Group Membership of Physical, Verbal, and Relational Victimization by Trajectory Type

		Physical		·	Verbal	* 1	Relational		
Trajectories	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
Low/non-victimization		49%		47%	82%		16%	72%	
		linear		intercept	Cubic		intercept	quadratic	
					increase			increase	
	<b>5</b> 00/	100/	2.694	120/		2224	<b>- - - - - - - - - -</b>		
Chronic Moderate	50%	19%	26%	42%		22%	56%		
	Intercept	linear	intercept	intercept		intercept	intercept		
							170/		170/
Chronic High							1/%		1/%
							intercept		linear
									decrease to
									moderate
Increasing		27%			6%			7%	70%
		Low;			Low;			Moderate;	Low;
		linear			linear			linear	linear
		increase			increase			increase	increase
Decreasing	50%	5%	74%	12%	11%	78%	11%	21%	14%
_	Moderate;	High;	Moderate;	High;	High;	Moderate;	High; then	High;	High; then
	linear	linear	quadratic	linear	linear	cubic	quadratic	quadratic	linear
	decrease	decrease	decreasing	decrease	decreasing	decreasing	decrease	decrease	decrease

*Note.* Victimization scores are categorized as follows: Low = 1.00 to 1.49; Moderate = 1.50 to 2.49; High = 2.50 to 4.00

Figure 1. Child-by-Environment Framework (Kochenderfer-Ladd & Ladd, 2010)





Figure 2a. Plot of All Children's Trajectories of Physical Victimization.

Figure 2b. Plot of All Children's Trajectories of Verbal Victimization





Figure 2c. Plot of All Children's Trajectories of Relational Victimization.



Figure 3a. Plot of Boys' Trajectories of Physical Victimization.







Figure 4a. Plot of Boys' Trajectories of Verbal Victimization

Figure 4b. Plot of Girls' Trajectories of Verbal Victimization





Figure 5a. Plots of Boys' Trajectories of Relational Victimization



