Trajectories of Peer Victimization in Elementary School Children and Associated Changes in Mental Health, Social Competence, and School Climate

by

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MSc, University of Victoria, 2011
BSc, University of Victoria, 2008

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Abstract

Peer victimization among children is a major concern in our society as it is associated with a number of adjustment difficulties that manifest over time. Although peer victimization declines for most children during the elementary school years, research suggests that between 2-25% of children continue to report high-stable or increasing levels of peer victimization over time. However, little is known about the developmental changes that explain why children become locked into these high-risk groups. Using a longitudinal sample of children in grades 1-3 followed across 5 waves of assessments, this dissertation investigated how differences in the chronicity of children's peer victimization experiences relate to changes in their mental health (internalizing and externalizing symptoms), social competence (prosocial leadership and social responsibility), and experiences of school climate.

Latent class analyses revealed that children follow 4 distinct trajectory groups of physical and relational peer victimization characterized by chronically high (*n*s = 102 & 199, physical and relational respectively), increasing (*n*s = 115 & 169), decreasing (*n*s = 466 & 174) or low stable (*n*s = 1260 & 1402) levels of physical and relational peer victimization across time. Findings from multilevel analyses showed that the peer victimization subgroups also varied in their longitudinal patterns of mental health, social competence and experiences of school climate after accounting for differences in sex, age, socioeconomic status, and prevention program participation. Children who had chronically high levels of peer victimization had higher mental health symptoms, lower levels of social competence and poorer experiences of school climate consistently over time compared to children in the low stable group. Children who reported increasing levels of peer victimization over time had slower rates of improvement in their social competence than children in the low stable group. Furthermore, children with increasing levels

of peer victimization also had declining experiences of school climate over time compared to children in the low stable peer victimization group. The heterogeneity in children's experiences of peer victimization suggest that programs need to tailor prevention efforts to the specific needs of at-risk children who adjust differently to their victimization experiences.

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Chapter 1: Introduction

Peer victimization is a major social problem among children. Findings from cross-national comparison studies show that peer victimization is a universal issue, with prevalence rates ranging between 5-45% across countries (Craig et al., 2009). Being the target of a peer's repeated hurtful teasing and aggressive behavior can affect multiple aspects of development including social adjustment, physical health, and mental well-being (Casper & Card, 2016; Hawker & Boulton, 2000; Reijntjes, Kamphuis, Prinzie, and Telch, 2010; Reijntjes et al., 2011).

Peer victimization can take various forms (Crick & Grotpeter, 1996). Physical peer victimization are overt bullying behaviors including inflicting verbal (e.g., threats) or physical harm (e.g., hitting). Relational peer victimization takes the form of group exclusion or malicious rumor spreading, as well as bullying through electronic means (i.e., cyberbullying; Cassidy, Faucher, & Jackson, 2013; Van Geel, Vedder, & Tanilon, 2014).

Reviews of longitudinal studies report that average levels of peer victimization typically decline across the elementary and early middle school years (Hong & Espelage, 2012; Reijntjes et al., 2010). However, several studies have identified a small group of children who continue to report high levels of peer victimization. Studies report that between 2-5% of children follow high and stable trajectories of peer victimization; and between 4-25% of children follow increasing trajectories of peer victimization compared to the majority of children who follow low, stable trajectories (Barker at al., 2008; Biggs et al., 2010; Boivin et al., 2010; Leadbeater & Hoglund, 2009). Clearly, chronic peer victimization persists across time for some children.

However, little is known about the co-occurring developmental changes in children and their environments that explain how some children become chronically victimized. Past research suggests that chronically targeted children may have mental health problems and problematic

social skills that leave them vulnerable to peer victimization. For example, studies have found that children with poor emotional regulation (Giesbrecht, Leadbeater, & MacDonald, 2011; Blandon, Calkins, Grimm, Keane & O'Brien, 2010) or social competence (Boivin et al., 2010; Browning, Cohen, & Warman, 2003) report increasing levels of peer victimization over time. Children with poor emotional regulation and limited social awareness can be targets for peer bullying because they may have trouble avoiding or inhibiting socially unacceptable behaviors. The elementary school years are critical years for learning to regulate emotions and to develop social competence, and these form the foundations for other social skills such as prosocial leadership and a sense of social responsibility (Ladd & Sechler, 2013; Wray-Lake & Syvertsen, 2011). Social-cognitive advances during these formative years allow children to recognize the hostile nature of their peers' aggressive acts and to select appropriate response strategies to resolve peer conflicts such as knowing when to walk away and when to seek help (Cillessen & Bellmore, 2011). It is possible that children who follow high or increasing trajectories of peer victimization struggle to develop the necessary social competencies to deal effectively with peer conflicts and opt for more maladaptive responses such as retaliating aggressively (Leadbeater & Hoglund, 2009; Card & Little, 2006) or withdrawing from peer activities (Buhs, Ladd, & Herald, 2006). Co-occurrence of these problems may explain why peer victimization persists for some vulnerable children.

Contextual factors such as poor school climates may also contribute to higher levels of peer victimization, particularly for children who experience their school environments as hostile (Cole et al., 2013), unsafe (Goldstein, Young, & Boyd, 2008), unfair (Leadbeater, Sukhawathanakul, Smith, & Boivin, 2014) or uncaring and rejecting (Ladd et al., 2013). Compared with other contextual factors (e.g., family/home environment, community factors),

studies have shown that school climate has the largest effect size when predicting peer victimization (see Cook, Williams, Guerra, Kim, & Sadek, 2010 for review). However, we know little about the school environment experiences of children who follow high-stable or increasing trajectories of peer victimization. Because context-related factors like school climate has largely been conceptualized as a shared characteristic of schools (e.g., Mitchell, Bradshaw, & Leaf, 2010; O'Malley, Katz, Renshaw, & Furlong, 2012), experiences of victimized children may not be accurately represented when examining classroom or school levels of school climate through the computation of an aggregate score. That is, while the majority of children in the classroom may report high levels of safety in the classroom, victimized children tend to report lower levels of safety, qualities of fairness, and interpersonal relationships (e.g., Leadbeater, Sukhawathanakul, Smith, & Boivin, 2014; Nickerson, Singleton, Schnurr, and Collen, 2014). The heterogeneity in the developmental patterns of peer victimization necessitates a person-centered analytical approach that differentiates multiple trajectories of peer victimization and assesses the differential patterns of change in both individual and contextual factors.

There is a pressing need to understand the mental health, social competencies, and perceived school environments of chronically victimized children in order to better inform prevention and intervention efforts. Although secondary interventions designed specifically for children who are identified as “at-risk” for bullying and violent behaviours have demonstrated some efficacy, chronically victimized children may not respond to whole-school prevention programs that promote universal strategies to deal with peer conflicts (see Ferguson, San Miguel, Kilburn, & Sanchez, 2007 for review). In order to better understand why peer victimization persists in some children, this dissertation examines the developmental changes in children who follow distinct trajectories of peer victimization in a sample of elementary school children across

2 years. The goal of the present study is to investigate differences in the developmental competencies and experiences of school climate in victimized children. I hypothesize that children in high-risk peer victimization groups (i.e., who follow chronic high or increasing trajectories) will have higher initial levels and increases in mental health problems and social competence deficits, as well as poorer experiences of school climate than children in low-risk groups (i.e., who follow low stable or decreasing trajectories). The current study extends past research by examining, longitudinally, the developmental correlates of children belonging to high-risk groups. A review of the literature on the effects of peer victimization on children's development is organized in the following ways. Research on the developmental course of peer victimization is presented first, followed by a review of previous work on the risks associated with peer victimization including the influence of internalizing and externalizing problems, lack of social competencies, and poor experiences of school climate.

The Developmental Course of Peer Victimization

Previous longitudinal studies show that, on average, levels of peer victimization (composite of physical and relational peer victimization) decline across the elementary and middle school years. For example, Rudolph, Troop-Gordon, Hessel, and Schmidt (2011) examined the rate of change in reports of peer victimization with a sample of elementary school children from grades 2 to 5. Findings from their latent growth curve analysis revealed that mean levels of victimization declined over time. With a younger sample of children, Reavis, Keane, and Calkins (2011) examined longitudinal changes in peer victimization across four waves of data collected in kindergarten and grades 1, 2 and 5. Results from their hierarchical linear models showed that, on average, peer victimization declined during elementary school. Similarly, Leadbeater and Sukhawathanakul (2011) used hierarchical linear models to examined

longitudinal changes in both physical and relational peer victimization (assessed separately) across the early elementary school years, grades 1 through 3. Their results showed declines in average levels of both physical and relational peer victimization over time. Sex did not moderate the slopes in any of these studies indicating that rates of changes in peer victimization did not differ for boys and girls.

There are several theoretical reasons that can explain the average decline. First, peer physical aggression is declining during this period (Kokko, Trembley, Lacourse, Nagin, & Vitaro, 2006; Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Williford et al., 2011), which means there may be fewer chances for children to be physically victimized. Second, children typically begin to gain competence in problem solving and perspective taking over the elementary school years (Ladd, 2005), which may enable them to deal with peer conflicts more effectively without resorting to aggression. However, considerable variance around these average growth trajectories is also typically reported (Reavis et al., 2011; Leadbeater & Sukhawathanakul, 2011; Rudolph et al., 2011), suggesting that there are many children who deviate from the average trajectory.

The negative effects of chronic peer victimization can be enduring and failure to seek support can perpetuate the victimization cycle and increase risks for further maladjustment (Zwierzynska, Wolke, & Lereya, 2013). Extreme and incessant peer bullying is more likely to lead to further maladjustment than periodic victimization experiences (Rosen et al., 2009). Studies that examine average levels of victimization are likely to miss the unique trajectories of vulnerable children. My dissertation builds upon previous work on the developmental course of peer victimization using longitudinal analyses that allow for identification of the patterns of peer victimization that reflect differences in children's experiences.

To model the heterogeneity in children's peer victimization experiences, researchers use person-centered statistical analytic approaches (e.g., latent class analysis) to identify theorized subgroups or *classes* based on longitudinal data assessing exposure of victimization over time. Past studies find that three or four subgroups represent children's experiences of victimization, including those who show low-stable, decreasing, increasing or high-stable patterns over time. These studies often combine both physical and relational forms of victimization into a composite score. For example, Barker and colleagues (2008) examined mother-reported peer victimization in a Canadian sample of 2,120 preschool children 3 to 6 years of age across 4 annual waves of data. The majority of the children (71%) followed a low and slightly increasing trajectory, 25% followed a moderate and increasing trajectory, and a 4% followed a high and chronic stable trajectory. In a sample of 432 Canadian children grades 1 to 3, Leadbeater and Hoglund (2009) found three similar groups of victimization: a low and stable trajectory (71%), a low and increasing trajectory (17%), and a high and decreasing trajectory (12%). In an older sample of Canadian children in grades 3 to 6 (n = 1,035), Boivin, Petitclerc, Feng and Barker (2010) also found three subgroups. The majority of children (85.5%) followed a low and stable trajectory, 10% followed a high and increasing trajectory, and 4.5% followed a high and decreasing trajectory. In a sample of US third graders, Biggs et al. (2010) reported similar subgroups that follow low and stable (56.2%), decreasing (5.9%), and increasing (4.04%) trajectories. The authors also reported two additional subgroups that had moderate stable (31.72%) and high stable (2.14%) levels of victimization across grades 3 to 5.

Sex differences among peer victimization subgroups vary in the literature. The majority of studies report no differences in group membership for girls or boys (e.g., Barker et al., 2008; Biggs et al., 2010; Leadbeater & Hoglund, 2009). This suggests that girls were not more likely to

belong to any one group than boys. However, Boivin et al. (2010) found that boys were more likely to be in the high-increasing trajectory subgroup than girls. Gage et al (2014) found that girls were more likely to be in the high-increasing trajectory subgroup than boys.

Overall, findings from these longitudinal studies provide clear evidence that peer victimization does not decrease for all children and that a significant percentage of children continue to report high levels of peer victimization throughout elementary school. In line with previous work that use the person-centered approach to extract latent classes (Barker et al., 2008; Biggs et al., 2010; Boivin et al., 2010 and Leadbeater & Hoglund, 2009), I expect to find groups of children with different patterns over time: reflecting low stable, decreasing, increasing or chronic high trajectories of peer victimization.

Less is known about the co-occurring developmental changes that might explain why some children continue to be chronically victimized. Existing research suggests that variations in the severity of victimization experiences may be a function of individual or contextual risk characteristics. Longitudinal research suggest that, in particular, mental health problems and poor social skills (e.g., low social competence) predict increases in peer victimization over time (e.g., Boivin et al., 2010; Browning et al., 2003; Cook et al., 2010; Hawker & Boulton, 2000; Reijntjes et al., 2010; 2011). These problems are also consequences of being victimized by peers. Victimization that leads to diminished self-concept and social withdrawal can limit opportunities to develop social competence and increase risks for mental health problems (Burt, Obradović, Long, & Masten, 2008; Ladd, 2006). I hypothesize that the co-occurring associations between changes in these risk factors and peer victimization may explain why children remain in increasing or chronic high trajectories of peer victimization across the elementary school years.

Developmental Risks Associated with Peer Victimization

Peer victimization and mental health problems

Research shows that peer victimization is a significant risk factor for mental health problems in children. In a meta-analytic review of the cross-sectional victimization-psychosocial maladjustment research, Hawker and Boulton (2000) showed that victimized children display higher levels of depression, loneliness, and anxiety relative to their non-victimized peers. Victims of peer aggression also appear to have poorer perceptions about themselves, as evidenced by negative correlations with global self-esteem and social self-concept.

However, it is unclear from cross-sectional studies whether peer victimization is a contributor to or a consequence of psychosocial maladjustment. Findings from longitudinal research suggest that problems likely co-occur over time (Casper & Card, 2016). Peer victimization may be a catalyst for future adjustment problems if traumatic experiences increase vulnerability to mental health problems by reinforcing negative self-evaluations (Troop-Gordon & Ladd, 2005), inaccurate social perceptions of peers (Ladd, Ettekal, Kochenderfer-Ladd, Rudolph, & Andrews, 2014), fear or avoidance of social interactions (Buhs, Ladd, & Herald, 2006), or negative experiences of school climate (Leadbeater, et al., 2014). On the other hand, children who show anxious or depressed symptoms may be more likely to be victimized by their peers because they are seen as easy targets (Leadbeater & Hoglund, 2009) or if they react strongly or overtly to peer victimization (Card & Little, 2006).

In a review of longitudinal studies, Reijntjes and colleagues (2010) examined the extent to which peer victimization at baseline predicts future changes in internalizing problems as well as the extent to which internalizing problems at baseline predict future changes in peer victimization. Mean effect sizes revealed that both paths between peer victimization and

subsequent internalizing problems, as well as between internalizing problems and subsequent peer victimization were significant. These reciprocal influences depict the existence of a vicious cycle between internalizing symptoms and peer victimization. That is, not only are internalizing problems associated with concurrent levels of peer victimization, but internalizing problems also appears to maintain the stability of peer victimization as opposed to only being a consequence of peer victimization.

As with internalizing problems, externalizing problems can be a consequence or antecedent of peer victimization. For example, children are who are targets of peer victimization may have hostile attribution biases which can drive aggressive behaviours as a retaliatory response (Crick & Dodge, 1994; Perren, Ettekal, Ladd, 2014; Yeung & Leadbeater, 2007). Children who exhibit aggression may also elicit retaliatory bullying by irritating and provoking or hurting their peers with their disruptive behaviours. Positive longitudinal associations between aggression and subsequent peer victimization indicate that peers may react to aggressive children with either physical attacks or social exclusion (Ladd, 2006; Ladd et al., 2014; Leadbeater & Hoglund, 2009). In a meta-analysis of longitudinal studies, Reijntjes et al (2011) examined the extent to which peer victimization predicted future changes in externalizing problems, as well as the extent to which externalizing problems at baseline predicted future changes in peer victimization. They found that effect sizes for both paths were equal in magnitude suggesting that the association between peer victimization and externalizing problems was bi-directional.

Two theoretical models have been used to explain associations between peer victimization and mental health problems. One model, the developmental cascade model (Masten & Cicchetti, 2010), describes the bidirectional relationship between peer victimization and mental health problems, suggesting that problems occurring in one domain (i.e., peer

relations) can impact or have “spillover effects” on other areas of functioning (i.e., mental health). For example, Van Lier and Koot (2010) demonstrated that externalizing problems in Grade 1 contributed to challenges within the peer domain including victimization, peer rejection, and friendlessness, which influenced each other across Grades 2 and 3 and led to the development of internalizing problems in Grade 4.

A second chronic-stress model describes how stressful life experiences such as peer victimization interact with biological predispositions to influence the development of mental health problems (Kochenderfer-Ladd & Wardrop, 2001). This more unidirectional model posits that peer victimization experiences mediate the relationship between early emotional or behavioral risks (e.g., anxious, withdrawn and aggressive behaviours in kindergarten) and later maladjustment (e.g., internalizing or externalizing symptoms in later grades). Pedersen, Vitaro, Barker, & Borge (2007) tested this mediation model in sample of kindergarten children followed across 8 years and found that early-childhood behaviours (disruptiveness and anxiety-social withdrawal behaviours at ages 6-7) predicted depressive symptoms in grade 8 (ages 12-13) through peer rejection experiences during middle childhood (ages 8-11).

However, what remains unclear is how mental health problems co-vary with experiences of peer victimization over time, possibly sustaining chronic victimization in elementary school children. Children who report low or decreasing levels of victimization may show corresponding decreases in emotional and behavioral problems perhaps reflecting normative developments in self-regulation (Giesbrecht et al., 2011; Blandon et al., 2010). On the other hand, the longer children are victimized, the more distressed and maladjusted they may become (Rosen et al., 2009). I hypothesize that children who follow chronically high or increasing trajectories of peer

victimization would also have higher initial and increasing levels of internalizing and externalizing symptoms across time compared to children who follow low or decreasing patterns.

Peer victimization and social competence

Social competence typically refers to the social skills, emotional understanding, and behaviours that children need for successful social development (see Cillessen & Bellmore, 2011; Trentacosta & Fine, 2010 for reviews). Ample research has shown that socially competent children engage in prosocial behaviors, get along well with peers, are aware of other children's feelings, and are generally leaders in the group (Caldwell & Pianta, 1991; Crick & Grotpeter, 1996; Ladd, 2005). Early social competence and successful peer relationships have long been considered a hallmark of adaptive functioning in early childhood (see Ladd & Sechler, 2013 for review) but few studies have examined the social competence of chronically victimized children longitudinally.

Social competence and peer victimization research have focused mainly on bullying perpetration, and have questioned whether children who possess higher levels of social competence abstain from involvement in bullying perpetration. Hawley (2003) proposed that children who are socially competent are able to skillfully use aggression to gain a socially dominant status within the peer group by balancing aggressive and prosocial acts. Studies have found that "bistrategic controllers" who engage in both aggressive and prosocial acts such as reciprocity, cooperation, and unsolicited help are also able to maximize their resource control and perceived popularity (Hawley, Little, & Card, 2008). On the other hand, children with social information processing difficulties are more likely to use aggression to solve conflict in non-normative ways that in turn invite further victimization by their peers (Crick & Dodge, 1994). For example, Olthof and colleagues (2011) found that despite engaging in both coercive and

prosocial strategies to gain dominance, aggressive victims (i.e., bully-victims) were less socially dominant, had fewer resource control, and lower perceived popularity than children who only engage in bullying but were not victims (i.e., the “ringleader bullies”).

It is clear that children with disadvantaged social skills struggle with navigating social interactions, yet little is known about how peer victimization can influence the developmental course of social competence or whether developmental trajectories of social competence differ depending on the severity of peer victimization. Existing literature suggests that peer victimization is negatively correlated with social competence. In a short-term longitudinal study involving first graders followed across two waves, Dhami, Hoglund, Leadbeater and Boone (2005) found that boys with low levels of social competence at school entry showed increases in physical victimization by the end of first grade compared to boys with high levels of social competence at school entry. Similarly, in a sample of third graders followed annually across 4 years, Boivin et al. (2010) found that children who were frequently victimized by their peers exhibited low social competence and greater aggressive behaviours (fighting and picking on other children) over time. However, the latter study did not assess social competence and aggression separately, making it difficult to understand their independent effects on peer victimization.

In some studies, improvements in social competence appear to offset risks for victimization. For example, in a longitudinal study involving third graders followed across 2 waves, Browning and colleagues (2003) found that children victimized at grade 3, who were no longer victimized at grade 5, had higher initial levels of social competence and were more liked by other children compared to children who were victimized at both time points. In another longitudinal study that followed children across ages 2 to 7, Blandon and colleagues (2010)

found that children with higher levels of social competence in preschool and kindergarten showed greater increases in subsequent peer acceptance in grade 2 compared with children who had lower levels of social competence.

It is also possible that gains in social competencies improve friendship quality which leaves children less vulnerable to victimization due to the protective, buffering function of friends. Social competence predicts children's success at cultivating meaningful friendships (see Ladd & Sechler, 2013, for review), which can help alleviate the interpersonal stress associated with peer victimization experiences. For example, ample research suggests that peer support operates as a protective factor buffering the effects of peer victimization on well-being and mental health problems in children and adolescents (Cardoos & Hindshaw, 2011; Jenkins & Demaray, 2012; Martin & Huebner, 2007; Yeung Thompson & Leadbeater, 2013).

Social competence coupled with prosocial behaviours may also increase peer acceptance among children with emotional problems. In a longitudinal study following first graders across 3 waves, Henricsson and Rydell (2006) found that higher levels of social competence and prosocial behavior in children with internalizing problems predicted greater peer acceptance over time. In contrast, peer acceptance declined over time in children with internalizing problems who had low levels of social competence and prosocial behaviors. Also in a study following children from grades 4 to 5, prosocial behaviours (a marker of social competence) moderated or dampened the effect of peer victimization on loneliness (Griese & Buhs, 2013). The authors argue that children who are victimized and who seek more consistent peer interaction through prosocial behaviours can increase their feelings of belonging and subsequently reduce feelings of loneliness.

In summary, socially competent children may have the necessary interpersonal and cognitive skills to successfully navigate peer interactions, utilize peaceful conflict resolution strategies, and establish protective friendships that can be critical in moderating the association between peer victimization and mental health problems. On the other hand, children without these advantages may struggle to manage peer victimization effectively. In support of this, a review by Cook at colleagues (2010) compared various individual predictors of peer victimization (e.g., social competence, mental health problems, self- and other-related cognitions) and found that low social competence exhibited the largest effect size with respect to being a victim of bullying.

Chronically victimized children may be marginalized from peer activities, and thus can have fewer opportunities to create protective friendships or practice social skills. Children who follow chronically high or increasing trajectories of peer victimization may lack strong support systems to cope effectively with their experiences. To the extent that the experience of peer victimization is humiliating and traumatic, it can also influence negative self- and social-perceptions (e.g., lowering self-worth and viewing social environments as more threatening) that in turn increase vulnerability to mental health problems and invite further abuse from their peers (Cole et al., 2013; Sinclair et al., 2012; Troop-Gordon & Ladd, 2005). In this study I hypothesize that children who follow chronically high or increasing trajectories of peer victimization will exhibit corresponding low stable or decreasing levels of social competence over time. In contrast, children who have increasing social competence will show corresponding declines in peer victimization over time.

In this study, I also used multiple indicators of advanced social competence including not only social skills but social skills coupled with prosocial leadership, and social responsibility.

The expression of more advanced forms of social competence such as the ability to be an effective leader or behave in a socially responsible manner has not been studied. To reflect the wide range of skills and behaviors, social competence has been viewed in the developmental literature as a multi-faceted construct and measures of social competence vary widely across studies (Rose-Krasnor, 1997; Stump, Ratliff, Wu & Hawley, 2009). In general, social competence is the acquisition of social skills including perspective taking, getting along with peers, and emotional understanding. Yet, studies of social competence typically focus on early development and the manifestation of more advanced skills like prosocial leadership and social responsibility have rarely been examined.

Social competence develops rapidly in the early school years and social skills become more refined as children gain experience through peer interactions. In the preschool years, children become more skilled at managing emotions such that they are able to discern their own and others' emotional states, and to talk about them fluently. For example, early attributes of social competence can include the capacity to empathize or express frustrations and anger effectively without escalating disagreements or harming others (Ladd, 2005). Thus, emotional competence is thought to be an early indication of social competence and a crucial predictor of successful peer relationships (Denham et al., 2003). The development of emotional competence and its association with social competence and peer victimization has been studied extensively in the literature (e.g., Giesbrecht et al., 2011; Rosen, Milich, & Harris, 2012; Sugimura & Rudolph, 2012). Specifically these studies report that children with poor emotional regulation skills reported higher levels of peer victimization. On the other hand, it is likely that the prosocial use of emotionally competent skills to effectively lead and behave in a socially responsible manner can help children deal more effectively with peer conflicts and avoid potential victimization.

Leadership and social responsibility are prosocially-oriented attributes that require a high level of social competence to achieve. Leadership is the ability to effectively guide, collaborate, and advise others while at the same time maintaining good relations within the group (Peterson & Seligman, 2006; Peterson, 2006). Social responsibility reflects societal norms that underlie attitudes and actions of compassion, tolerance, fairness, and an overall concern for the welfare of others that often results in behaviours that favor the common good (Gallay, 2006). Early social competence is considered an important precursor to social responsibility (Wray-Lake & Syvertsen, 2011). For example, the ability to control one's own negative emotions while also helping others regulate theirs is an important skill to have to be an effective, socially responsible leader. Research into young children's development of leadership skills and social responsibility is sparse, especially in relation to peer victimization. Some studies suggest that having leadership skills has a protective influence on children and adolescents' mental health and well-being (e.g., Chang, 2003; Park & Peterson, 2006). Moreover, school-based programs aimed at empowering children to be socially responsible leaders or bystanders have demonstrated efficacy in preventing peer victimization. For example, the *Friend to Friend* program (Leff et al., 2009), the *Befriending* program (Menesini, Codescasa, Benelli, & Cowie, 2003), and the *WITS* peer victimization prevention programs (Leadbeater & Sukhawathanakul, 2010; Leadbeater, Thompson, & Sukhawathanakul, 2016) include program components that encourage children to assist their peers with getting help and in dealing peacefully with conflict. These programs show efficacy in reducing peer victimization by increasing children's social responsibility. In particular, Leadbeater and colleagues (2016) found that greater implementation of the *WITS* program led to increases in the levels of prosocial leadership and social responsibility, which in turn were related to lower levels peer victimization, aggression and emotional problems. More

research is needed to determine how more advanced social competence skills like prosocial leadership and social responsibility changes in association with children's experiences of peer victimization, particularly for high-risk children who follow chronically high or increasing trajectories of victimization.

Peer victimization and children's experiences of school climate

An ecological systems theoretical framework (Bronfenbrenner 1994; Lerner et al., 2006) sees peer victimization and bullying not merely as problems at the individual level, but also as embedded in child, family, school, and community beliefs, attitudes, and behaviours about interpersonal conflict. In line with this framework, research that focuses on the family domain has examined parent and peer support (e.g., Holt & Espelage, 2007; Desjardins & Leadbeater, 2011; Yeung Thompson & Leadbeater, 2013) as mediators of peer victimization and subsequent maladjustment. Research that focuses on the school domain has examined a range of school-level moderators including social economic status (Khoury-Kassabri, Benbenishty, & Astor, 2005), classroom size (Koth, Bradshaw, & Leaf, 2008) and teacher support (Flaspohler et al., 2009).

To capture the complexity and multi-dimensional nature of the school environment, the term "school climate" is often used in studies that assess school-level influences. School climate is typically defined as the attitudes, beliefs, and values that make up the social environment within a school and is demonstrated in the interactions between students, teachers, administrators, and community members (Cohen, McCabe, Michelli, & Pickeral, 2009; Mitchell, Bradshaw, & Leaf, 2010; O'Malley, Voight, Renshaw, & Eklund, 2014; Thapa, Cohen, Guffrey, & Higgins-D'Alessandro, 2013). Extensive literature highlights the relations between positive experiences of school climate and children's and adolescents' mental health (Klein, Cornell, & Konold, 2012; Wang & Dishion, 2012; Wang, Berry, & Swearer, 2013), and reductions in school

violence (Astor, Benbenishty, Zeira, Vinokur, 2002) and in deviant behaviours (Zaykowski & Gunter, 2012; Klein, Cornell, & Konold, 2012).

Studies that examine the relations between experiences of school climate and peer victimization have focused mainly on middle and high school student samples. These demonstrate that positive experiences of school climate are related to lower levels of peer victimization and greater experiences of safety and equality at school particularly among youth. For example, in a sample of 5th, 8th, and 11th graders, Gendron, Williams, and Guerra (2011) found that experiences of school climate moderated the effect of self-esteem on bullying perpetration. Specifically, high self-esteem predicted lower levels of peer bullying perpetration when experiences of school climate were high, but not when it was negative. In fact, when experiences of school climate were low, high self-esteem predicted higher levels of bullying perpetration. Positive experiences of school climate may empower children to help others and reduce the need to gain social status through aggressive acts. Children with positive experiences of school climate feel that they can trust the adults in their environment to help when needed. In a sample of rural middle school students, Corrigan, Klein, and Isaacs (2010) found that students' trust in teachers was negatively related to the likelihood of being victimized at school, and positively related to concern for fellow students and sense of community. Similarly, in a sample of ninth graders, Eliot, Cornell, Gregory, and Fan (2010) found that students who experience their teachers and other school staff as supportive were more likely to endorse positive attitudes toward seeking help for bullying and threats of violence compared to students who experienced the adults in their school as less supportive.

It is clear that positive experiences of school climate can have a preventative impact on peer victimization on average. However, more research is needed to understand the nature of

victimized children's experiences of school climate and how these may interact with or change as a function of their peer victimization experience. Emerging research suggests that children who report chronically high or increasing levels of victimization may have poorer experiences of school climate. For example, in a longitudinal study of children in grades 3 through 5, children who consistently reported high levels of peer victimization over time also reported lower levels of school safety over time (Gage, Prykanowski, & Larson, 2014). In contrast, children who reported low levels of victimization over time reported higher levels of school safety. In another sample of third and fourth graders, Leadbeater and colleagues (2014) found longitudinal associations between multiple facets of school climate and peer victimization. Findings from their autoregressive cross-lagged analyses demonstrated that experiences of peer victimization can stem from and lead to poorer reports of student-student and student-teacher interpersonal relationships, as well as poorer experiences of fairness over time. These findings suggests that children who are common targets of peer victimization may feel marginalized and believe that they have unequal access to resources and learning opportunities compared to other children.

Because victimized children's experiences may deviate from the average student's ratings, their experience of school climate may not be fully captured in studies that use classroom- or school-level aggregates. Moreover, due to limited person-centered analytic longitudinal studies we know very little about how experiences of school climate change among children who report high levels of victimization over the course of the elementary school years. Children belonging to low or decreasing victimization subgroups may report higher initial and increasingly positive experiences of school climate, whereas children who are in chronic high or increasing subgroups are expected to report declining experiences of school climate.

Limitations of Existing Research

Although peer victimization declines for most children during the elementary school years (Rudolph et al., 2011; Reavis et al., 2011; Leadbeater & Sukhawathanakul, 2011), peer victimization does not decrease for all children. Several studies have identified small groups of children who follow high or increasing trajectories of victimization (Barker et al, 2008; Boivin et al., 2010; Leadbeater & Hoglund, 2009). The developmental correlates of these high-risk groups need to be examined. Reviews of research on the antecedents and consequences of peer victimization suggest that individual differences in mental health and social competencies may play a key role in continuities in peer victimization (Hawker & Boulton, 2000; Reijntjes et al., 2010; 2011) but these factors have not been assessed longitudinally across groups of children who follow different trajectories of peer victimization. In addition, little is known about the how victimized children experience their social environments over time. School climate has been identified as an important contextual moderator of peer victimization and children's experiences of their school climates are likely to deteriorate over time for victimized children (Cook et al., 2010; Gage et al., 2014; Leadbeater et al., 2014). The associations between children's experiences of school climate and different patterns of peer victimization have not been assessed longitudinally.

Research that uses a person-centered (or group-based) analytic approach to identify distinct trajectories of peer victimization in elementary school children is limited. Apart from the Leadbeater and Hoglund (2009) study with children in grades 1 through 3, no other studies have examined subgroups of children in the early elementary school grades (i.e., starting from the first grade). Barker et al. (2008) focused only on preschool children (ending at grade 1), and two other studies (Biggs et al., 2010; and Boivin et al., 2010) started following children in third

grade. Social dominance hierarchies and norms about the use of aggression develop in the early elementary school years and stabilize over time, making it especially important to understand the trajectories of peer victimization in early elementary school (Hawley, 2003; Hawley et al., 2008; Samivalli, 2010).

Finally research is needed to determine whether girls and boys differ in their developmental outcomes associated with peer victimization experiences. For example, studies that have examined sex differences in victimized children's mental health are mixed. Some studies have found that peer victimization predict depressive symptoms in both boys and girls (e.g., Rudolph, et al., 2011; Lier et al., 2012), while others have found stronger effects of peer victimization on depressive symptoms in girls (Paul & Cillessen, 2003). Tran, Cole, and Weiss (2012) found that depressive symptoms were more predictive of physical peer victimization for boys than for girls.

Research Goals

The goal of this research is to examine a differentiated view of peer victimization trajectories that reflects the heterogeneity in elementary school children. The present study contributes to existing literature by investigating the relations between peer victimization and three developmental correlates. I aim to (1) differentiate groups of elementary school children who follow distinct trajectories of peer victimization over time and (2) assess how these groups differ with respect to initial levels of and changes in indicators of mental health, social competence and children's experiences of school climate over time. Guided by previous research, I hypothesize that children's mental health (internalizing and externalizing symptoms), social competence (social skills, leadership, and social responsibility), and experiences of school climates (comprised of perceptions of student- and teacher-interpersonal relationships, fairness

and sharing of resources, and parent involvement) vary across different peer victimization trajectory groups.

Hypothesis 1: Identifying peer victimization groups in young children: multiple victims

Consistent previous studies (e.g., Rudolph et al., 2011; Reavies et al., 2011; Leadbeater & Sukhawathanakul, 2011), I hypothesize that the majority of children in the sample will follow low or declining trajectories of peer victimization. As most children gradually improve their emotional regulation and experience increasing social pressures from peers, parents and teachers to abide by an appropriate code of conduct; aggressive behaviours and experiences of peer victimization should decline over time in the majority of children. However I also expect that a small group of children will report chronically high or increasing levels of peer victimization (possible range of 2-25%; e.g., Barker et al., 2008; Biggs et al., 2010; Boivin et al., 2010; Leadbeater & Hoglund, 2009). Figure 1 depicts the hypothesized peer victimization groups.

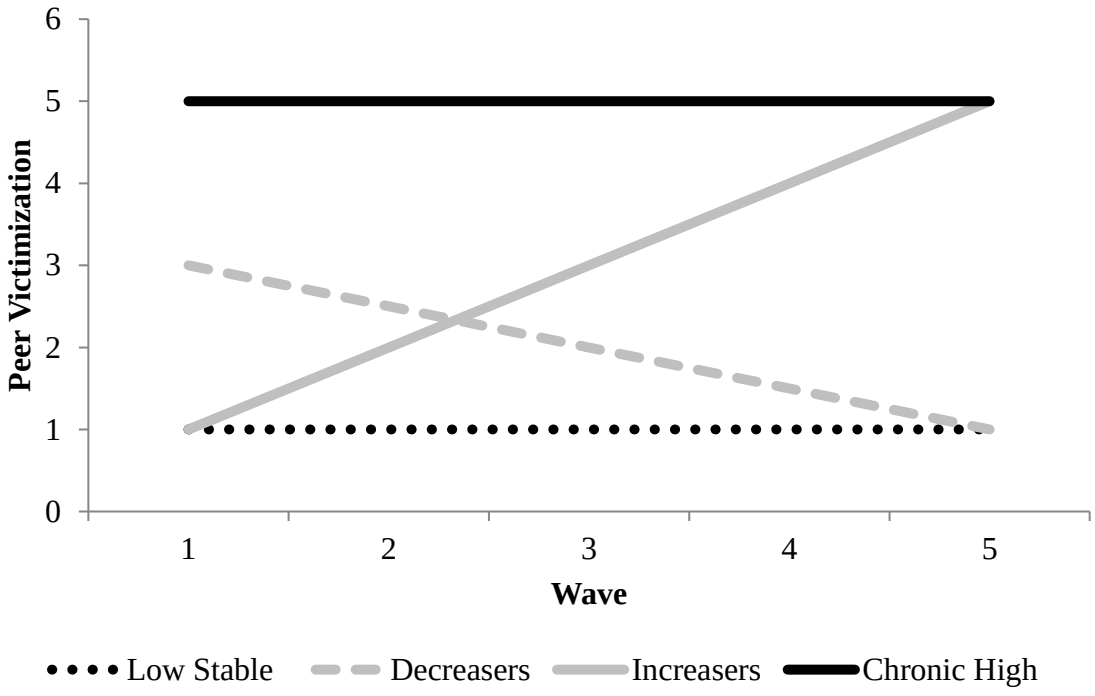


Figure 1. Hypothesized peer victimization groups.

Hypothesis 2: Examining longitudinal associations with mental health, social competence, and experiences of school climate among different groups of peer victimized children

I hypothesize that children belonging to chronically high or increasing groups of victimization will report corresponding higher internalizing and externalizing symptoms, and lower social competence (social skills, leadership, and social responsibility), and poorer experiences of school climates over time.

Mental health. Considerable research has documented co-occurring risks for internalizing and externalizing symptoms among children who report peer victimization (e.g., Hanish & Guerra, 2002; Hawker & Boulton, 2000; Reijntjes et al., 2010; 2011). These relations can be bidirectional. Children who show anxious or depressed symptoms may be more likely to be victimized by their peers because they are easy targets or are more likely to retaliate and aggress back (Leadbeater & Hoglund, 2009). On the other hand, experiences of peer victimization can influence negative self- and social-perceptions (e.g., lowering self-worth and viewing social environments as more threatening) that in turn increase vulnerability to maladjustment (Cole et al., 2013). It was hypothesized that levels of mental health problems would co-occur with experiences of peer victimization such that children who belong to the chronically high or increasing subgroups will report higher initial and increasing levels of internalizing and externalizing symptoms over time. In contrast, I expect that children belonging in low stable or decreasing groups will report low initial and decreasing levels of internalizing and externalizing symptoms over time. Figure 2 depicts the hypothesized patterns of internalizing and externalizing symptoms as a function of peer victimization groups.

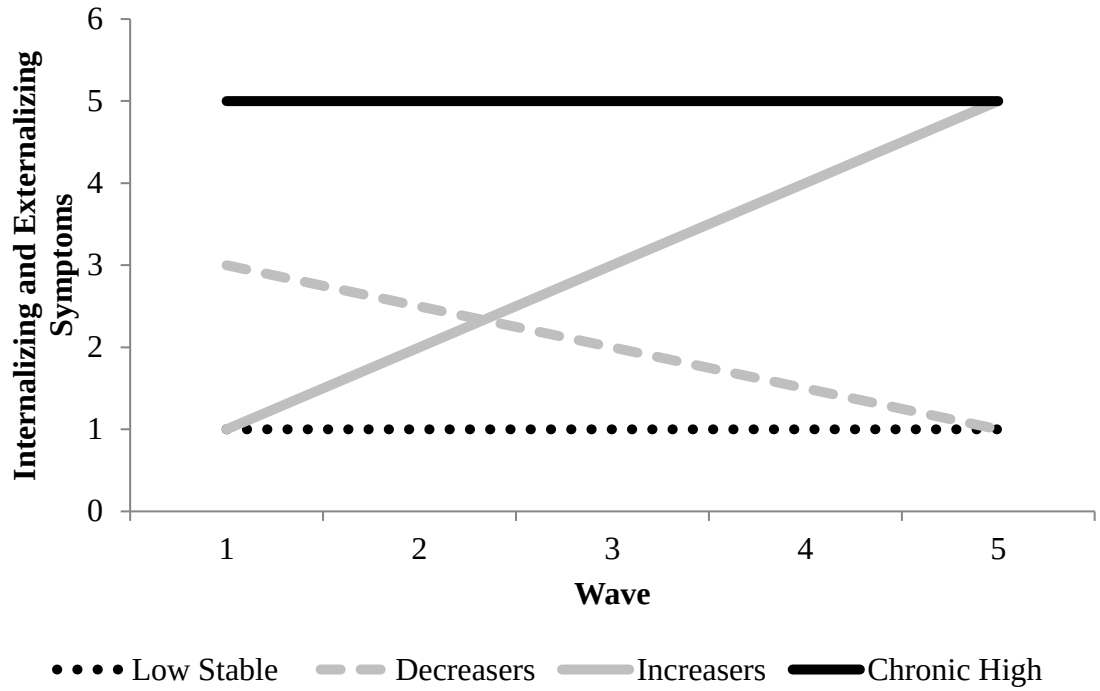


Figure 2. Hypothesized patterns of internalizing and externalizing problems as a function of peer victimization groups.

Social competence. In addition to examining associations with mental health, changes in social competence were examined. In this study, social competence includes measures of prosocial leadership (e.g., the ability to get other children to work together) and social responsibility (e.g., the ability to help and include others to solve peer conflicts). Existing literature predicts that gains in social competencies over the course of the elementary school years should improve children's conflict resolution skills (Cillessen & Bellmore, 2011; Trentacosta & Fine, 2010) and protect against harms associated with peer victimization (Boivin et al., 2010; Browning et al., 2003). Therefore I hypothesize that children who belong to low stable or decreasing peer victimization subgroups will display high initial and increasing levels of social competence over time. In contrast, chronically victimized children may struggle to

develop social competence over time because being marginalized from peer activities offers fewer opportunities to practice these skills. I hypothesize that children who belong to chronically high or increasing subgroups will display low initial and declining levels of social competence over time. Figure 3 depicts the hypothesized patterns of social competence as a function of peer victimization groups.

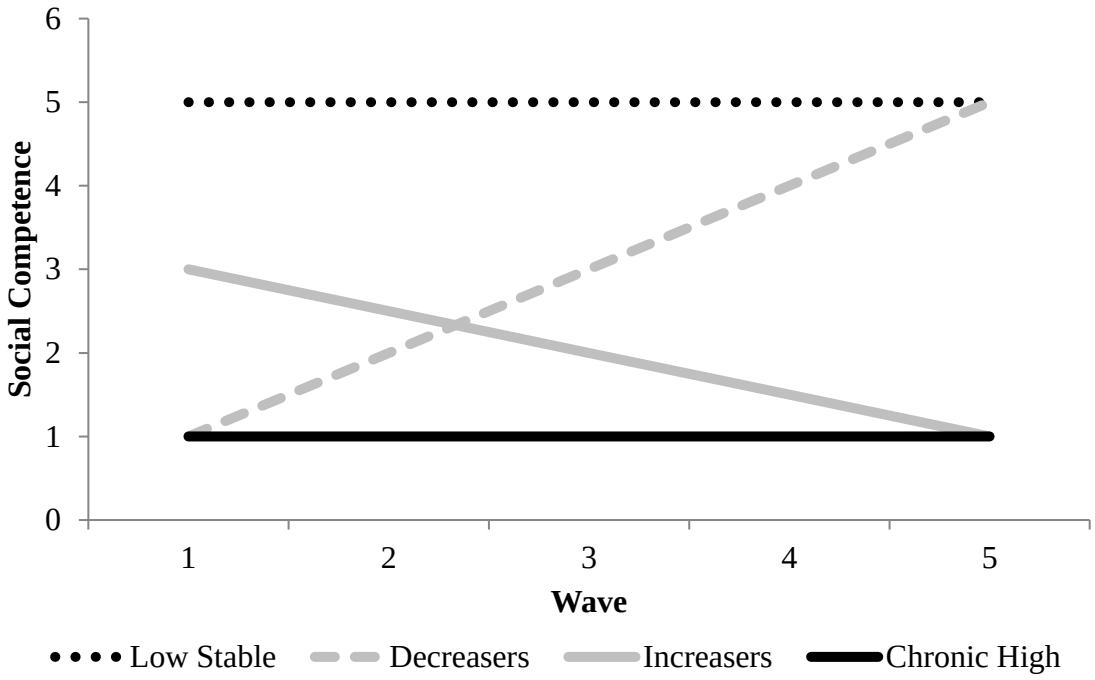


Figure 3. Hypothesized patterns of social competence as a function of peer victimization groups.

School climate. Emerging research suggests that experiences of school climate deteriorate over time for victimized children, as the trauma of being a victim of peer aggression can change children's experience of their school climate as caring, fair, and supportive when they need help (Leadbeater et al., 2014). Consistent with previous research that demonstrate positive associations between poor experiences of school climates and elevated levels of school violence (e.g., Brookmeyer, Fanti, & Henrich, 2006; Goldstein, Young, & Boyd, 2008; Birkett et al., 2009), it was hypothesized that children who followed chronically high or increasing trajectories of victimization would report low initial and declining experiences of school climate over time. In contrast, it was expected that children belonging to low stable or decreasing victimization subgroups would report high initial and increasing experiences of school climate over time as the absence or rarity of peer aggression may promote children's experiences of school support.

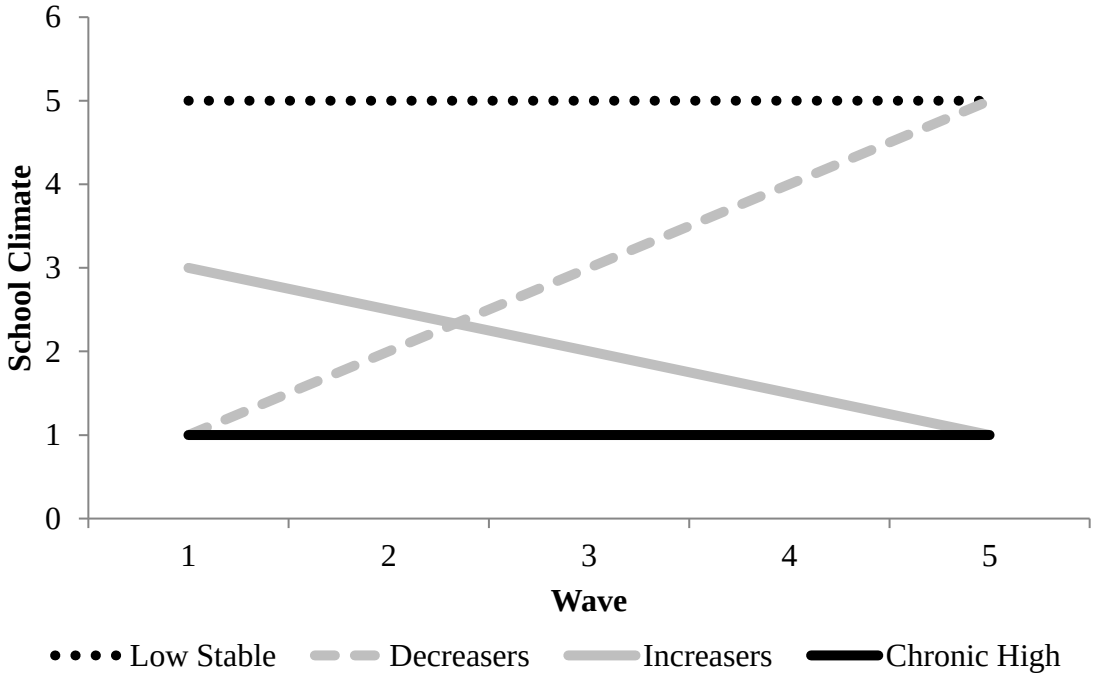


Figure 4. Hypothesized patterns of school climate as a function of peer victimization groups.

Chapter 2: Methods

Participants

Data included children (n = 1967; 1027 female), their parents, and teachers who were recruited from 137 classrooms in 27 predominately rural schools across three provinces representing Eastern, Central and Western Canada. Participants were part of an ongoing evaluation of the *WITS* programs for the prevention of peer victimization (www.witsprogram.ca). The *WITS* programs provides children with developmental appropriate strategies to help deal peacefully with peer conflict; 'WITS' stands for Walk away, Ignore, Talk it out, and Seek help. All procedures performed in studies were in accordance with the ethical standards of The University of Victoria's Human Ethics Review Board. All schools recruited at least 65% of the eligible students, with an average of 75%. Teachers of children with parent consent also gave consent in writing to their own participation at each assessment. Baseline data at T1 were collected in the spring of 2011 from 1659 grades 1-3 children and an additional 308 children were added in the fall of 2011 at T2 to boost the sample size. This yielded a total sample 1967 children and their parents and teachers. Participants were then followed 4 times in the fall and spring for two years. Schools were randomly assigned to program (n = 16) and control conditions (n = 11) yielding a total of 1329 participants in the program condition and 638 participants in the control condition. Control and program children did not differ on any of the demographic or study variables at baseline.

Demographic information (i.e., ethnicity, parent's marital status, level of education, children's living situation, and number of schools attended since kindergarten) were gathered from parents at baseline. The majority (93%) of participants were European Caucasian, 2% Aboriginal, 2% are of mixed ethnicity, 1% Asian, and <1% are Hispanic, Indo-Canadian, or

African Canadian. Participants indicated that 73% of children lived in a two-parent household. Forty-four percent of mothers and 45% of fathers completed "some college or technical training" beyond high school, and 30% of mothers and 21% of fathers had some post-secondary education. Moves were minimal; 70% of the children had only attended their current school.

Attrition was minimal across the three waves of data collection. Selective attrition was assessed by testing for differences at T1 on demographic and key variables between children who remained in the longitudinal study (n = 1600) and those who did not participate at T5 (n = 382; 19%). Findings did not reveal any significant differences between key demographic variables such as sex, age, mother and father education. However, non participants changed schools more often (M = 1.61) than children who remained in the study (M = 1.35), $t(1640) = 4.60$, $p < .001$.

Procedure

Teachers sent home evaluation packages to parents of children in participating schools informing them of the study and seeking consent for participation. Parents provided written consent for their child's participation and completed a demographic and school climate questionnaire and returned it to the school in a sealed envelope for pick-up by a research assistant. Data were collected from participating children in their classrooms. A trained research assistant read the child questionnaire items aloud to the class, and children completed the questionnaires individually and privately. A research assistant also circulated to check completion of the questionnaires and to help children who needed assistance.

Measures

Peer victimization. Peer victimization was measured using the Social Experience Questionnaire (SEQ; Crick & Grotpeter, 1996) that was modified for administration to young

children. This scale was adapted from Crick and Grotpeter's (1996) original five-point scale (ranging from 'never' to 'all the time') to facilitate ease of understanding for younger children (Leadbeater, Hoglund, & Woods, 2003; Leadbeater & Hoglund, 2009; Leadbeater & Sukhawathanakul, 2011). In the modified version, children rated how often they experienced relational victimization (e.g., "How often does another kid tell lies about you to make others not like you anymore?"), and physical victimization (e.g., "How often do you get pushed or shoved by another kid at school?") on a three-point scale (0 = never, 1 = sometimes, 2 = almost all the time). Each subscale contained 5 items. Prior research has demonstrated measurement invariance across time, gender, and grade level among elementary school children using this revised scale (Desjardins, Yeung Thompson, Sukhawathanakul, Leadbeater, & MacDonald, 2013). Two practice items were also used to familiarize children with the response scale. During administration, adults read the SEQ items aloud, instructed children to follow along using a brightly colored piece of paper, and circulated around the room to ensure that children are responding to appropriate items. Concurrent correlations between physical and relational peer victimization ranged from .69 to .71.

Mental health: internalizing and externalizing symptoms. The items were drawn from the Early School Behavior Rating Scale (Caldwell & Pianta, 1991) and the Behaviour Assessment System for Children (BASC; Reynolds & Kamphaus, 2004). Parents and teachers rated on a 4-point scale (0 = hardly ever, 1 = sometimes, 2 = often, 3 = almost always) how often children displayed aggressive behaviours (3 items; "kicks, bites, or hits other children", "fights with other children," "destroys other children's property"), and internalizing symptoms (4 items; "worries", "cries easily", "has headaches or stomach aches", "appears unhappy or depressed"). Parent and

teacher ratings were averaged and items were summed. Concurrent correlations between internalizing and externalizing symptoms ranged from .14 to .21.

Social competence. Social competence consisted of a composite of prosocial leadership and social responsibility. Concurrent correlations between prosocial leadership and social responsibility were .79, .78, .80, .79, .81 across time suggesting that the two constructs are highly related. Prosocial leadership was assessed using measures from the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 2004). Parents and teachers rated 7 items on a 4-point scale (0 = hardly ever, 1 = sometimes, 2 = often, 3 = almost always) how often children displayed leadership (e.g., “is good at getting people to work together,” “is a leader in groups”) and social competence skills (e.g., “offers to help other children,” “shares toys or possessions with other children”). Parent and teacher ratings of each item were averaged together and then summed. Social Responsibility measures were developed to reflect main themes of the curriculum objectives outlined in the British Columbia Ministry of Education Performance Standards: Social Responsibility Framework (Leadbeater & Sukhawathanakul, 2011). Teachers rated children's social responsibility levels on six items (e.g., "Looks for chances to help and include others," and "Helps to solve peer conflicts"), measured on a 4-point Likert scale (0 = ‘not yet within expectations’, 1 = ‘meets expectations’, 2 = ‘fully meets expectations’, and 3 = ‘exceeds expectations’). The 6 items were summed.

Experiences of school climate. Children’s experience of school climate was measured using the School Climate Survey (SCS; Haynes, Emmons, & Comer, 1993) to assess the general social environment of the school and the quality of relationships that exist among students and adults in the school building. The elementary and middle school student version includes 30 items that assess five aspects of school climate: 1.) *Student-teacher relations* refers to the level of

caring, respect, and trust that exists between students and teachers (e.g., “My teachers care about me”). 2.) *Student interpersonal relations* refers to the levels of caring, respect, and trust that exists among students in the school (e.g., “Children at my school respect one another”). 3.) *Fairness* refers to the equal treatment of students regardless of ethnicity and socioeconomic status (e.g., “At my school, boys and girls are treated equally well”). 4.) *Equity in sharing of resources* refers to equal student opportunity to participate in school activities, and with materials and equipment (e.g., “The same children do not always get to use things, like a computer, a ball or a piano, when we play”). 5.) *Parent participation* refers to the frequency in which parents participated in school activities (5 items; e.g., “Parents often come to my school to help with special projects”). Students responded on a three-point scale, according to how much they agree with the statement (1 = disagree, 2 = not sure, 3 = agree). Only children in grades 3 to 6 were asked to complete the school climate measure due to the complexity of the concepts asssessed. The number participants who completed the school climate subscale at each wave was: T1 = 797, T2 = 1241, T3 = 1225, T4 = 1507, T5 = 1381. Concurrent correlations between the 5 subscales ranged from .17 to .59. The five subscales were combined to produce a composite of school climate.

Covariates. Covariates included sex (0=male; 1=female), child age at baseline, socioeconomic status (SES), and program status. Mother’s educational attainment was used as a proxy for SES. Education ranged from 1 = grade 8 or less, to 8 = completing some graduate degree. Finally, program status indicates whether the child was attending a school with the *WITS* peer victimization prevention program in place or a control school (0=control school; 1=program school).

Data Analytic Strategy

Recent longitudinal studies investigating involvement in bullying perpetration and victimization use growth mixture modeling or semiparametric group-based approaches to understand heterogeneity in victimization and changes in its patterns of growth over time (e.g., Barker et al., 2008; Haltigan & Vaillancourt, 2014; Leadbeater & Hoglund, 2009; Nylund, Bellmore, Nishina, & Graham, 2007; Rosen et al., 2009). Latent class analysis (LCA) is the person-centered or group-based statistical technique used by these studies. LCA examines the pattern of relations among a set of observed variables and identifies and classifies similar individuals into 'latent classes' (Nagin, 1999; Jung & Wickrama, 2008).

In this study, LCA was used to identify group differences in the trajectories of peer victimization (i.e., classes) over time. To estimate the optimal number of classes that best represents the different patterns of peer victimization in children, a series of models were fitted to the victimization data beginning with a one-trajectory model and moving to a five-trajectory model (see Figure 5). Evaluation of the best fitting models was accomplished by using the Bayesian information criterion (BIC), the Lo-Mendell-Rubin likelihood ratio test (LMR-LRT), entropy (Nagin, 1999), and class size and interpretability (Jung & Wickrama, 2008; Nylund et al., 2007). The BIC is a commonly used fit index in which lower values indicate a more parsimonious model. LMR-LRT provides a *k*-1 likelihood ratio based method for determining the ideal number of trajectories (where k = number of groups); a low p value ($p < .05$) indicates that the k trajectory model is a better fit to the data compared to the k-1 trajectory model. Entropy is a measure of classification accuracy with values closer to 1 indexing greater precision (range 0-1). The selection of the best model was based on a combination of the following: 1) lowest BIC, 2) statistically significant likelihood tests, 2) posterior probabilities of correct class

assignment (i.e., >.70; Nagin, 2005), and 3) size and interpretability of the classes (Jung & Wickrama, 2008; Nylund et al., 2007). Here, classes were expected to reflect differences in initial levels and changes in peer victimization across time among distinct groups of children.

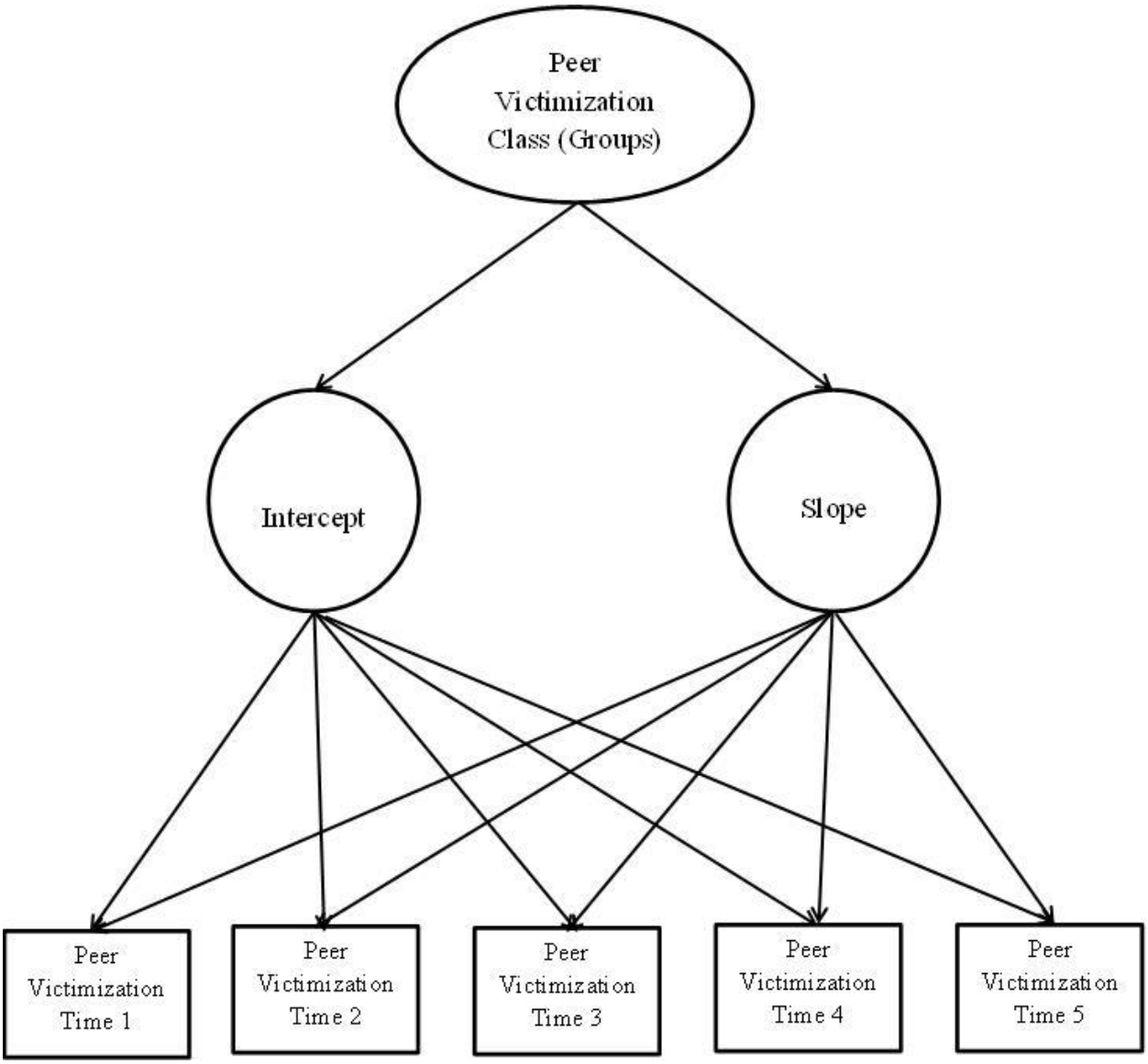


Figure 5. A latent class model predicting peer victimization subgroups

Assessing longitudinal changes in mental health, social competence, and school climate

Each child was assigned to a latent class (i.e., the latent class to which they were most likely to belong based on their initial levels and changes in peer victimization over time). Their saved latent classes were used to predict associations with longitudinal trajectories of mental health, social competence, and school climate. Multilevel modeling procedures were used to handle the hierarchical structure of the data in which yearly measurement occasions were nested within children. Multilevel models allow for individual changes to be modeled at the within-person level (Level 1) and the individual differences in these changes to be modeled at between-person level (Level 2). Furthermore, between-person predictor variables can be used account for individual differences in within-person changes over time.

A series of multilevel models were carried out to examine how peer victimization group membership predicted differences in longitudinal changes in mental health, social competence and school climate. Specifically, two levels were specified in the models: Level 1) the within-person level represents individual changes in growth and Level 2) the between-person level represents individual differences in growth. A third level was also estimated to account for between-school differences. School-level variance made up 2% of the total variance for peer victimization, 1% for internalizing problems, 2% for externalizing problems, 4% for social competence and 6% of school climate. As most of the variability was within and between children and almost no variability between schools, the multilevel models were treated as two-level models, that is, predictors were entered only at the within-and between-child levels (i.e., levels one and two). Separate models were run for each of the outcomes: *mental health* (internalizing and externalizing), *social competence*, and s*chool climate*.

Level 1: Within-person growth

Each model was evaluated with 'Time' (i.e., 5 waves of assessment) as the within-person variable to account for individual changes in the outcome variables over time. Specifically, 'Time' was coded using a time in study approach where 0 represents baseline levels. Time was treated as a continuous variable (T1, baseline = 0, T2 = 1, T3 = 2, T4 = 3, T5 = 4) and used as a within-person predictor at Level 1.

Level 2: Between-person differences in initial levels and change over time

Membership within the four victimization trajectory groups was included as between-person predictors. In order to allow for comparisons across victimization groups, three dummy coded variables were created. The Low Stable group was coded as the reference group and differences of each of the three other groups (i.e., Chronic High, Increasers, and Decreasers) from the reference group were estimated. Dummy coded variables were entered on both the intercept and Time slope, providing estimates of victimization group differences in initial levels and change over time of mental health, social competence, and school climate. The time by victimization group interaction assesses whether the outcome variable changes differently by victimization group compared to the Low Stable group. Separate models were examined for the physical and relational victimization trajectory groups.

Although previous studies combine both physical and relational forms of victimization, assessing them separately may yield important information about the differences in children's reports (Crick & Grotpeter, 1996). Additionally, concurrent correlations between physical and relational peer victimization were moderate (*r*s = .69, .70, .72, .69, and .71 for T1 – T5 respectively) suggesting that while the two forms of victimization are associated with one another, they are still distinct constructs. In this study, boys also reported more physical peer

victimization than girls, whereas girls reported more relational peer victimization than boys (see Table 2), which supports the separation of the two forms of victimization as they may affect girls and boys differently in levels of mental health, social competence and experiences of school climate.

In addition to peer victimization group differences, covariates were included in the models to account for sex differences, between-person age differences at baseline, SES, and whether the child was attending a school with the *WITS* peer victimization prevention program in place or not. Specifically covariates were included on both the intercept and slope to adjust for differences in baseline levels and changes over time in the outcome variables. Significant effects of the covariates signify that changes differ by sex, age, SES, or program status. Age was mean centered at baseline which signifies that the intercept represents the initial levels for a student who is of the average age upon study entry.

The full two-level model examining how peer victimization groups differed in their longitudinal changes of mental health, social competence, and experiences of school climate can be displayed as follows:

Level 1: $$Y_{ij} = \beta_{0i} + \beta_{1i}(\text{Time}_{ij}) + e_{ij} \quad (1)$$

Level 2: $$\beta_{0i} = \gamma_{00} + \gamma_{01}(\text{ChronicHigh}) + \gamma_{02}(\text{Increasers}) + \gamma_{03}(\text{Decreasers}) + \gamma_{04}(\text{Sex}) + \gamma_{05}(\text{Age}) + \gamma_{06}(\text{SES}) + \gamma_{07}(\text{Program}) + u_{0i} \quad (2)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}(\text{ChronicHigh}) + \gamma_{12}(\text{Increasers}) + \gamma_{13}(\text{Decreasers}) + \gamma_{14}(\text{Sex}) + \gamma_{15}(\text{Age}) + \gamma_{16}(\text{SES}) + \gamma_{17}(\text{Program}) + u_{1i} \quad (3)$$

where Y_{ij} represents the outcome variables (either mental health, social competence, or experiences of school climate) for child *i* at time *j*. β_{0i} refers to the predicted score for the outcome at baseline for child *i*; β_{1i} represents the slope coefficient for time (i.e., the individual change in the outcome for child *i*); and e_{ij} represents the within-person residual variance.

Due to the dummy coding of the peer victimization groups, γ_{00} now represents the intercept of the reference group (i.e., Low Stable group); γ_{01} to γ_{03} represent the difference in intercept from the reference group for the other three victimization groups (i.e., the Chronic High, Increasers, and Decreasers, respectively); γ_{04} to γ_{07} represent the effect of each of the covariates on the intercept. Similarly, γ_{10} represents the average change in the outcome for the reference group (i.e., Low Stable group); γ_{11} to γ_{13} represents the difference in change over time of the three victimization groups (i.e., Chronic High, Increasers, and Decreasers, respectively) from the reference group; and γ_{14} to γ_{17} represent the effect of the covariates on the slope. Finally, u_{0i} and u_{1i}, represent individual deviations from average intercepts and slopes (i.e., random effects). Mplus v7 software (Muthén & Muthén, 2012) was used to fit the multilevel models, which were estimated using full information maximum likelihood for robust standard error.

Chapter 3: Results

Descriptive Statistics

Correlations among study variables are presented in Table 1. Internalizing problems were positively related to externalizing problems across time (*r*s range = .06 to .62). Mental health symptoms (internalizing and externalizing) were negatively correlated with social competence (*r*s range = -.14 to -.35). School climate was negatively associated with mental health symptoms across time (*r*s range = -.03 to -.19). Social competence was positively related to school climate across time (*r*s range = .13 to .27).

Means, standard deviations, and psychometric properties of study variables are shown in Table 2, for males and females. Males had higher levels of physical peer victimization at times 3 through 5 than females. Males also had higher levels of externalizing problems at all time points compared to females. Females had higher levels of relational peer victimization at times 2 and 5 than males. Females also had higher levels of social competence across all time points compared to males. The items belonging to each measure were internally consistent across time. Cronbach's alphas ranged from .78 to .85 for peer victimization, .82 to .88 for mental health problems, .88 to .92 for social competence, and .70 to .80 for school climate.

Table 1
Correlation between study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Int1	-																		
2. Int2	.52	-																	
3. Int3	.40	.60	-																
4. Int4	.38	.40	.41	-															
5. Int5	.40	.43	.44	.62	-														
6. Ext1	.14	.11	.12	.12	.06	-													
7. Ext2	.10	.15	.13	.10	.06	.43	-												
8. Ext3	.08	.17	.21	.14	.12	.35	.59	-											
9. Ext4	.11	.12	.08	.20	.14	.24	.27	.27	-										
10. Ext5	.12	.17	.09	.21	.21	.25	.35	.29	.48	-									
11. SC1	-.26	-.19	-.17	-.14	-.15	-.31	-.28	-.22	-.15	-.20	-								
12. SC2	-.16	-.25	-.23	-.13	-.17	-.27	-.33	-.27	-.14	-.17	.56	-							
13. SC3	-.23	-.24	-.31	-.16	-.20	-.30	-.32	-.33	-.15	-.20	.52	.73	-						
14. SC4	-.15	-.16	-.16	-.24	-.22	-.24	-.26	-.26	-.26	-.30	.50	.53	.54	-					
15. SC5	-.19	-.18	-.20	-.20	-.29	-.23	-.24	-.23	-.20	-.35	.48	.52	.53	.72	-				
16. Clim1	-.19	-.12	-.11	-.10	-.12	-.06	-.04	-.03	-.04	-.03	.26	.17	.20	.21	.17	-			
17. Clim2	-.13	-.13	-.15	-.13	-.12	-.10	-.09	-.09	-.02	-.10	.23	.21	.27	.18	.16	.60	-		
18. Clim3	-.14	-.14	-.18	-.10	-.14	-.15	-.10	-.11	.02	-.07	.21	.20	.27	.18	.20	.50	.54	-	
19. Clim4	-.12	-.12	-.18	-.17	-.12	-.10	-.10	-.11	-.06	-.08	.16	.17	.21	.19	.18	.40	.45	.57	-
20. Clim5	-.09	-.08	-.16	-.11	-.12	-.09	-.07	-.09	-.01	-.05	.15	.13	.17	.15	.18	.41	.43	.47	.58

Note. All correlations were significant at $p < .05$. Int = Internalizing; Ext = Externalizing; Lead = Prosocial Leadership; SC = Social Competence; Clim = School Climate

Table 2

Means (standard deviations) and psychometric properties of study variables by males and females

	Total	Males	Females	Cronbach's
Peer Victimization				
Physical T1	2.73 (2.43)	2.86 (2.51)	2.61 (2.35)	0.78
Physical T2	2.50 (2.35)	2.63 (2.40)	2.37 (2.30)	0.80
Physical T3	2.42 (2.36)	2.55 (2.46)[a]	2.30 (2.25)	0.82
Physical T4	2.21 (2.24)	2.33 (2.30)[a]	2.10 (2.17)	0.82
Physical T5	2.03 (2.13)	2.21 (2.24)[a]	1.87 (2.01)	0.81
Relational T1	2.90 (2.50)	2.79 (2.50)	3.00 (2.50)	0.78
Relational T2	2.58 (2.46)	2.36 (2.36)[a]	2.79 (2.53)	0.80
Relational T3	2.61 (2.54)	2.37 (2.53)	2.84 (2.53)	0.83
Relational T4	2.41 (2.45)	2.18 (2.42)	2.63 (2.45)	0.83
Relational T5	2.32 (2.43)	2.10 (2.36)[a]	2.53 (2.47)	0.85
Mental Health Problems				
Internalizing T1	2.33 (1.66)	2.19 (1.60)	2.46 (1.71)	0.88
Internalizing T2	2.10 (1.66)	2.03 (1.61)	2.16 (1.71)	0.85
Internalizing T3	2.11 (1.79)	2.02 (1.79)	2.19 (1.78)	0.82
Internalizing T4	2.01 (1.80)	1.93 (1.78)	2.08 (1.81)	0.87
Internalizing T5	2.06 (1.84)	2.05 (1.85)	2.07 (1.84)	0.88
Externalizing T1	0.14 (0.53)	0.18 (0.62)[a]	0.10 (0.41)	0.80
Externalizing T2	0.12 (0.47)	0.15 (0.55)[a]	0.09 (0.39)	0.82
Externalizing T3	0.12 (0.45)	0.15 (0.54)[a]	0.08 (0.35)	0.83
Externalizing T4	0.08 (0.39)	0.10 (0.43)[a]	0.07 (0.36)	0.85
Externalizing T5	0.10 (0.40)	0.12 (0.43)[a]	0.08 (0.37)	0.86
Social Competence				
Social Competence T1	21.79 (7.86)	20.00 (7.90)	23.44 (7.45)[a]	0.88
Social Competence T2	21.58 (7.59)	20.00 (7.67)	23.09 (7.21)[a]	0.88
Social Competence T3	21.97 (7.97)	20.17 (7.98)	23.65 (7.59)[a]	0.90
Social Competence T4	22.32 (8.04)	20.40 (8.08)	24.14 (7.57)[a]	0.92
Social Competence T5	22.74 (8.63)	20.78 (8.59)	24.60 (8.26)[a]	0.92
School Climate				
School Climate T1	8.17 (1.76)	8.09 (1.83)	8.25 (1.69)	0.70
School Climate T2	8.15 (1.73)	8.11 (1.77)	8.18 (1.70)	0.72
School Climate T3	8.19 (1.81)	8.19 (1.82)	8.19 (1.80)	0.76
School Climate T4	8.20 (1.74)	8.19 (1.81)	8.21 (1.67)	0.76
School Climate T5	8.18 (1.83)	8.19 (1.85)	8.18 (1.81)	0.80

Note: a = males and females differ at $p < .05$.

Peer Victimization Trajectories

Average change in peer victimization. Prior to conducting the latent class analyses to determine subgroups, latent growth curves were fitted to physical and relational peer victimization to demonstrate average change over time. This analysis provides an additional description to what the typical pattern of peer victimization looks like in this sample. Figure 7 displays the average trajectories of physical and relational peer victimization. On average, physical peer victimization declined over time (Intercept = 0.547, p <.001; Slope = -.034, p<.001), with significant individual differences in intercept (variance = 0.547, p <.001) and slope (variance = 0.012, p <.001). Relational peer victimization also declined over time (Intercept = 0.571, p <.001; Slope = -.027, p<.001), with significant individual differences in intercept (variance = 0.144, p <.001) and slope (variance = 0.012, p <.001). These findings suggest that while on average children decline in their levels of peer victimization over time, there is heterogeneity surrounding initial levels and rate of change over time.

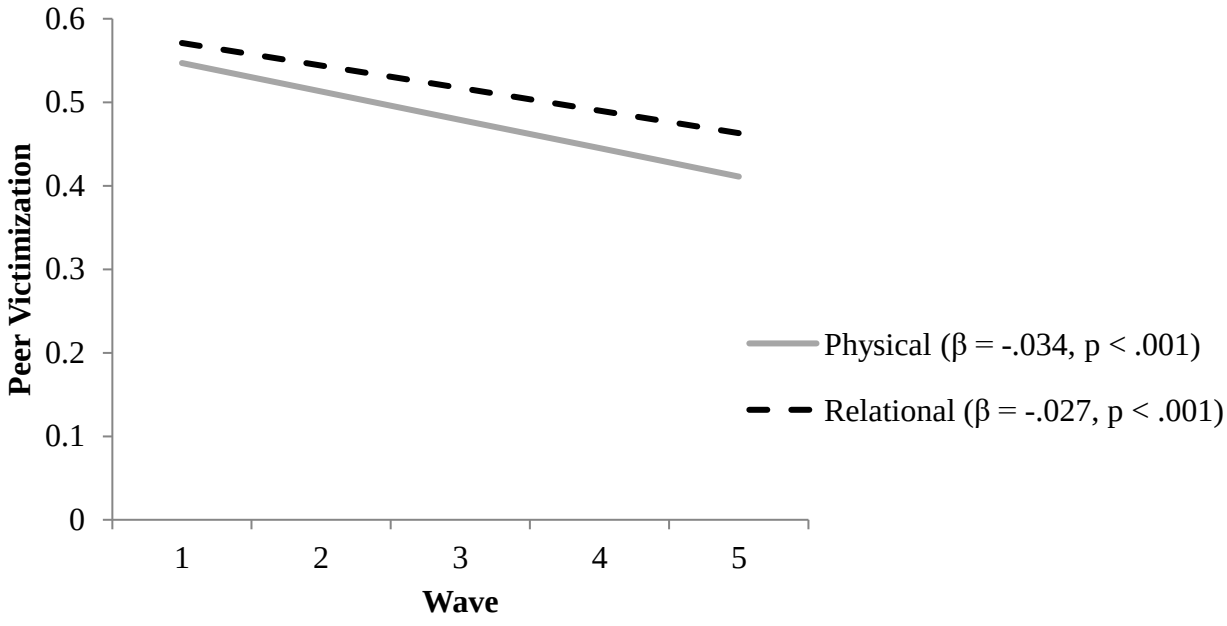


Figure 6. Average trajectories of peer victimization.

Determining peer victimization subgroups. Results of the latent class analyses are provided in Table 3 which shows the fit indices comparing the one to five group trajectory models for physical and relational peer victimization. For both physical and relational peer victimization, six-trajectory models were also tested but model convergence was not achieved. The Bayesian information criteria (BIC) steadily decreased in the one to five group trajectory models, but increased in the five-group trajectory model (BIC=34699.02 and 33832.86 compared to BIC=34589.05 and 33561.92 for physical and relational peer victimization respectively). The remaining two indices, the Lo-Mendell-Rubin likelihood ratio (LMR-LRT) and entropy, all favored the four-group trajectory model, which indicated that four distinct trajectories of peer victimization best fit the data. The four-trajectory models had lower *p* values (*p*s > .05 compared to *p* <.001) indicating that the four-trajectory model is a better fitting model compared to the five-trajectory model. The four-trajectory models also had entropy values that had a larger deviation from 1 (entropy = .72 and .77 for physical and relational peer victimization respectively) than the five-trajectory models (entropy = .70 and .74 for physical and relational peer victimization respectively) indicating that the four-trajectory models had greater classification accuracy than the five-trajectory models. The average posterior class membership probabilities for both the physical and relational peer victimization four-trajectory models were all above the minimum .70 threshold for class assignment (range = .82 to .80; Nagin, 2005)

Further examination of the five-group trajectory model revealed that an additional group did not add conceptually to the interpretation of group differences. In the physical peer victimization model, the additional fifth class had a slightly steeper decline than a similar class with the same intercept. Similarly, in the relational peer victimization model, the additional fifth class had a slightly steeper slope than a similar class with the same intercept. The identified four

classes were also consistent with those commonly found within the literature (e.g., Barker et al., 2008; Biggs et al., 2010; Boivin et al., 2010 and Leadbeater & Hoglund, 2009). Thus based on the fit statistics and parsimony of group differences for ease of interpretation, the four-trajectory models were used to predict changes in the study outcomes.

Table 3

Fit Statistics for the 1-5 Trajectory models for physical and relational peer victimization

	Fit Indices		
	BIC	LMR-LRT	Entropy
Physical Peer Victimization Latent Class Models			
One Trajectory	34803.66	*na*	.58
Two Trajectory	34772.82	$p < .001$	.64
Three Trajectory	34630.66	$p < .001$	.69
Four Trajectory	**34589.05**	***p* < .001**	**.72**
Five Trajectory	34699.02	$p > .05$	.70
Relational Peer Victimization Latent Class Models			
One Trajectory	34851.55	*na*	.68
Two Trajectory	33616.54	$p < .001$	.70
Three Trajectory	33653.86	$p < .001$	.72
Four Trajectory	**33561.92**	***p* < .001**	**.77**
Five Trajectory	33832.86	$p = .08$	.74

Note: BIC = Bayesian information criterion; LMR-LRT = Lo-Mendell-Rubin likelihood ratio; *na* = not applicable.

Table 4 presents of the number and proportion of children in each victimization group along with the model estimates that characterize the distinct trajectories of children in each group. Figure 8 presents the four-group trajectory model for physical peer victimization. As expected, most of the children (65%) followed a low stable trajectory characterized by low levels of physical peer victimization at baseline ($\beta = 1.49$, $p < .001$) and non-significant change over time ($\beta = -.08$, $p > .05$). This group of children is referred to as the "Low Stable" group. Twenty-four percent of children followed a moderate decreasing trajectory characterized by moderate levels of physical peer victimization at baseline ($\beta = 4.82$, $p < .001$) and declining levels of victimization over time ($\beta = -.65$, $p < .001$). This group of children is referred to as the "Decreasers" group. Six percent of children followed a low increasing trajectory characterized by low levels of physical peer victimization at baseline ($\beta = 2.33$, $p < .001$) and increasing levels of victimization over time ($\beta = .83$, $p < .001$). This group of children is referred to as the "Increasers" group. Five percent of children followed a high decreasing trajectory characterized by high levels of physical peer victimization at baseline ($\beta = 7.88$, $p < .001$) and declining levels of victimization over time ($\beta = -.56$, $p < .05$). This group of children is referred to as the "Chronic High" group.

Table 4

Trajectory class counts and proportions, and model estimates for the four-group trajectory model for physical and relational peer victimization

	Number of Children	Proportion of total sample	Intercept (SE)	Slope (SE)
Physical Peer Victimization Group				
1.) Chronic High	102	5%	7.88 (.34)**	-.56 (.25)*
2.) Increasers	115	6%	2.33 (.34)**	.83 (.21)**
3.) Decreasers	466	24%	4.82 (.31)**	-.65 (.09)**
4.) Low Stable	1260	65%	1.49 (.11)**	-.08 (.05)
Relational Peer Victimization Group				
1.) Chronic High	199	10%	6.29 (.38)**	-.15 (.11)
2.) Increasers	169	9%	1.88 (.30)**	1.03 (.13)**
3.) Decreasers	174	9%	5.86 (.35)**	-1.10 (.16)**
4.) Low Stable	1402	72%	1.91 (.11)**	-.14 (.03)*

Note: SE = Standard Error; *$p < .05$; **$p < .001$

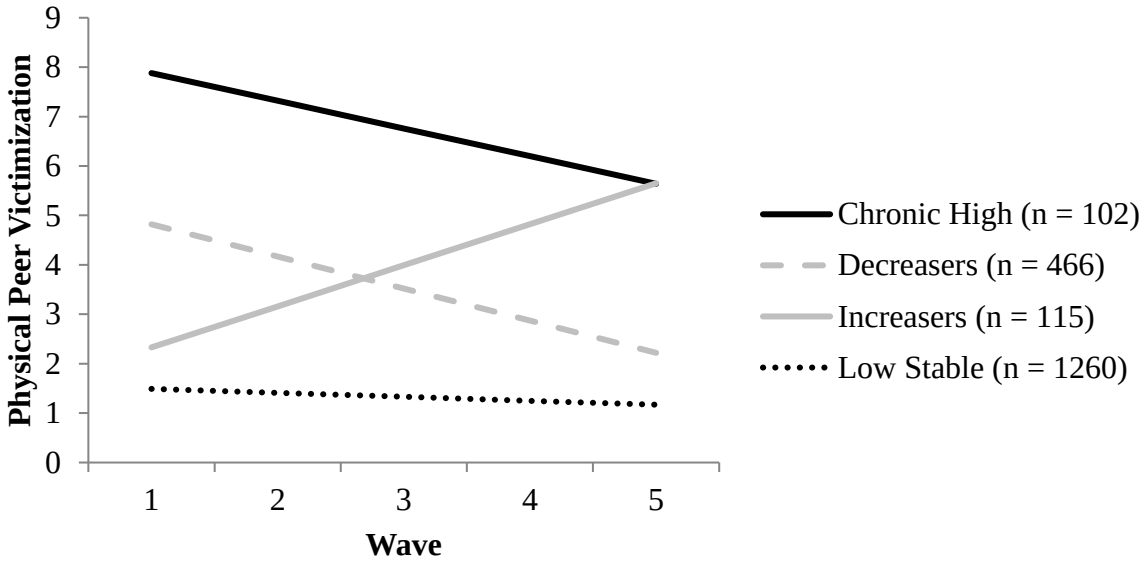


Figure 7. Trajectories of physical peer victimization subgroups.

Figure 9 presents the four-group trajectory model for relational peer victimization. As shown in Table 4, the majority of children (72%) followed a low decreasing trajectory characterized by low levels of relational peer victimization at baseline (β = 1.91, p <.001) and declining levels of victimization over time (β = -.14, p <.05; the "Normative Low" group). Ten percent of children followed a high stable trajectory characterized by high levels of relational peer victimization at baseline (β = 6.29, p <.001) and little change over time (β = -.15, p >.05; the "Chronic High" group). Nine percent of children follow a low increasing trajectory characterized by low levels of relational peer victimization at baseline (β = 1.88, p <.001) and increasing levels of victimization over time (β = 1.03, p <.001; the "Increasers"). Nine percent of children followed a high decreasing trajectory characterized by high levels of relational peer victimization at baseline (β = 5.86, p <.001) and declining levels of victimization over time (β = -1.10, p <.001; the "Decreasers").

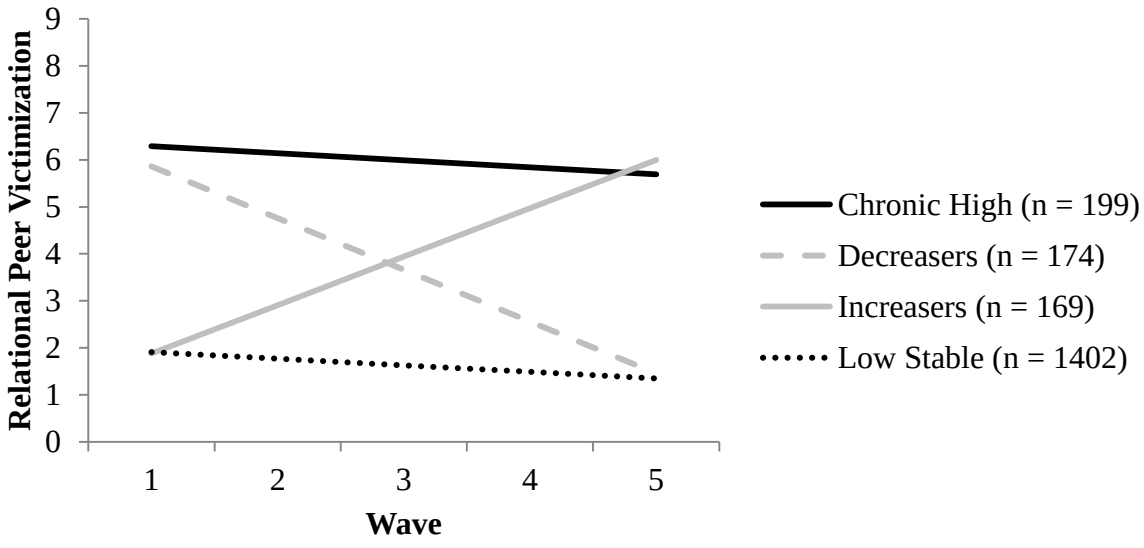


Figure 8. Trajectories of relational peer victimization subgroups.

Assessing longitudinal changes in mental health, social competence, and school climate

Tables 5 and 6 provide the means (or numbers) and standard deviations (or percentages) of the demographic (sex, SES, age, program status) and outcome variables (mental health, social competence and school climate) by peer victimization group membership across the five waves of data. The percentage of males ranged from 45% to 57%, the mean age across groups was 8 years old, mothers among the majority of children within the groups had some college, vocational or technical training beyond high school (SES) and the percentage of program children ranged from 67% to 77%.

Table 5

Means (or N) and standard deviations (or %) of variables across time by physical peer victimization group membership

	Chronic High (n = 102)		Increasers (*n* = 115)		Decreasers (*n* = 466)		Normative Low (*n* = 1260)	
	Mean (N)	*SD (%)*	*Mean (N)*	*SD (%)*	*Mean (N)*	*SD (%)*	*Mean (N)*	*SD (%)*
Demographics at T1								
Sex								
Male	57	56%	65	57%	242	52%	570	45%
Female	45	44%	50	43%	224	48%	690	55%
Age	8.20	1.34	8.21	1.30	7.65	1.22	8.26	1.32
SES	4.26	1.56	4.19	1.36	4.22	1.40	4.30	1.46
Program status								
Program	77	75%	88	77%	313	67%	844	67%
Control	25	24%	27	23%	153	33%	416	33%
Mental Health								
Internalizing T1	3.28	1.96	2.38	1.79	2.47	1.65	2.20	1.61
Internalizing T2	2.88	1.89	2.30	1.79	2.22	1.70	1.95	1.57
Internalizing T3	2.74	2.06	2.38	1.89	2.39	1.95	1.92	1.65
Internalizing T4	2.92	2.28	2.24	1.94	2.05	1.89	1.90	1.68
Internalizing T5	2.92	2.05	2.21	1.81	2.30	2.03	1.89	1.73
Externalizing T1	0.69	1.23	0.12	0.42	0.21	.62	0.07	.35
Externalizing T2	0.41	0.89	0.19	0.65	0.18	.58	0.07	.33
Externalizing T3	0.35	0.75	0.27	0.72	0.18	.57	0.06	.31
Externalizing T4	0.26	0.88	0.10	0.39	0.11	.38	0.06	.33
Externalizing T5	0.38	0.91	0.10	0.30	0.10	.38	0.08	.35
Social Competence								
Social Competence T1	15.60	6.59	20.90	7.24	20.64	8.05	22.81	7.63
Social Competence T2	17.94	7.22	20.34	7.10	20.35	7.72	22.49	7.45
Social Competence T3	16.68	7.73	20.16	7.68	20.48	8.04	23.11	7.70
Social Competence T4	16.91	8.05	20.03	7.18	21.04	8.11	23.50	7.79
Social Competence T5	17.14	8.82	19.69	7.99	21.39	8.92	24.02	8.24
School Climate								
School Climate T1	7.11	2.56	7.92	1.47	7.41	1.81	8.52	1.58
School Climate T2	7.07	2.63	7.77	2.02	7.59	1.90	8.47	1.45
School Climate T3	6.85	2.68	7.41	2.10	7.71	1.92	8.54	1.51
School Climate T4	6.79	2.31	7.30	2.05	7.88	1.86	8.51	1.49
School Climate T5	6.94	2.24	7.19	2.15	7.83	1.95	8.52	1.60

Note. Classes are based on modal class assignments. Percentages refer to row totals within each respective category

Table 6

Means (or N) and standard deviations (or %) of variables across time by relational peer victimization group membership

	Chronic High (n = 199)		Increasers (*n* = 169)		Decreasers (*n* = 174)		Normative Low (*n* = 1402)	
	Mean (N)	*SD (%)*	*Mean (N)*	*SD (%)*	*Mean (N)*	*SD (%)*	*Mean (N)*	*SD (%)*
Demographics at T1								
Sex								
Male	79	40%	71	42%	78	45%	706	50%
Female	120	60%	98	58%	96	55%	696	50%
Age	8.21	1.31	7.89	1.26	8.33	1.31	8.24	1.30
SES	4.19	1.43	4.26	1.53	4.14	1.45	4.30	1.43
Program status								
Program	142	71%	118	70%	117	67%	945	67%
Control	57	29%	51	30%	57	33%	457	33%
Mental Health								
Internalizing T1	2.91	1.91	2.33	1.69	2.39	1.45	2.24	1.64
Internalizing T2	2.61	1.82	2.40	1.96	2.31	1.84	1.94	1.53
Internalizing T3	2.67	2.01	2.33	1.94	2.53	1.89	1.94	1.68
Internalizing T4	2.88	2.32	2.18	1.98	2.26	1.93	1.83	1.63
Internalizing T5	2.84	2.14	2.22	1.86	2.36	1.94	1.89	1.75
Externalizing T1	0.46	0.92	0.13	0.48	0.22	0.76	0.08	0.39
Externalizing T2	0.39	0.82	0.14	0.57	0.19	0.62	0.07	0.34
Externalizing T3	0.32	0.72	0.19	0.55	0.25	0.74	0.06	0.31
Externalizing T4	0.21	0.71	0.14	0.44	0.09	0.35	0.06	0.32
Externalizing T5	0.28	0.75	0.13	0.39	0.09	0.38	0.07	0.33
Social Competence								
Social Competence T1	17.68	7.88	20.20	7.46	22.20	7.50	22.53	7.74
Social Competence T2	19.29	7.84	20.83	7.36	21.53	8.24	22.05	7.43
Social Competence T3	18.83	8.30	20.69	7.67	20.87	8.61	22.73	7.72
Social Competence T4	19.15	8.25	20.80	7.83	21.41	8.40	23.12	7.82
Social Competence T5	19.39	8.99	21.57	8.18	21.23	8.73	23.57	8.47
School Climate								
School Climate T1	7.44	2.31	8.31	1.46	7.70	1.84	8.33	1.65
School Climate T2	7.20	2.43	7.98	1.84	7.83	1.76	8.33	1.55
School Climate T3	7.02	2.35	7.56	2.11	7.92	1.98	8.46	1.56
School Climate T4	7.14	2.05	7.66	2.05	8.22	1.74	8.41	1.58
School Climate T5	7.18	2.06	7.30	2.10	8.10	1.93	8.45	1.66

Note. Classes are based on modal class assignments. Percentages refer to row totals within each respective category.

Mental Health

Results from the multilevel models examining intercepts and changes (slopes) in mental health across *physical peer victimization groups* are shown in Table 7. The Low Stable reference group did not change over time in their internalizing or externalizing problems (non-significant slopes). The Chronic High physical victimization group was significantly higher in initial levels than the Low Stable group at baseline (*estimate* = 0.90, *SE* = .26, $p < .001$), and remained higher over time. Similarly, the Decreaser physical victimization group had significantly more internalizing problems at baseline than the Low Stable group (*estimate* = 0.29, *SE* = .11, $p < .01$). None of the physical victimization groups showed significant differences in change over time from the Low Stable group (see Figure 9A).

The Chronic high group was also significantly higher than the Low Stable group at baseline in their levels of externalizing problems (*estimate* = 0.60, *SE* = .14, $p < .001$), but did not significantly differ in rate of change. The Decreaser group was significantly higher in initial levels of externalizing than the Low Stable group (*estimate* = 0.18, *SE* = .04, $p < .001$). The Decreaser group also had a significantly different rate of change such that they were declining more in their externalizing than Low Stable group (*estimate* = -0.02, *SE* = .01, $p < .01$; see Figure 9B). There were no significant differences in initial levels or rate of change between the Low Stable group and Increaser group in either internalizing or externalizing problems.

Similar to the Low Stable physical victimization group, the Low Stable *relational peer victimization* group (reference group) did not show significant change over time in internalizing or externalizing problems (see Table 8). The Chronic High relational victimization group was significantly higher than the Low Stable group in initial levels of internalizing (*estimate* = 0.40, *SE* = .18, $p < .05$) and increased over time in internalizing problems at a significantly greater rate

than the Low Stable group (*estimate* = 0.15, *SE* = .05, $p < .01$). The Decreaser relational victimization group also increased in internalizing problems at a significantly greater rate than the Low Stable group (*estimate* = 0.09, *SE* = .04, $p < .05$), however the Decreaser group did not differ from the Low Stable group at baseline (see Figure 10A).

Figure 10B shows the patterns of change in externalizing problems for the four relational peer victimization groups. The Chronic High group was significantly higher at baseline in externalizing problems (*estimate* = 0.42, *SE* = .08, $p < .001$), but did not significantly differ from the Low Stable group in how their externalizing problems changed over time. The Decreasers also had significantly more externalizing problems than the Low Stable group at baseline (*estimate* = 0.19, *SE* = .06, $p < .01$). Similar to the physical victimization groups, there were no significant differences between the Increaser relational victimization group and the Low Stable group in baseline levels or rates of change of internalizing or externalizing problems.

With respect to the covariates, girls were consistently higher in internalizing problems at baseline across all models, whereas boys were consistently higher in externalizing problems at baseline. There were not significant sex differences in rates of change.

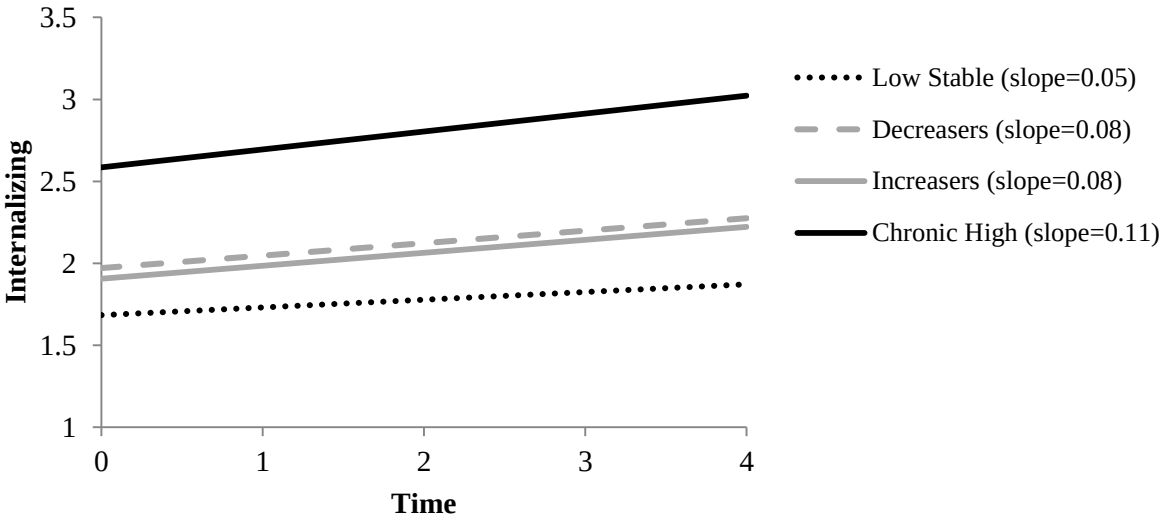
Table 7

Changes in mental health problems as a function of physical peer victimization group membership

	Internalizing Problems				Externalizing Problems			
	Intercept (baseline)		Slope (changes)		Intercept (baseline)		Slope (changes)	
	Est.	*SE*	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
Reference Group								
Low Stable (n = 1260)	1.684	0.353	0.047	0.099	0.118	0.106	0.020	0.029
Physical Peer Victimization Groups								
Chronic High (n = 102)	0.902***	0.257	0.062	0.070	0.598***	0.140	-0.054	0.038
Increasers (n = 115)	0.223	0.222	0.032	0.061	0.096	0.052	-0.018	0.012
Decreasers (n = 466)	0.287**	0.106	0.029	0.030	0.175***	0.036	-0.025**	0.009
Covariates								
Sex	0.274**	0.091	-0.040	0.025	-0.083**	0.028	0.009	0.007
Age at baseline	0.004	0.003	-0.001	0.001	0.001	0.001	0.000	0.000
SES	-0.043	0.032	0.003	0.009	-0.018	0.010	-0.001	0.003
Program	0.129	0.096	-0.042	0.026	0.021	0.028	-0.002	0.007

Note. Sex (0 = *male*, 1 = *female*), SES (maternal education), age, and program status (0 = control, 1 = program) were used in all models as covariates. Sample sizes for each trajectory group are based on class assignment using the posterior probability of group membership. *$p < .05$, **$p < .01$, ***$p < .001$.

A)



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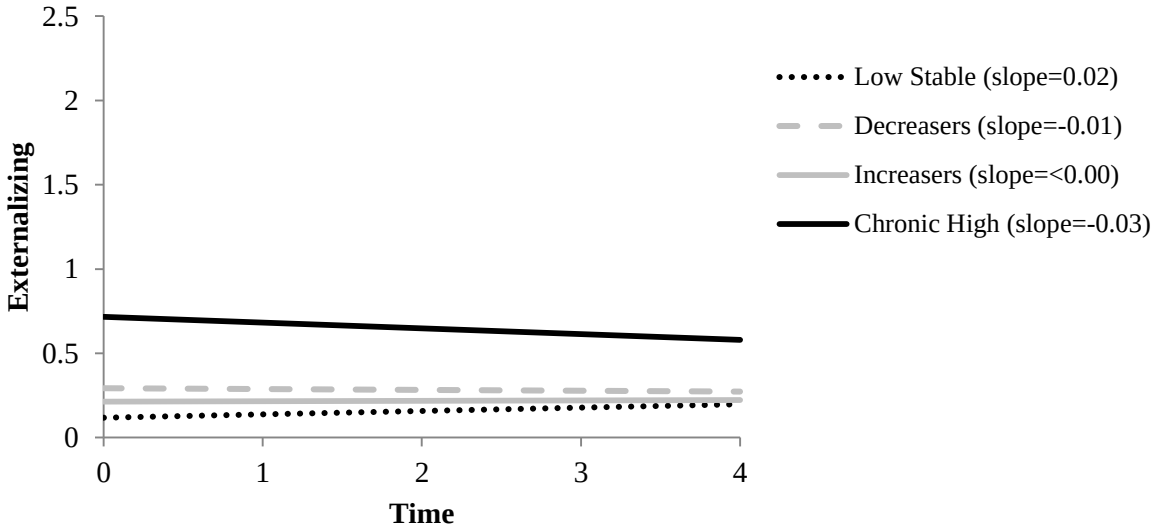


Figure 9. Trajectories of mental health as a function of physical peer victimization groups. A) Internalizing problems; B) Externalizing problems. *Note.* slope refers to change over time of each peer victimization group.

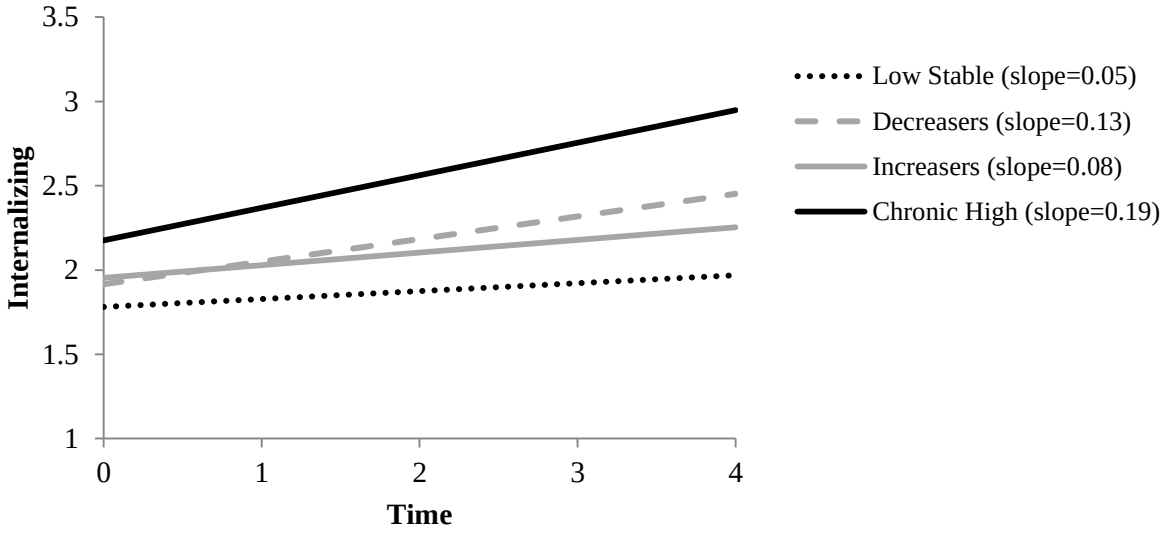
Table 8

Changes in mental health problems as a function of relational peer victimization group membership

	Internalizing Problems				Externalizing Problems			
	Intercept (baseline)		Slope (changes)		Intercept (baseline)		Slope (changes)	
	Est.	*SE*	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
Reference Group								
Low Stable (n = 1402)	1.781***	0.354	0.047	0.098	0.168	0.103	0.009	0.029
Relational Peer Victimization Groups								
Chronic High (n = 199)	0.395*	0.179	0.146**	0.051	0.424***	0.079	-0.037	0.021
Increasers (n = 169)	0.172	0.175	0.028	0.046	0.049	0.047	0.002	0.012
Decreasers (n = 174)	0.135	0.145	0.087*	0.043	0.191**	0.064	-0.020	0.014
Covariates								
Sex	0.225*	0.091	-0.049	0.025	-0.118***	0.030	0.012	0.007
Age at baseline	0.004	0.003	-0.001	0.001	0.000	0.001	0.000	0.000
SES	-0.043	0.032	0.004	0.009	-0.017	0.011	-0.001	0.003
Program	0.149	0.096	-0.044	0.026	0.028	0.028	-0.003	0.007

Note. Sex (0 = *male*, 1 = *female*), SES (maternal education), age, and program status (0 = control, 1 = program) were used in all models as covariates. Sample sizes for each trajectory group are based on class assignment using the posterior probability of group membership. *$p < .05$, **$p < .01$, ***$p < .001$.

A)



B)

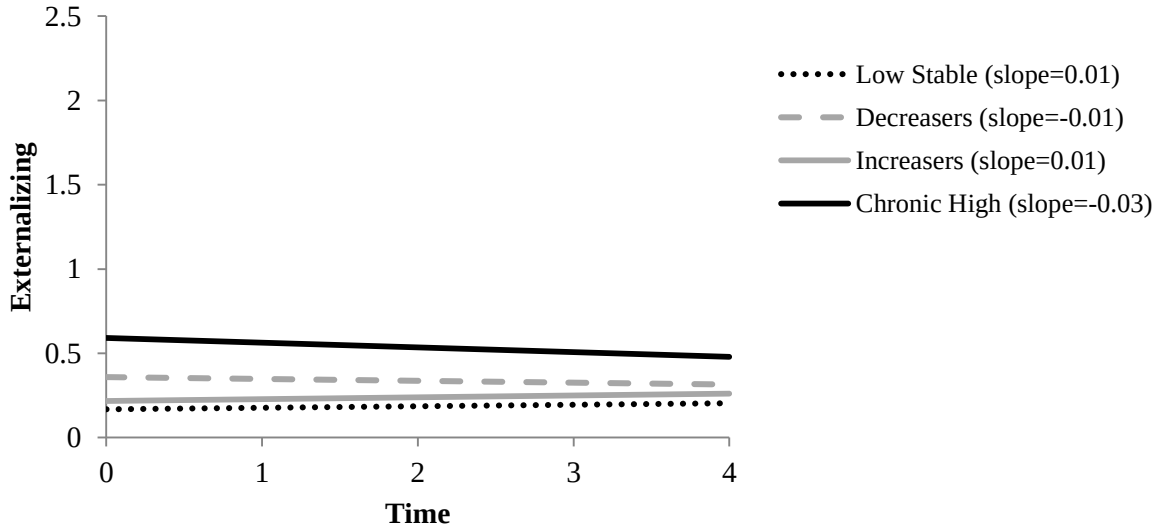


Figure 10. Trajectories of mental health as a function of relational peer victimization groups. A) Internalizing problems; B) Externalizing problems. *Note.* slope refers to change over time of each peer victimization group.

Social Competence

The results of the multilevel models examining trajectories of social competence across *physical peer victimization* groups are presented in Table 9 and displayed in Figure 11. The Low Stable physical victimization group showed significant gains in social competence over time (*estimate* = 0.89, *SE* = .42, $p < .05$). As can be seen in Figure 11, the Chronic High physical victimization group was much lower in social competence than all other groups and was significantly lower than the Low Stable group at baseline (*estimate* = -5.87, *SE* = .87, $p < .001$). The Decreaser group was also significantly lower in social competence than the Low Stable group at baseline (*estimate* = -1.74, *SE* = .49, $p < .001$). The Increaser physical victimization group did not differ from the Low Stable group in their initial levels of social competence. However, there was a significant difference between the Low Stable group and the Increaser group in the rate of change (*estimate* = -0.56, *SE* = .24, $p < .05$). That is, children in the Increaser physical peer victimization group were increasing in social competence at a significantly slower rate than children in the Low Stable group. All the other groups showed some improvements in social competence, however the Increaser group did not show any gains in social competence over time (see Figure 11).

Nearly identical patterns were observed for the *relational peer victimization* groups (see Table 10; Figure 12). The Chronic High relational victimization group was significantly lower in initial levels of social competence than the Low Stable group (*estimates* = -4.11, *SE* = .72, $p < .001$), but did not significantly differ in rate of change over time. Similarly, the Decreaser group was also significantly lower in social competence than the Low Stable group at baseline (*estimates* = -1.80, *SE* = .67, $p < .001$). The Decreaser group did not significantly differ from the Low Stable group in rate of change. Finally, the Increaser relational victimization group did not

significantly differ from the Low Stable group in levels of social competence at baseline, although they showed significantly slower rates of improvement in social competence (*estimate* = -0.40, *SE* = .18, $p < .05$; see Figure 12).

Overall, girls were higher at baseline in both measures of prosocial leadership and social competence. Furthermore, children with higher SES were also higher in both measures of social competence at baseline and showed steeper gains in prosocial leadership than children with lower SES. These patterns were consistent across all models.

Table 9

Changes in social competence as a function of physical peer victimization group membership

	Intercept (baseline)		Slope (changes)	
	Est.	*SE*	*Est.*	*SE*
Reference Group				
Low Stable (n = 1260)	15.884***	1.607	0.886*	0.418
Physical Peer Victimization Groups				
Chronic High (n = 102)	-5.870***	0.870	-0.219	0.237
Increasers (n = 115)	-0.815	0.868	-0.555*	0.241
Decreasers (n = 466)	-1.745***	0.491	-0.237	0.128
Covariates				
Sex	3.246***	0.408	0.060	0.104
Age at baseline	0.010	0.014	-0.007	0.004
SES	0.833***	0.140	0.029	0.036
Program	0.121	0.446	-0.039	0.115

Note. Sex (0 = *male*, 1 = *female*), SES (maternal education), age, and program status (0 = control, 1 = program) were used in all models as covariates. Sample sizes for each trajectory group are based on class assignment using the posterior probability of group membership. *p < .05, **p < .01, ***p < .001.

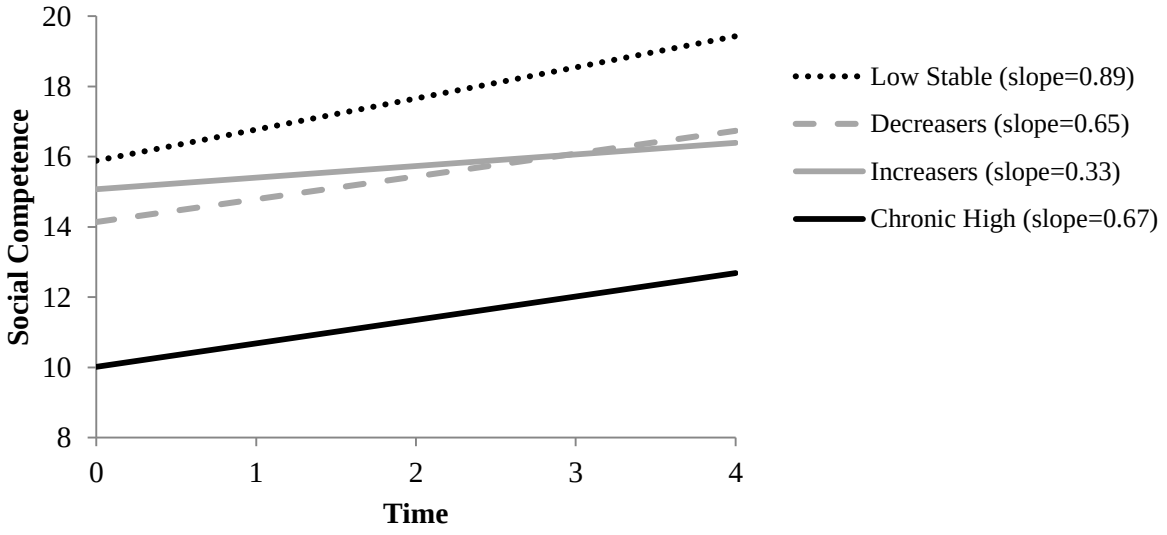


Figure 11. Trajectories of social competence as a function of physical peer victimization groups.

Note. slope refers to change over time of each peer victimization group.

Table 10

Changes in social competence as a function of relational peer victimization group membership

	Intercept (baseline)		Slope (changes)	
	Est.	*SE*	*Est.*	*SE*
Reference Group				
Low Stable (n = 1402)	15.317***	1.591	0.792*	0.412
Relational Peer Victimization Groups				
Chronic High (n = 199)	-4.110***	0.718	-0.254	0.198
Increasers (n = 169)	-0.111	0.692	-0.403*	0.182
Decreasers (n = 174)	-1.799***	0.666	-0.151	0.166
Covariates				
Sex	3.572***	0.408	0.105	0.104
Age at baseline	0.013	0.014	-0.006	0.004
SES	0.827***	0.142	0.031	0.036
Program	0.052	0.444	-0.051	0.116

Note. Sex (0 = *male*, 1 = *female*), SES (maternal education), age, and program status (0 = control, 1 = program) were used in all models as covariates. Sample sizes for each trajectory group are based on class assignment using the posterior probability of group membership. *p < .05, **p < .01, ***p < .001.

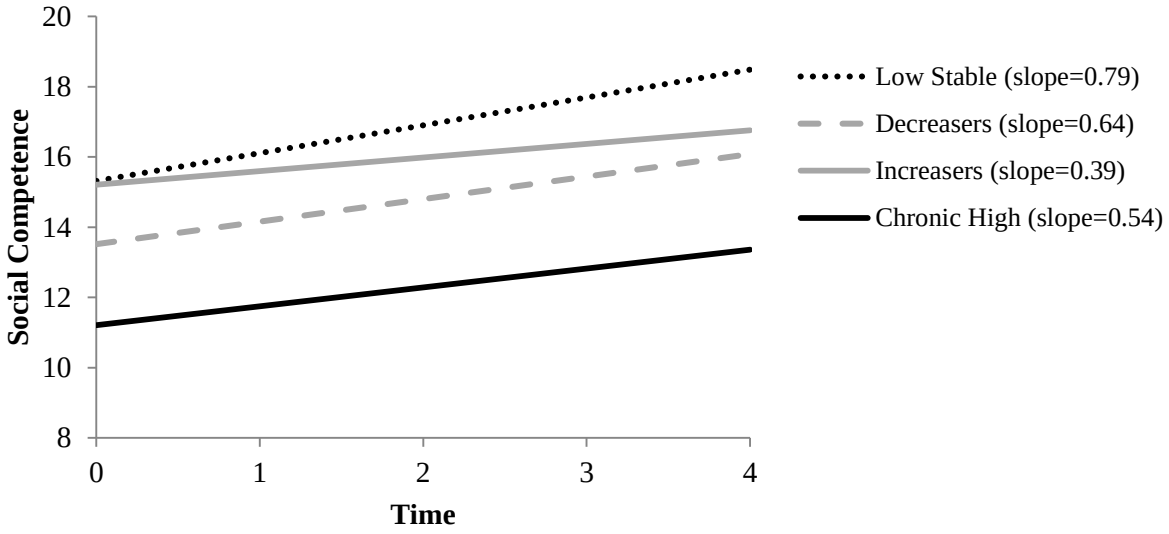


Figure 12. Trajectories of social competence as a function of relational peer victimization groups. *Note.* slope refers to change over time of each peer victimization group.

Experiences of School Climate

School climate trajectories across *physical peer victimization* groups showed similar patterns as the social competence trajectories. Specifically, Chronic High and Decreaser groups had significantly lower experiences of school climate at baseline (*estimates* = -15.01 and -9.96, respectively, *ps* < .001), whereas the increaser group did not significantly differ from the Low Stable group (see Table 11). The Increaser physical victimization group did show significant differences in the rate at which their experiences of school climate changed over time (*estimate* = -2.48, *SE* = .54, *p* < .001). While the Low Stable group showed a slight (non-significant) increase in experiences of school climate, the Increaser group declined over time in experiences of school climate (see Figure 13). The Decreaser physical victimization group showed significantly steeper increases in experiences of school climate relative to Low Stable group (*estimate* = 0.78, *SE* = .27, *p* < .01).

The patterns of results were identical for the *relational peer victimization* groups. That is, Chronic High and Decreaser relational victimization groups were significantly lower than Low Stable group at baseline (see Table 12). The Decreaser group showed significantly greater improvements in experiences of school climate than Low Stable group (*estimate* = 1.31, *SE* = .38, *p* < .01). Though the Increaser group did not differ from Low Stable group in experiences of school climate at baseline, they showed declines over time that significantly differed from the Low Stable group (*estimate* = -2.35, *SE* = .40, *p* < .001; see Figure 14).

Lastly, children who were older at baseline had significantly poorer initial experiences of school climate than younger children. Additionally, children in program schools had significantly higher experiences of school climate initially, however their rate of change was significantly lower than children in control schools.

Table 11

Changes in school climate as a function of physical peer victimization group membership

	Intercept (baseline)		Slope (changes)	
	Est.	*SE*	*Est.*	*SE*
Reference Group				
Low Stable (n = 1260)	64.531***	4.437	1.170	1.072
Physical Peer Victimization Groups				
Chronic High (n = 102)	-15.012***	2.308	-0.180	0.538
Increasers (n = 115)	-1.347	2.130	-2.482***	0.539
Decreasers (n = 466)	-9.955***	0.998	0.775**	0.271
Covariates				
Sex	0.192	0.812	-0.238	0.216
Age at baseline	-0.136***	0.039	-0.008	0.009
SES	0.434	0.289	-0.136	0.075
Program	2.622**	0.874	-0.676**	0.234

Note. Sex (0 = *male*, 1 = *female*), SES (maternal education), age, and program status (0 = control, 1 = program) were used in all models as covariates. Sample sizes for each trajectory group are based on class assignment using the posterior probability of group membership. *p < .05, **p < .01, ***p < .001.

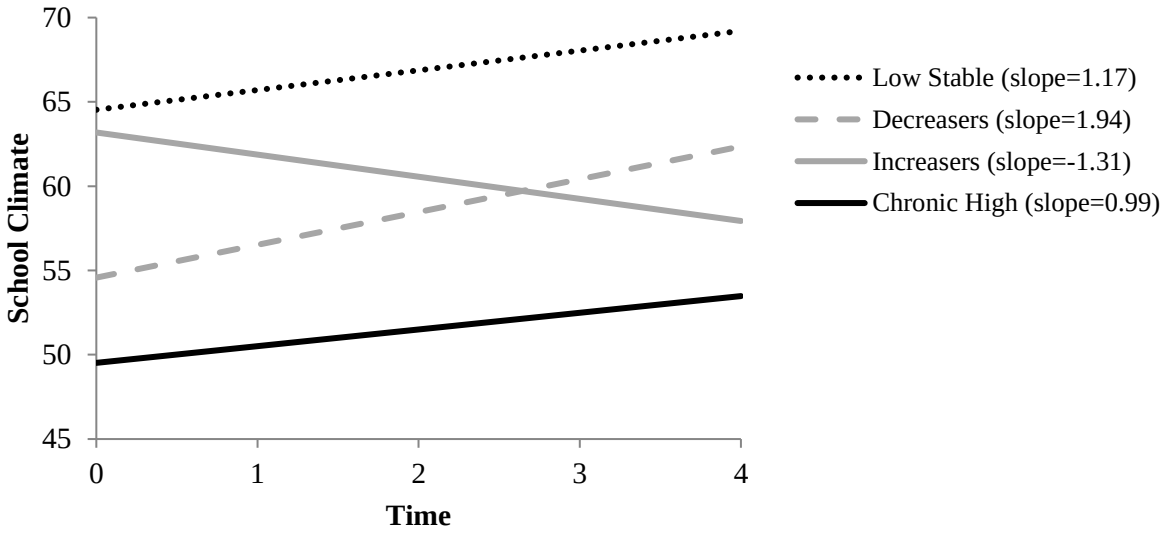


Figure 13. Trajectories of school climate as a function of physical peer victimization groups.

Note. slope refers to change over time of each peer victimization group.

Table 12

Changes in school climate as a function of relational peer victimization group membership

	Intercept (baseline)		Slope (changes)	
	Est.	*SE*	*Est.*	*SE*
Reference Group				
Low Stable (n = 1402)	61.036***	4.487	1.308	1.080
Relational Peer Victimization Groups				
Chronic High (n = 199)	-10.228***	1.549	-0.623	0.374
Increasers (n = 169)	1.062	1.579	-2.350***	0.400
Decreasers (n = 174)	-9.512***	1.498	1.306**	0.380
Covariates				
Sex	1.223	0.819	-0.127	0.213
Age at baseline	-0.118**	0.039	-0.008	0.009
SES	0.394	0.296	-0.116	0.075
Program	2.393**	0.864	-0.708**	0.230

Note. Sex (0 = *male*, 1 = *female*), SES (maternal education), age, and program status (0 = control, 1 = program) were used in all models as covariates. Sample sizes for each trajectory group are based on class assignment using the posterior probability of group membership. *p < .05, **p < .01, ***p < .001.

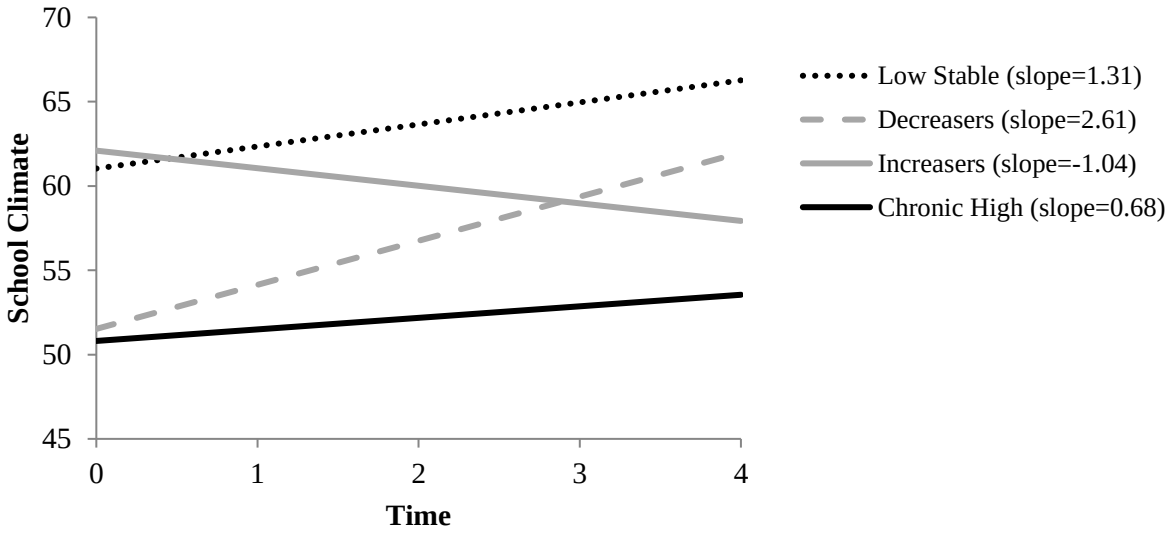


Figure 14. Trajectories of school climate as a function of relational peer victimization groups.

Note. slope refers to change over time of each peer victimization group.

Chapter 4: Discussion

Using longitudinal latent class analysis, I identified four groups of children with varying patterns of peer victimization across time. This person-centered analytic approach enabled me to investigate the trajectory of developmental risks associated with each group of children. I approached this research from a developmental-contextual perspective by considering risks associated with both individual development and the quality of children's environments. From this perspective, I examined the ways in which individual characteristics such as mental health vulnerabilities (internalizing and externalizing symptoms) and social skills (social competence), as well as context (experiences of school climate) differed as a function of severity of victimization experiences. By elucidating the mental health, social competencies and experiences of school climate among distinct groups of children we can better understand the heterogeneity of individual childhood experiences as not all children experience the same level of victimization over time.

I achieved two major research goals within this dissertation research. First, by employing a longitudinal person-oriented analytic approach using latent class analysis, I was able to illuminate heterogeneity in developmental patterns of children's peer victimization experiences. Second, using multilevel models I was able to show psychosocial factors (mental health, social competence, and experiences of school climate) that were associated with different groups of peer-victimized children. Findings from this study help demonstrate that children with differentiated experiences of peer victimization can vary in their patterns of development.

Heterogeneity in Children's Peer Victimization Experiences

Distinct peer victimization subgroups

As hypothesized, there were significant differences in the trajectories of peer victimization. These longitudinal patterns of victimization were similar for both physical and relational forms of peer victimization. Findings from the latent class analyses revealed that the largest proportion of children for physical victimization reported consistently low, stable (65%; "Low Stable") or decreasing (24%; "Decreasers") levels of physical peer victimization across time followed by an increasing trajectory subgroup (6%; "Increasers"), and a chronic, high trajectory subgroup (5%; "Chronic High"). For relational peer victimization, the majority of children followed a low trajectory (72%; "Low Stable"), and the remaining children followed high stable (10%; "Chronic High"), declining (9%; "Decreasers") and increasing (9%; "Increasers") trajectories.

Declining patterns of peer victimization

The low stable or declining levels of physical and relational peer victimization ("Low Stable" and "Decreasers") are both consistent with developmental theories of aggression which posit that aggressive behaviours are low or decline over the course of childhood because children gradually refine self-regulatory skills and learn to respect social norms as they age, and are thus are less likely to choose maladaptive responses to peer conflict (Tremblay, 2003; Tremblay & Nagin, 2005; Nærde, Ogden, Janson, & Zachrisson, 2014). For instance, increasing competence in social skills such as problem solving and perspective taking (Ladd, 2005) may enable children to address peer conflicts more effectively without resorting to retaliatory aggression. Similarly children's emotional regulation skills improve during the school-age years as they encounter increasing socialization demands from peers and family, which helps to prevent against engaging

in aggression when faced with peer bullying incidences. Studies have consistently demonstrated that children who become increasingly more emotionally regulated over the course of their elementary school years are less likely report peer victimization experiences over time (Giesbrecht, Leadbeater, & MacDonald, 2011; Kim & Cicchetti, 2010; Kim-Spoon, Cicchetti, & Rogosch, 2013; White, Jarrett, & Ollendick, 2013).

These social and emotional advances likely contribute to the low and declining levels of aggression and corresponding reports of peer victimization across childhood among the majority of children in this sample as well as other longitudinal samples. For instance, in a large-scale (n = 10,658) nationally representative longitudinal study following Canadian preschool children through to adolescence, Cote, Vaillancourt, LeBlanc, Nagin, & Tremblay (2006) found that the majority of children (52%) in their sample demonstrated desisting trajectories of physical aggression. Similarly, in another sample of Canadian children, Pepler, Jiang, Craig, & Connolly (2008) found that the majority of children (42%) in their sample report consistently low levels of relational aggression across elementary and middle school. Longitudinal studies examining peer victimization subgroups also report that the majority of children followed a low trajectory of victimization ranging from 56% to 85% (Barker et al., 2008; Leadbeater & Hoglund, 2009; Boivin, Petitclerc, Feng & Barker, 2010; Biggs et al., 2010).

High-risk atypical developmental patterns of peer victimization

Although most children followed low stable or declining trajectories of physical and relational peer victimization, a small subgroup of children reported high (5% for physical and 10% for relational "Chronic High" victims) or increasing (6% for physical and 9% for relational "Increasers" victims) levels of peer victimization over the course of elementary school. The percentages in these high-risk groups are consistent with percentages reported in other studies.

Percentages in the Chronic High trajectory group range from 2% to 12% and percentages of Increasers range from 10% to 25% among studies (Barker et al., 2008; Leadbeater & Hoglund, 2009; Boivin et al., 2010).

These trajectories reflect more severe and chronic developmental patterns of peer victimization. Such atypical patterns may suggest that while most children are able to resolve their peer conflicts more adaptively over time and thus report fewer victimization incidences over time, a small minority fail to do so. To date, we know little about why these children remain victimized over the course of their elementary school years. The majority of studies examining peer victimization in elementary school have addressed predictors of victimization risks by examining the *average* trajectory of peer victimization within a sample without accounting for heterogeneity in children's experiences (e.g., see Hanish & Guerra, 2002; Hanish et al., 2004; Casper & Card, in press for review). These studies have found that, on average, children decline in their trajectories of peer victimization (e.g., Leadbeater & Sukhawathanakul, 2011; Reavis et al., 2011; Rudolph et al., 2011). Consistent with these studies, on average, children in this sample declined in their physical and relational peer victimization over time but variation in both initial levels and slope indicate that there are individual differences. The findings from the latent class analyses clearly demonstrate that not all children follow the average declining trajectory and may differ in other areas of development.

Current studies examining risk factors associated with average trajectories of peer-victimized children have commonly identified internalizing and externalizing problems as main sources of variation in children's risk for peer victimization. This suggests that social-emotional difficulties may in part, explain why some children continue to follow high stable or increasing trajectories of victimization. For example, findings in a recent meta-analytic review revealed that

the average magnitude of associations between the two forms of peer victimization and internalizing and externalizing problems were moderate (correlations ranged between .31 to .45) among 137 child and adolescent samples (Casper & Card, 2016). Existent longitudinal person-centered studies that focused on late elementary and middle school-aged children are consistent with these associations (Boivin et al., 2010; Biggs et al., 2010; Haltigan & Vaillancourt, 2014; Giang & Graham, 2007; Rosen et al., 2009; Wang et al., 2010). For example, Boivin and colleagues (2010) found that children belonging to high stable and increasing trajectory subgroups become more emotional and socially withdrawn over time (grades 3 through 6) compared to children in the low, stable victimization subgroup. Similarly in their sample of third to fifth graders, Biggs and colleagues (2010) found that children belonging to high stable and increasing subgroups reported greater affective distress (negative mood) over time compared to the normative, low victimization group suggesting that chronically victimized children may have poorer emotional adjustment over time.

However, to date no studies that use person-centered analytic methodology have examined whether these mental health associations exist among younger children during their early elementary school years. Gaining self-confidence and self-esteem are important developmental tasks of childhood and adolescence, and the provision of support from peers help to provide positive feedback that foster these qualities. However, peer victimization experiences can compromise growth in these fundamental areas of development, particularly if the experience is pervasive and predominant (Ladd 2005; 2006). Peer victimization experiences can trigger depressive self-schemas (critical views of oneself, intrusive thoughts, and dysfunctional information processing) that contribute to risks for depression and anxiety later in life (Cole et al., 2014). Similarly early onset of physical aggressive behaviours may provoke peer conflict and

contribute to future externalizing problems (Cote et al., 2006; Tremblay & Nagin, 2005). However, as person-centered analytic studies are limited, it is unclear whether chronic or increasing peer victimization experiences during the early years coincide with high or increasing psychopathology over time for high-risk subgroups of victimized children. My findings from the multilevel analyses examining longitudinal associations between the subgroups and measures of mental health, social competence and experiences of school climate contribute to a better understanding of the trajectories of adjustment outcomes of high-risk subgroups of victimized children.

Psychosocial Development of Peer Victimized Children

Mental health and peer victimization trajectories

Children belonging to the Chronic High subgroup of physical peer victimization shared corresponding high levels of both externalizing and internalizing problems across time compared to the Low Stable subgroup. Specifically, the Chronic High subgroup had high initial levels that remained high across time. Children in the remaining two subgroups (Increasers and Decreasers) had higher initial levels of internalizing and externalizing problems than the Low Stable subgroups but did not differ in their rate of change.

These findings are consistent with past research that documents a strong link between children's mental health problems and peer victimization (Casper & Card, 2016). One explanation that accounts for the heterogeneity in mental health trajectories is that the group of children exhibiting mental health problems in conjunction with high levels of peer victimization over time had pre-existing problems that made them easier targets of peer aggression. For example, Leadbeater and Hoglund (2009) found that increasing levels of internalizing problems along with aggressive behaviours contribute to greater levels of peer victimization over the

course of grades one through three. Among fourth to sixth graders, Kochel, Ladd, & Rudolph (2012) found that peer victimization mediated the association between depressive symptoms and subsequent declines in peer acceptance suggesting that depressive symptoms can promote peer difficulties. Depressed or anxious children can display behaviours that become increasingly atypical for other children their age across elementary school (e.g., cry easily, withdrawing from group activities), and that have the potential to elicit disliking, or aggressive responses from their peers. Children with high levels of aggression may be neglected or actively rejected by their peers due to their disruptive nature (Ladd, 2006). Rudolph and colleagues (2013) found that early externalizing behaviours predicted increases in peer victimization over time, and greater likelihood of affiliating with peers who engage in deviant behaviours. Aggressive children often display problems with self-regulation and are more likely to retaliate aggressively to peer conflict, which can lead to further victimization (Toblin, Schwartz, Gorman, & Abou-ezzeddine, 2005). These studies demonstrate that early internalizing and externalizing problems can propel children onto a maladaptive social trajectory.

Another explanation is that mental health problems occur in response to peer victimization experiences. In a large-scale longitudinal study of children and adolescents in the UK, Zwierzynska et al. (2013) found that not only did peer victimization at age 8 and 10 predict the development of internalizing symptoms in early adolescence (age 11-14), they also found that victimization increased the odds of scoring on the extreme end of the distribution (>90th percentile) for depression and emotional problems. Specifically peer victimization predicted depression symptom persistence: the odds for persistently scoring in the top 10th percentile of depression scores were higher for victims than non-victims. Thus peer victimization affects not just incidence but also chronicity of depression problems. Similarly, in a sample of children in

grades 5 to 7, Perren et al. (2013) found that peer victimization increases externalizing problems partially through increasing hostile attributions suggesting peer victimization serves to intensify hostile attributions which, in turn, increases aggressive reactions toward others

In lieu of competing perspectives, peer victimization and mental health problems can have reciprocal influences on each other. The Chronic High subgroup of children in this sample followed high and stable internalizing and externalizing trajectories as well suggesting that symptoms may co-occur with peer victimization experiences over time. Specifically, the high initial levels of symptoms reported among the chronically victimized group of children indicate that children had adjustment difficulties early and experiences of chronic victimization may have prolonged their symptoms over time. In contrast, children in the Increaser group did not differ in their levels of symptoms compared to the Low Stable group suggesting that mental health difficulties alone may not explain why these children become vulnerable to their peers' aggression over time. On the hand, children in the Decreaser group had higher initial levels of internalizing and externalizing problems, as well as declining levels, compared to the Low Stable group. This finding suggests that declining adjustment difficulties may co-vary with declining levels of victimization. It is possible that existing mental health difficulties may have contributed to risks for victimization early, which may explain differences in initial levels, but declining symptoms may have exerted a protective, dampening effect on victimization. Children who become more skilled at regulating their emotions and aggression may become less targeted for their behaviours and more accepted by their peers.

Together, these findings are consistent with the theory that mental health can be both the precursor and consequence to peer victimization. Reijntjes and colleagues (2010; 2011) found in their extensive review of the peer victimization and mental health longitudinal literature, that

mean effect sizes for the paths between peer victimization and subsequent internalizing and externalizing problems, and between internalizing and externalizing problems and subsequent peer victimization were significant across studies. These reciprocal influences suggests that mental health vulnerabilities may place children at greater risk for peer victimization and the trauma of peer victimization experiences can also increase the risk of psychopathology over time depicting a cascading cycle.

Lastly, there were no differences in mental health trajectories (slope) by sex, age, SES, and program. However, there were notable sex differences in the intercept. Specifically females had higher initial levels of internalizing symptoms whereas males had higher initial levels of externalizing symptoms. These findings are consistent with past research on sex differences in child psychopathology (e.g., see Else-Quest, Hyde, Goldsmith, Van Hulle, 2006; Essau, Lewinsohn, Seeley, & Sasagawa, 2010; Zahn-Waxler, Shirtcliff, & Marceau, 2008). The consensus among reviews of the literature is that girls exhibit fewer externalizing problems because they mature faster biologically, cognitively, and socially and thus may acquire more adaptive ways of regulating their behaviours at an earlier age than boys. However, these advances can make girls more sensitive to their peers' approval or disapproval and more likely to ruminate on negative peer interactions, which can increase girls' vulnerability to internalizing problems.

Social competence and peer victimization trajectories

Children in the Chronic High victimization subgroups had low initial levels of social competence and remained low over time compared to children in the Low Stable victimization subgroups. Children in the Increasers victimization subgroups had similar initial levels of social competence as the Low Stable subgroups but did not increase in their social competence as

rapidly as the Low Stable subgroups. Children in the Decreasers victimization subgroups had similar social competence trajectories as the Low Stable subgroups.

In this study, social competence included advance forms of social skills such as the ability to be lead prosocially and in a socially responsible manner. Prosocial leadership and social responsibility are important individual characteristics that help promote children's relational development as well as protect against peer victimization, aggression and emotional problems (Leadbeater, Thompson, & Sukhawathanakul, 2016). Prosocial leadership consists of social skills necessary to maintain harmonious relationships and be a peer leader which includes the ability to share, offer help, show interest in others' ideas, give good suggestions, play well with other children, and recruit people to work together. Social responsibility measures children's ability to use prosocial behaviours for the greater good including looking for chances to help others, helping to solve peer conflicts, and showing a sense of community responsibility. Together, prosocial leadership and social responsibility reflect children's benevolent use of social competence skills to assist others (and themselves) to interact peacefully with their peers. The level of social competence among the majority of children in this sample increased over time (i.e., Low Stable and Decreasers subgroups), which is to be expected as children gradually master interpersonal skills including knowledge of social norms, perspective taking, emotion recognition and understanding (Ladd, 2005). However, considerable heterogeneity exists in the trajectories of social competence, which differed depending on the chronicity of children's peer victimization experiences over time.

The finding that children who are chronically victimized have lower social competence at baseline and continue to remain low across time suggests that these children may have had pre-existing social competence deficits that made them more vulnerable to their peer's aggression.

This finding is consistent with social–cognitive deficit perspectives, which purport that children who exhibit social information and emotion processing deficits including poor social skills, poor emotional understanding, fewer prosocial interactions, and hostile attribution biases, are more likely to be targets of their peers' aggression (Burt et al., 2008; Burt, Douglas Coatsworth, & Masten, 2016; Dharmi et al., 2005; Dodge et al., 2003; Kawabata et al., 2014). These children struggle to interpret benign or aggressive social cues in order to resolve conflicts peacefully and can become aggressive themselves over time and invite further aggression from their peers. For example, in a longitudinal study involving children in grades 1 to 7, Dodge and colleagues (2003) found that early social information processing problems predicted peer victimization, and also partially mediated the effect of peer victimization on later aggression. Similarly, problems with social information processing, specifically critical self-referent interpretations of peer experiences (e.g., "The <event> happened because I am not as good as other children"), has been linked to greater likelihood of peer victimization and subsequent internalizing problems (Prinstein, Cheah, & Guyer, 2005). Moreover, poor social competence can impede children's ability to form and maintain meaningful friendships. Emotional support from friends is an important moderator between peer victimization and mental health problems (Yeung Thompson & Leadbeater, 2013; Desjardins & Leadbeater, 2011).

It is also possible that exposure to peer victimization can limit development in social competence. Emerging research shows that peer victimization can predict poorer social-cognitive development over time (Boivin et al., 2010; Griese, Buhs, & Lester, 2016; Lansford, Malone, Dodge, Pettit, &Bates, 2010). For example, in a longitudinal study following children in kindergarten to grade three, Lansford and colleagues (2010) found a cascading effect of peer victimization on social information processing problems and aggression. Specifically,

mediational path models revealed a predictive cycle of social information processing problems and aggression on subsequent peer rejection. In contrast, children who develop greater social information processing skills and lower aggression over time facilitated the progress of peer liking and popularity. Similarly, Boivin et al. (2010) found that children grades 3-6 who were frequently victimized by their peers exhibited declines in social competence over time. In another sample of 3-6 graders, Griese and colleagues (2016) found that children who were chronically victimized over time (i.e., high stable group of children) exhibited co-occurring declines in prosocial behaviours. In contrast, children who have low levels of peer victimization over time had co-occurring increasing levels of prosocial behaviours.

Findings from the current study revealed that children in the Increaser subgroups for both physical and relational peer victimization had significantly slower growth in social competence compared to children in the Low Stable subgroups. These findings demonstrate the disparity in development between victimized and non/less frequently victimized children. Increasing exposure to peer victimization may limit opportunities for children to lead prosocially and reduce motivations to engage in a socially responsible manner. It may be difficult for victimized children to refine these skills over time if other children do not reciprocate their helping behaviours. Indeed, research has shown that victimized children's cognitions regarding their self-worth diminishes, and the beliefs that peers are more threatening strengthens over time (e.g., Cole et al., 2013; Sinclair et al., 2012; Troop-Gordon & Ladd, 2005). It is likely that these children feel that their efforts to lead prosocially and socially responsible "does not matter" because they are rejected. Alternatively the inability to develop these skills over time can contribute to peer rejection as failure to act prosocially or in a socially responsible manner can isolate children from engaging in peer activities.

In contrast, children in the Low Stable and Decreaser subgroups displayed corresponding increases in social competence over time compared to the Chronic High and Increasers subgroups. Despite having lower initial levels of social competence compared to the Low Stable groups, children in the Decreaser groups also showed similar growth in social competence with the Low Stable group. These findings suggest a protective effect of social competence. School-based programs that target children's social competence have the potential to reduce peer victimization. Programs that encourage members of the community to teach children how to deal peacefully with peer conflict, encourage helping behaviours, and enforce expectations of socially responsible behaviours can foster a positive school environment that condemns bullying behaviours. For example, the *WITS* programs offers developmentally appropriate strategies to help children deal with peer conflict and aims to create responsive by soliciting members of the community (e.g., teachers, parents, RCMP officers, Elders, athletes) to reinforce prosocial messages (Leadbeater & Sukhawathanakul, 2011). A recent evaluation of the implementation processes of the program found that reductions in peer victimization, internalizing and externalizing symptoms can be attributed to improvements in prosocial leadership and social responsibility (Leadbeater, Thompson, Sukhawathanakul, 2016). Similarly, an evaluation of the *Making Choices: Social Problem Solving Skills for Children* program, a school-based program designed to promote social competence, found that children in the program condition had lower levels of physical and relational aggression and higher levels of social competence at post-test compared to children in the control condition (Fraser et al., 2005).

Finally, there were a few demographic differences in the intercept and slope of social competence. Specifically, females had higher levels on both measures of social competence at baseline. This is consistent with past research that shows that girls tend to exhibit higher

empathy, prosociality, social skills and understanding of others' emotions than boys during the early school years (Zahn-Waxler et al., 2008). Children with higher SES also had higher levels on both measures of social competence at baseline, and had steeper increases in prosocial leadership than children with lower SES. Children's socioeconomic background is associated with variety of factors such as school readiness and academic achievement that could contribute to higher levels of social competence (Janus & Duku, 2007). Lastly, younger children increased more rapidly in prosocial leadership than older children. This effect was very small and is likely a function of when the developmental gains took place such that older children may have already plateaued in their prosocial leadership skills whereas younger children had greater room for development.

Experiences of school climate and peer victimization trajectories

Children in the Chronic High victimization subgroups had lower initial experiences of school climate and remained lower over time compared to children in the Low Stable victimization subgroups. Children in the Increasers victimization subgroups had similar initial levels of school climate to the Low Stable subgroups but reported declining experiences of school climate over time compared to the Low Stable subgroups, who reported increasingly positive experiences of school climate over time. Children in the Decreasers victimization subgroups had similar experiences of school climate trajectories as the Low Stable subgroups.

These findings suggest that exposure to peer victimization is associated with poorer experiences of school climate. It is possible that being a target of peer aggression fosters feelings of mistrust in members of the school community (including peers, teachers, and parents) and demonstrates that not all children are treated equally. This study is the first to show that children with increasing experiences of peer victimization (i.e., the Increasers), and children who were

chronically victimized early in their school years and continue to report high levels (i.e., the Chronic High), have distinct declining trajectories of school climate experiences compared to the majority of children who have more favourable perceptions of school climate over time. Moreover, this study is the first to examine the relationship between peer victimized children and experiences of school climate from a person-centered analytic perspective. These findings are consistent with the negative associations between peer victimization and experiences of school climate reported among older middle and high school samples (e.g., Gendron et al., 2011; Corrigan et al., 2010; Eliot et al., 2010).

Diminishing experiences of school climate have implications for other areas of functioning including academic achievement. In a cross-sectional study involving a sample of fifth graders, Wang and colleagues (2014) found that peer victimization was related to lower GPA and to a poorer perception of school climate, which was also associated with lower GPA. Persistent exposure to peer victimization coupled with poor perceptions of school climate can also contribute to an eroding sense of personal safety (Gage et al., 2014; Goldstein, Young, & Boyd, 2008) and school connectedness (Wilson, 2004; O'Brennan & Furlong, 2009), which can ultimately lead to withdrawal from school activities (Mehta, Cornell, Fan, & Gregory, 2013).

On the other hand, a school with a positive climate has implications for reducing the amount of peer aggression as children and adults in the school community are likely to reinforce helping behaviours and disapprove disruptive behaviours (Orpinas & Horne, 2009). In this study, although children in the Decreaser groups had poorer experiences of school climate at baseline compared to the Low Stable group, their experiences of school climate became increasingly positive over time. This finding suggests that declining levels of peer victimization is associated with improvements in experiences of school climate over time. It is possible that children in the

Decreaser group felt increasingly supported by their school community and received the help they needed to reduce the frequency of victimization over time. A positive school climate may be made up of more supportive teachers that students trust will provide help and intervene during peer conflicts. For example, positive teacher-student relationships have been shown to predict lower levels of peer victimization among child (Elledge, Elledge, Newgent, & Cavell, 2016; Leadbeater, Sukhawathanakul, Smith, & Bowen, 2015) and adolescent samples (Yeung & Leadbeater, 2010). Accumulating research with older middle and high school samples suggests that positive school climates can reduce the prevalence of school violence (Brookmeyer, Fanti, & Henrich, 2006; Goldstein, Young, & Boyd, 2008; Birkett et al., 2009). Positive school climates has also been linked to fewer mental health symptoms in addition to lower levels of peer victimization (Leadbeater, Sukhawathanakul, Thompson and Holfeld, 2015). Enhancing school climate has implications for school-based intervention programs aimed at reducing bullying and peer victimization. For example, the *Expect Respect Project* is a school violence prevention program focused on improving school climates by reinforcing expectations for respectful and healthy behaviours in student relationships (Meraviglia, Becker, Rosenbluth, Sanchez, & Robertson, 2003). The multilevel program has 5 components including classroom curriculum, staff training, policy development, parent education, and support services. Findings from an evaluation of the program involving fifth graders demonstrated improvements in staffs' and students' ability to identify bullying-related problems, and increases in students' perceptions that adults in their school will intervene in bullying situations (Meraviglia et al., 2003).

There were few demographic and program differences in intercept and slope of school climate. Specifically, older children reported less positive experiences of school climate at baseline compared to younger children. The school climate portion of the survey was

administered to children in grades three and up. It may be that older children have a better understanding of the concepts involved in the measure of school climate so they are more likely to use the full range of the scale. On average, children in program schools had more positive experiences of school climate at baseline and increased less rapidly over time than children in control schools. It is difficult to make conclusions about program effects in this study as implementation levels were not examined. Implementation fidelity is a significant contribution to how programs reduce children's peer victimization and associated mental health problems. The relationship between program implementation and program outcomes has been examined in previous research. Leadbeater, Thompson, and Sukhawathanakul (2016) found that adherence and integration of program components lead to increases in children's engagement with the program (i.e., responsiveness) which in turn increased protective factors that were related to declines in peer victimization, internalizing and externalizing problems. More research is needed to understand how program implementation factors interact with the developmental trajectories of different groups of high-risk children.

Limitations and Future Directions

There are several limitations in this study that are important to discuss. First, the study relied on self-reported measures of peer victimization. Although past research has demonstrated that self-reports are a reliable source of information to assess the frequency and severity of children's peer victimization across time (e.g., Desjardins, Yeung Thompson, Sukhawathanakul, Leadbeater, & MacDonald, 2013), peer nominations in addition to self-reports may provide a more comprehensive representation of children's peer victimization experiences. For example, Ladd and Kochenderfer-Ladd (2002) found in their study comparing multiple informants of peer victimization that peer reports in addition to other informants (self, teacher, parent) were a more

reliable estimate of children's relational adjustment than any single informant measure, including self-reports. The authors also noted that data from the four informants became increasingly concordant over time. The inclusion of other sources of information in this study, namely teacher and parent reports of mental health problems and social competence, help to offset the limitations of relying on self-reports as a single informant of children's adjustment. Teachers and parents report on children's social and emotional adjustment (i.e., internalizing and externalizing symptoms, prosocial leadership, social responsibility, school climate), which depicts a fuller portrait of children's overall functioning in school and relationships with their peers (e.g., gets along well with other students, shares toys, etc.). Future research may benefit from gathering the responses of other informants such as school principals to report on school and neighbourhood climates. School principals may offer additional information about children's environments such as the level of poverty and community violence, which have been shown to predict aggression in school (Guerra, Rowell Huesmann, & Spindler, 2003). Additionally, observers could be used to report on the interactions between students and teachers in order to provide a more objective measure of school climate free from responder bias.

A second limitation of this study is that the children in this study attended rural schools in Canada and were predominately Caucasian. Therefore, the findings within the current sample may not generalize to urban schools and/or more heterogeneous populations of children. In future studies, it would be valuable to investigate whether the current results are replicated in inner-city samples or among ethnic minority groups. Research suggests that children may differ in their reports of peer victimization depending on their geographic locations. For example, Leadbeater, Sukhawathanakul, Smith, Yeung Thompson, Gladstone, and Sklar (2013) found that children grades 4 to 7 in rural communities in British Columbia reported higher levels of peer

victimization compared to their urban counterparts. It is possible that in contexts with higher community risks such as neighbourhoods with a disproportional amount of violence or poverty, peer victimization may have a more detrimental impact on children's development as well as their perceptions of school climate.

A third limitation is that the casual directions of the relationships cannot be determined from this research. Individual patterns of peer victimization could lead to distinct patterns of mental health, social competence, and perceptions of school climate, or vice versa. For example, children in the increasing peer victimization group also showed slower developments of social competence. It is unknown whether experiencing increasing peer victimization limits their development of social competence or if children whose social competence skills develop slower lead to increasing victimization. All that can be gleaned is that these relationships coincide with one another but it cannot be established which is the causal determinant. Greater temporal resolution of these processes (i.e., more frequent assessments) would provide greater insight into the temporal sequencing of events, which would allow for greater understanding of the leading cause.

Finally, more research is needed to determine whether the peer victimization subgroups differed as a function of program status. Although program effects are outside the scope of this research and are controlled for in all models, future research may want to examine whether the developmental trajectories of victimized children vary in schools with high or low program implementation fidelity. The *WITS* programs aims to prevent peer victimization by enhancing protective processes including prosocial leadership and social responsibility (Leadbeater, Thompson, & Sukhawathanakul, 2016). Therefore it is possible that victimized children belonging in program schools that demonstrate strong adherence to and integration of program

components may show improvements in their mental health symptoms, social competence, and experiences of school climate over time compared to victimized children in the control schools.

Implications

These findings imply that children with differing patterns of victimization cannot be addressed with a uniform 'one size fits all' approach. Universal school-based programs may promote harmonious relationships among children who already have the fundamental social skills to take advantage of program strategies. However, universal programs may not reach vulnerable children who do not have these skills. For example, victims who display internalizing or externalizing symptoms may attempt to follow the program suggestions but may ultimately become frustrated when their peers continue to victimize them despite their efforts.

Helping educators and parents identify and assisting the specific needs of at-risk children may provide a more supportive, targeted approach. Soliciting the help of peer leaders to engage in the process of helping their at-risk peers navigate challenging social situations (e.g., how to walk away effectively during a confrontation) may also be beneficial. For example, a greater focus on fostering social competence in children who are developmentally lagging in these skills may help mitigate their increasing experience of peer victimization. Encouraging peer leaders to mentor at-risk children can further promote the development of social skills among excluded children who may not have the opportunity to practice their skills. Universal peer victimization prevention programs may also want to consider including a program component in addition to their whole-school curriculum that targets at-risk children in order to broaden their effectiveness.

Indicated or selective interventions for victims and bullies have been shown to be effective in reducing negative outcomes such as aggression among high-risk youth (see Ferguson et al., 2007 for review). For example, the *Social Skills Group Intervention (SSGRIN)* is social

skills training program that specifically targets highly disliked, socially anxious, and bullied elementary school children (DeRosier, 2004). The program components include basic behavioural and cognitive social skills training, building adaptive coping strategies for social problems of teasing and peer pressure, and reinforcing prosocial and socially responsible attitudes. Findings from an evaluation of the *SSGRIN* program found that victimized children in the program group showed increased peer liking, self-esteem and self-efficacy post intervention compared to children in the control group. Program children also showed greater declines in social anxiety and aggression than children in the control group. Similarly, the *Social Skills Training Programme* is another program that aims to improve the social skills of victimized elementary school children (Fox & Boulton, 2003). Program components include teaching children appropriate social skills for creating and maintaining friendships (e.g., conversation skills, how to join in and play with others, how to give compliments), and strategies for dealing with bullying situations. Findings from an evaluation of the program showed that children assigned to the intervention group showed greater increases in global self-worth compared children in the control group. These encouraging findings demonstrate the usefulness of selective interventions for victimized children. However, more research is needed to evaluate the efficacy of these targeted interventions that are disseminated in the conjunction with other multilevel whole-school programs.

Summary and Conclusion

In summary, these findings draw attention to the heterogeneity in the level and change in peer victimization during the early elementary school years that is typically missed with more traditional variable-centered analytic approaches. This study is the first to examine the heterogeneity in children's peer victimization experiences in relation to a range of individual and

contextual psychosocial outcomes to offer a clearer picture of the distinct pattern of development among children. Children who report consistently high levels of peer victimization over time had poorer developmental outcomes over time. These children appear to be disadvantaged early, displaying higher levels of mental health problems and lower levels of social competence and poorer perceptions of school climate than their less victimized peers. Children who reported increasing victimization over time also had poorer developmental outcomes compared to children who reported low or declining levels of victimization. Although these children had similar starting points as the normative group of children, their increasing level of victimization was associated with slower gains in social competence and declining school climate over time.

It is clear that not all children have the same peer victimization experiences across the elementary school years. Prevention programs may benefit from targeting the specific needs of children within each victimization group. Ultimately the goal would be to prospectively identify children within at-risk subgroups to provide early intervention that will target their unique needs.

References

Astor, R. A., Benbenishty, R., Zeira, A., & Vinokur, A. (2002). School climate, observed risky behaviors, and victimization as predictors of high school students' fear and judgments of school violence as a problem. Health Education & Behavior, 29(6), 716-736.

Barker, E. D., Boivin, M., Brendgen, M., Fontaine, N., Arseneault, L., Vitaro, F., ... & Tremblay, R. E. (2008). Predictive validity and early predictors of peer-victimization trajectories in preschool. *Archives of General Psychiatry, 65(10)*, 1185-1192.

Barker, E. D., Arseneault, L., Brendgen, M., Fontaine, N., & Maughan, B. (2008). Joint development of bullying and victimization in adolescence: Relations to delinquency and self-harm. *Journal of the American Academy of Child & Adolescent Psychiatry*, 47(9), 1030-1038.

Birkett M., Espelage D. L., Koenig B. W. (2009). LGB and questioning students in schools: The moderating effects of homophobic bullying and school climate on negative outcomes. *Journal of Youth and Adolescence*, 38, 989–1000. Doi: 10.1007/s10964-008-9389-1

Blandon, A. Y., Calkins, S. D., Grimm, K. J., Keane, S. P., & O'Brien, M. (2010). Testing a developmental cascade model of emotional and social competence and early peer acceptance. *Development and Psychopathology*, 22(04), 737-748.

Boivin, M., Petitclerc, A., Feng, B., & Barker, E. D. (2010). The developmental trajectories of peer victimization in middle to late childhood and the changing nature of their behavioral correlates. *Merrill-Palmer Quarterly*, *56*(3), 231-260.

Brookmeyer, K. A., Fanti, K. A., & Henrich, C. C. (2006). Schools, parents, and youth violence: A multilevel, ecological analysis. *Journal of Clinical Child and Adolescent Psychology*, *35*(4), 504-514.

Bronfenbrenner, U. (1994). Ecological models of human development. *Readings on the development of children, 2*, 37-43.

Browning, C., Cohen, R., & Warman, D. M. (2003). Peer social competence and the stability of victimization. *Child Study Journal*, 33,73−90

Buhs, E. S., Ladd, G. W., & Herald, S. L. (2006). Peer exclusion and victimization: Processes that mediate the relation between peer group rejection and children's classroom engagement and achievement? *Journal of educational psychology*, 98(1).

Burt, K. B., Obradović, J., Long, J. D., & Masten, A. S. (2008). The interplay of social competence and psychopathology over 20 years: Testing transactional and cascade models. *Child development*, *79*(2), 359-374.

Burt, K. B., Douglas Coatsworth, J., & Masten, A. S. (2016). Competence and psychopathology in development. *Developmental Psychopathology*.

Caldwell, C. B., & Pianta, R. C. (1991). A measure of young children's problem and competence behaviors: The Early School Behavior Scale. *Journal of Psychoeducational Assessment*, *9*(1), 32-44.

Cardoos, S. L., & Hinshaw, S. P. (2011). Friendship as protection from peer victimization for girls with and without ADHD. *Journal of Abnormal Child Psychology*, 39(7), 1035-1045.

Card, N. A., & Little, T. D. (2006). Proactive and reactive aggression in childhood and adolescence: A meta-analysis of differential relations with psychosocial adjustment. *International Journal of Behavioral Development*, 30(5), 466-480.

Casper & Card (2016). Overt and relational peer victimization: A Meta-analytic review of their overlap and associations with social-psychological adjustment. *Child Development*.

Cassidy, W., Faucher, C., & Jackson, M. (2013). Cyberbullying among youth: A comprehensive

review of current international research and its implications and application to policy and practice. *School Psychology International*, 0143034313479697.

Chang, L. (2003). Variable effects of children's aggression, social withdrawal, and prosocial leadership as functions of teacher beliefs and behaviors. *Child development*, *74*(2), 535-548.

Cillessen, A. H., & Bellmore, A. D. (2011). Social skills and social competence in interactions with peers. *The Wiley-Blackwell Handbook of Childhood Social Development, Second Edition*, 393-412.

Cohen, J., McCabe, L., Michelli, N. M., & Pickeral, T. (2009). School climate: Research, policy, practice, and teacher education. The Teachers College Record, 111(1), 180-213.

Cook, C. R., Williams, K. R., Guerra, N. G., Kim, T. E., & Sadek, S. (2010). Predictors of bullying and victimization in childhood and adolescence: A meta-analytic investigation. *School Psychology Quarterly*, 25(2), 65.

Cole, D. A., Dukewich, T. L., Roeder, K., Sinclair, K. R., McMillan, J., Will, E., ... & Felton, J. W. (2014). Linking peer victimization to the development of depressive self-schemas in children and adolescents. *Journal of Abnormal Child Psychology*, *42*(1), 149-160.

Cole, D. A., Maxwell, M. A., Dukewich, T. L., & Yosick, R. (2010). Targeted peer victimization and the construction of positive and negative self-cognitions: Connections to depressive symptoms in children. *Journal of Clinical Child & Adolescent Psychology*, *39*(3), 421-435.

Corrigan, M. W., Klein, T. J., & Isaacs, T. (2010). Trust Us: Documenting the Relationship of Students' Trust in Teachers to Cognition, Character, and Climate. Journal of Research in Character Education, 8(2), 61-73.

Côté, S., Vaillancourt, T., LeBlanc, J. C., Nagin, D. S., & Tremblay, R. E. (2006). The development of physical aggression from toddlerhood to pre-adolescence: A nation wide longitudinal study of Canadian children. Journal of abnormal child psychology, 34(1), 68-82.

Craig, W., Harel-Fisch, Y., Fogel-Grinvald, H., Dostaler, S., Hetland, J., Simons-Morton, B., ... & Pickett, W. (2009). A cross-national profile of bullying and victimization among adolescents in 40 countries. International Journal of Public Health, 54(2), 216-224.

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. Psychological bulletin, 115(1), 74.

Crick, N. R., & Grotpeter, J. K. (1996). Children's treatment by peers: Victims of relational and overt aggression. *Development and Psychopathology*, *8*(02), 367-380.

DeRosier, M. E. (2004). Building relationships and combating bullying: Effectiveness of a school-based social skills group intervention. *Journal of Clinical Child and Adolescent Psychology*, *33*(1), 196-201.

Desjardins, T. L., & Leadbeater, B. J. (2011). Relational victimization and depressive symptoms in adolescence: Moderating effects of mother, father, and peer emotional support. *Journal of Youth and Adolescence*, 40(5), 531-544.

Desjardins, T., Yeung Thompson, R. S., Sukhawathanakul, P., Leadbeater, B. J., & MacDonald, S. W. (2013). Factor structure of the Social Experience Questionnaire across time, sex, and grade among early elementary school children. *Psychological assessment*, *25*(4), 1058.

Dhami, M. K., Hoglund, W. L., Leadbeater, B. J., & Boone, E. M. (2005). Gender-linked risks

for peer physical and relational victimization in the context of school-level poverty in first grade. *Social Development*, 14(3), 532-549.

Dodge, K. A., Lansford, J. E., Burks, V. S., Bates, J. E., Pettit, G. S., Fontaine, R., & Price, J. M. (2003). Peer rejection and social information‐processing factors in the development of aggressive behavior problems in children. *Child Development*, *74*(2), 374-393.

Eliot, M., Cornell, D., Gregory, A., & Fan, X. (2010). Supportive school climate and student willingness to seek help for bullying and threats of violence. *Journal of School Psychology*, 48(6), 533-553.

Elledge, L. C., Elledge, A. R., Newgent, R. A., & Cavell, T. A. (2016). Social risk and peer victimization in elementary school children: the protective role of teacher-student relationships. *Journal of abnormal child psychology*, *44*(4), 691-703.

Elsaesser, C., Gorman-Smith, D., & Henry, D. (2013). The role of the school environment in relational aggression and victimization. *Journal of Youth and Adolescence*, *42*(2), 235-249.

Else-Quest N, Hyde J, Goldsmith HH, Van Hulle CA. 2006. Gender differences in temperament: a meta-analysis. *Psychol. Bull.* 132:33–72

Essau, C. A., Lewinsohn, P. M., Seeley, J. R., & Sasagawa, S. (2010). Gender differences in the developmental course of depression. *Journal of Affective Disorders*, *127*(1), 185-190.

Ferguson, C. J., San Miguel, C., Kilburn, J. C., & Sanchez, P. (2007). The Effectiveness of School-Based Anti-Bullying Programs A Meta-Analytic Review. *Criminal Justice Review*, 32(4), 401-414.

Flaspohler, P. D., Elfstrom, J. L., Vanderzee, K. L., Sink, H. E., & Birchmeier, Z. (2009). Stand by me: The effects of peer and teacher support in mitigating the impact of bullying on

quality of life. Psychology in the Schools, 46(7), 636-649.

Fox, C., & Boulton, M. (2003). Evaluating the effectiveness of a social skills training (SST) programme for victims of bullying. *Educational Research*, *45*(3), 231-247.

Fraser, M. W., Galinsky, M. J., Smokowski, P. R., Day, S. H., Terzian, M. A., Rose, R. A., & Guo, S. (2005). Social information-processing skills training to promote social competence and prevent aggressive behavior in the third grades. *Journal of Consulting and Clinical psychology*, *73*(6), 1045.

Gage, N. A., Prykanowski, D. A., & Larson, A. (2014). School climate and bullying victimization: A latent class growth model analysis. School psychology quarterly, 29(3), 256.

Gallay L (2006). Social responsibility. In LR Sherrod, R Kassimir, C Flanagan, & A. Syvertsen (Eds.), Youth activism: An international encyclopedia (pp. 509-602). Westport, CT: Greenwood.

Gendron, B. P., Williams, K. R., & Guerra, N. G. (2011). An analysis of bullying among students within schools: Estimating the effects of individual normative beliefs, self-esteem, and school climate. *Journal of school violence,* 10(2), 150-164.

Giang, M. T., & Graham, S. (2008). Using latent class analysis to identify aggressors and victims of peer harassment. *Aggressive Behavior*, 34(2), 203-213.

Giesbrecht, G. F., Leadbeater, B. J., & MacDonald, S. W. (2011). Child and context characteristics in trajectories of physical and relational victimization among early elementary school children. *Development and psychopathology*, 23(1), 239.

Goldstein, S. E., Young, A., & Boyd, C. (2008). Relational aggression at school: Associations with school safety and social climate. *Journal of Youth and Adolescence*, *37*(6), 641-654.

Graham, S., Bellmore, A. D., & Mize, J. (2006). Peer victimization, aggression, and their co-occurrence in middle school: Pathways to adjustment problems. *Journal of Abnormal Child Psychology*, 34(3), 349-364.

Griese, E. R., & Buhs, E. S. (2013). Prosocial Behavior as a Protective Factor for Children's Peer Victimization. *Journal of Youth and Adolescence*, 1-14.

Griese, E. R., Buhs, E. S., & Lester, H. F. (2016). Peer victimization and prosocial behavior trajectories: Exploring sources of resilience for victims. *Journal of Applied Developmental Psychology*, *44*, 1-11.

Goldstein, S. E., Young, A., & Boyd, C. (2008). Relational aggression at school: Associations with school safety and social climate. *Journal of Youth and Adolescence*, 37(6), 641-654.

Guerra, N. G., Rowell Huesmann, L., & Spindler, A. (2003). Community violence exposure, social cognition, and aggression among urban elementary school children. *Child Development*, *74*(5), 1561-1576.

Haltigan, J. D., & Vaillancourt, T. (2014). Joint trajectories of bullying and peer victimization across elementary and middle school and associations with symptoms of psychopathology. *Developmental Psychology*, 50(11), 2426.

Hanish, L. D., & Guerra, N. G. (2002). A longitudinal analysis of patterns of adjustment following peer victimization. *Development and Psychopathology, 14,* 69-89.

Hawker, D.S.J. & Boulton, M.J. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry, 41*, 441-455.

Hawley, P. H. (2003). Prosocial and coercive configurations of resource control in early adolescence: A case for the well-adapted Machiavellian. *Merrill-Palmer Quarterly*, 279-

309.

Hawley, P. H., Little, T. D., & Card, N. A. (2008). The myth of the alpha male: A new look at dominance-related beliefs and behaviors among adolescent males and females. *International Journal of Behavioral Development*, *32*(1), 76-88.

Henricsson, L., & Rydell, A. M. (2006). Children with behaviour problems: The influence of social competence and social relations on problem stability, school achievement and peer acceptance across the first six years of school. Infant and Child Development, 15(4), 347-366.

Hong, J. S., & Espelage, D. L. (2012). A review of research on bullying and peer victimization in school: An ecological system analysis. *Aggression and Violent Behavior*, 17(4), 311-322.

Holt, M. K., & Espelage, D. L. (2007). Perceived social support among bullies, victims, and bully-victims. *Journal of Youth and Adolescence*, 36(8), 984-994.

Janus, M., & Duku, E. (2007). The school entry gap: Socioeconomic, family, and health factors associated with children's school readiness to learn. *Early education and development*, *18*(3), 375-403.

Jenkins, L. N., & Demaray, M. K. (2012). Social support and self-concept in relation to peer victimization and peer aggression. *Journal of School Violence*, 11(1), 56-74.

Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass*, 2(1), 302-317.

Kawabata, Y., Tseng, W. L., & Crick, N. R. (2014). Adaptive, maladaptive, mediational, and bidirectional processes of relational and physical aggression, relational and physical victimization, and peer liking. *Aggressive Behavior*, *40*(3), 273-287.

Kim-Spoon, J., Cicchetti, D., & Rogosch, F. A. (2013). A longitudinal study of emotion

regulation, emotion lability-negativity, and internalizing symptomatology in maltreated and nonmaltreated children. *Child Development, 84*(2), 512-527.

Klein, J., Cornell, D., & Konold, T. (2012). Relationships between bullying, school climate, and student risk behaviors. *School Psychology Quarterly*, *27*(3), 154.

Khoury-Kassabri, M., Benbenishty, R., & Astor, R. A. (2005). The effects of school climate, socioeconomics, and cultural factors on student victimization in Israel. *Social Work Research*, 29(3), 165-180.

Kochenderfer-Ladd, B., & Wardrop, J. L. (2001). Chronicity and instability of children's peer victimization experiences as predictors of loneliness and social satisfaction trajectories. *Child Development,* 72(1), 134-151.

Kokko, K., Tremblay, R. E., Lacourse, E., Nagin, D. S., & Vitaro, F. (2006). Trajectories of prosocial behavior and physical aggression in middle childhood: Links to adolescent school dropout and physical violence. *Journal of Research on Adolescence*, 16(3), 403-428.

Koth, C. W., Bradshaw, C. P., & Leaf, P. J. (2008). A multilevel study of predictors of student perceptions of school climate: The effect of classroom-level factors. Journal of Educational Psychology, 100(1), 96.

Ladd, G. W. (2005). *Children's peer relations and social competence: A century of progress*. Yale University Press.

Ladd, G. W. (2006). Peer rejection, aggressive or withdrawn behavior, and psychological maladjustment from ages 5 to 12: An examination of four predictive models. *Child Development*, 77(4), 822-846.

Ladd, G. W., Ettekal, I., Kochenderfer-Ladd, B., Rudolph, K. D., & Andrews, R. K. (2014).

Relations among chronic peer group rejection, maladaptive behavioral dispositions, and early adolescents' peer perceptions. *Child Development*, *85*(3), 971-988.

Ladd, G. W., & Sechler, C. M. (2013). Young children's peer relations and social competence. Handbook of research on the education of young children, 33-66.

Lansford, J. E., Malone, P. S., Dodge, K. A., Pettit, G. S., & Bates, J. E. (2010). Developmental cascades of peer rejection, social information processing biases, and aggression during middle childhood. *Development and Psychopathology*, *22*(03), 593-602.

Leadbeater, B. and Hoglund, W. (2009). The effects of peer victimization and physical aggressive on changes in internalizing from first to third grade. *Child Development*, 80(3), 843-859.

Leadbeater, B., & Sukhawathanakul, P. (2011). Multicomponent programs for reducing peer victimization in early elementary school: A longitudinal evaluation of the WITS primary program. *Journal of Community Psychology*, *39*(5), 606-620.

Leadbeater, B., Sukhawathanakul, P., Smith, D., & Bowen, F. (2014). Reciprocal Associations Between Interpersonal and Values Dimensions of School Climate and Peer Victimization in Elementary School Children. *Journal of Clinical Child & Adolescent Psychology*, 1-14.

Leadbeater, B. J., Sukhawathanakul, P., Smith, A., Yeung Thompson, R. S., Gladstone, E. J., & Sklar, N. (2013). Bullying and Victimization in Rural Schools: Risks, Reasons, and Responses. *Journal of Rural and Community Development*, 8(1), 31-47.

Leadbeater, B. J., Sukhawathanakul, P., Thompson, K., & Holfeld, B. (2015). Parent, Child, and Teacher Reports of School Climate as Predictors of Peer Victimization, Internalizing and Externalizing in Elementary School. *School Mental Health*, *7*(4), 261-272.

Leadbeater, B. J., Thompson, K., & Sukhawathanakul, P. (2016). Enhancing Social Responsibility and Prosocial Leadership to Prevent Aggression, Peer Victimization, and Emotional Problems in Elementary School Children. *American Journal of Community Psychology*, 1-12.

Leff, S. S., Gullan, R. L., Paskewich, B. S., Abdul-Kabir, S., Jawad, A. F., Grossman, M., ... & Power, T. J. (2009). An initial evaluation of a culturally adapted social problem-solving and relational aggression prevention program for urban African-American relationally aggressive girls. Journal of Prevention & Intervention in the Community, 37(4), 260-274.

Lerner, R. M., Lerner, J. V., Almerigi, J., & Theokas, C. (2006). Dynamics of Individual ←→ Context Relations in Human Development: A Developmental Systems Perspective. In J. C. Thomas, D. L. Segal, M. Hersen, J. C. Thomas, D. L. Segal, M. Hersen (Eds.), Comprehensive Handbook of Personality and Psychopathology, Vol. 1: Personality and Everyday Functioning (pp. 23-43). Hoboken, NJ US: John Wiley & Sons Inc.

Martin, K. M., & Huebner, E. S. (2007). Peer victimization and prosocial experiences and emotional well-being of middle school students. Psychology in the Schools, 44(2), 199-208.

Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, 22(03), 491-495.

Mehta, S. B., Cornell, D., Fan, X., & Gregory, A. (2013). Bullying climate and school engagement in ninth‐grade students. *Journal of School Health*, *83*(1), 45-52.

Menesini, E., Codecasa, E., Benelli, B., & Cowie, H. (2003). Enhancing children's responsibility to take action against bullying: Evaluation of a befriending intervention in Italian middle schools. Aggressive Behavior, 29(1), 1-14.

Meraviglia, M. G., Becker, H., Rosenbluth, B., Sanchez, E., & Robertson, T. (2003). The expect respect project creating a positive elementary school climate. *Journal of Interpersonal Violence*, *18*(11), 1347-1360.

Mitchell, M. M., Bradshaw, C. P., & Leaf, P. J. (2010). Student and teacher perceptions of school climate: A multilevel exploration of patterns of discrepancy. *Journal of School Health*, *80*(6), 271-279.

Nærde, A., Ogden, T., Janson, H., & Zachrisson, H. D. (2014). Normative development of physical aggression from 8 to 26 months. *Developmental Psychology*, *50*(6), 1710.

Nagin, D. S. (1999). Analyzing developmental trajectories: a semiparametric, group-based approach. *Psychological Methods*, 4(2), 139.

Nickerson, A. B., Singleton, D., Schnurr, B., & Collen, M. H. (2014). Perceptions of school climate as a function of bullying involvement. *Journal of Applied School Psychology*, 30(2), 157-181.

Nylund, K., Bellmore, A., Nishina, A., & Graham, S. (2007). Subtypes, severity, and structural stability of peer victimization: What does latent class analysis say? *Child Development*, 78(6), 1706-1722.

O'Malley, M., Katz, K., Renshaw, T., & Furlong, M. (2012). Gauging the system: Trends in school climate measurement and intervention. In S. Jimerson, A. Nickerson, M. Mayer & M. Furlong (Eds.), *The Handbook of School Violence and School Safety: International research and practice* (2nd edition) (pp. 317 - 329). New York: Routledge.

Orpinas, P., & Horne, A. (2009). Creating a positive school climate and developing social competence. *Handbook of bullying in schools: An international perspective*, 49-59.

Paul, J. J., & Cillessen, A. H. (2003). Dynamics of peer victimization in early adolescence:

Results from a four-year longitudinal study. *Journal of applied school psychology*, 19(2), 25-43.

Park, N., & Peterson, C. (2006). Moral competence and character strengths among adolescents: The development and validation of the values in action inventory of strengths for youth. *Journal of Adolescence*, 29, 891–909.

Pedersen, S., Vitaro, F., Barker, E. D., & Borge, A. I. (2007). The timing of Middle-Childhood peer rejection and friendship: Linking early behavior to Early-Adolescent adjustment. *Child Development*, 78(4), 1037-1051.

Perren, S., Ettekal, I., & Ladd, G. (2013). The impact of peer victimization on later maladjustment: mediating and moderating effects of hostile and self-blaming attributions. *Journal of child psychology and psychiatry*, 54(1), 46-55.

Peterson, C. (2006). A Primer in Positive Psychology. Oxford University Press.

Peterson, C., & Seligman, M. E. (2006). The values in action (VIA) classification of strengths. A life worth living: Contributions to positive psychology, 29-48.

Prinstein, M. J., Cheah, C. S., & Guyer, A. E. (2005). Peer victimization, cue interpretation, and internalizing symptoms: Preliminary concurrent and longitudinal findings for children and adolescents. *Journal of Clinical Child and Adolescent Psychology*, *34*(1), 11-24.

Reavis, R. D., Keane, S. P., & Calkins, S. D. (2010). Trajectories of peer victimization: The role of multiple relationships. *Merrill-Palmer quarterly (Wayne State University. Press)*, *56*(3), 303.

Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child Abuse & Neglect*, *34*(4), 244-252.

Reijntjes, A., Kamphuis, J. H., Prinzie, P., Boelen, P. A., Van der Schoot, M., & Telch, M. J. (2011). Prospective linkages between peer victimization and externalizing problems in children: A meta-analysis. Aggressive behavior, 37(3), 215-222.

Reynolds, C. R., & Kamphaus, R. W. (2004). *Behavior assessment scale for children*. Bloomington, MN: Pearson Assessments.

Rose-Krasnor, L. (1997). The nature of social competence: A theoretical review. *Social Development*, 6(1), 111-135.

Rosen, P. J., Milich, R., & Harris, M. J. (2012). Dysregulated Negative Emotional Reactivity as a Predictor of Chronic Peer Victimization in Childhood. *Aggressive Behavior*, 38(5), 414-427. doi:10.1002/ab.21434

Rosen, L. H., Underwood, M. K., Beron, K. J., Gentsch, J. K., Wharton, M. E., & Rahdar, A. (2009). Persistent versus periodic experiences of social victimization: Predictors of adjustment. *Journal of Abnormal Child Psychology*, *37*(5), 693-704.

Rudolph, K. D., Troop-Gordon, W., Hessel, E. T., & Schmidt, J. D. (2011). A latent growth curve analysis of early and increasing peer victimization as predictors of mental health across elementary school. *Journal of Clinical Child & Adolescent Psychology*, *40*(1), 111-122.

Rudolph, K. D., Lansford, J. E., Agoston, A. M., Sugimura, N., Schwartz, D., Dodge, K. A., ... & Bates, J. E. (2014). Peer victimization and social alienation: Predicting deviant peer affiliation in middle school. *Child development*, *85*(1), 124-139.

Schonert-Reichl, K. A., Smith, V., Zaidman-Zait, A., & Hertzman, C. (2012). Promoting children's prosocial behaviors in school: Impact of the "Roots of Empathy" program on the social and emotional competence of school-aged children. *School Mental Health*,

4(1), 1-21.

Schwartz, D. (2000). Subtypes of victims and aggressors in children's peer groups. *Journal of Abnormal Child Psychology,* 28(2), 181-192.

Sinclair, K. R., Cole, D. A., Dukewich, T., Felton, J., Weitlauf, A. S., Maxwell, M. A., ... & Jacky, A. (2012). Impact of physical and relational peer victimization on depressive cognitions in children and adolescents. Journal of Clinical Child & Adolescent Psychology, 41(5), 570-583.

Sugimura, N., & Rudolph, K. D. (2012). Temperamental Differences in Children's Reactions to Peer Victimization. *Journal Of Clinical Child And Adolescent Psychology*, 41(3), 314-328. doi:10.1080/15374416.2012.656555

Stump, K. N., Ratliff, J. M., Wu, Y. P., & Hawley, P. H. (2009). Theories of social competence from the top-down to the bottom-up: A case for considering foundational human needs. In Social behavior and skills in children (pp. 23-37). Springer New York.

Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. Review of Educational Research, 83(3), 357-385.

Toblin, R. L., Schwartz, D., Gorman, A. H., & Abou-ezzeddine, T. (2005). Social–cognitive and behavioral attributes of aggressive victims of bullying. *Journal of Applied Developmental Psychology, 26*(3), 329-346.

Tran, C. V., Cole, D. A., & Weiss, B. (2012). Testing reciprocal longitudinal relations between peer victimization and depressive symptoms in young adolescents. Journal of Clinical Child & Adolescent Psychology, 41(3), 353-360.

Trentacosta, C. J., & Fine, S. E. (2010). Emotion Knowledge, Social Competence, and Behavior

Problems in Childhood and Adolescence: A Meta-analytic Review. *Social Development*, *19*(1), 1-29.

Troop-Gordon, W., & Ladd, G. W. (2005). Trajectories of peer victimization and perceptions of the self and schoolmates: Precursors to internalizing and externalizing problems. *Child Development*, *76*(5), 1072-1091.

van Lier, P. A., & Koot, H. M. (2010). Developmental cascades of peer relations and symptoms of externalizing and internalizing problems from kindergarten to fourth-grade elementary school. Development and psychopathology, 22(03), 569-582.

Van Geel, M., Vedder, P., & Tanilon, J. (2014). Relationship between peer victimization, cyberbullying, and suicide in children and adolescents: a meta-analysis. JAMA pediatrics, 168(5), 435-442.

Wang, C., Berry, B., Swearer, S. M. (2013). The critical role of school climate in effective bullying prevention. *Theory into Practice , 52*(4), 296-302. doi:10.1080/00405841.2013.829735

Wang, M. T., & Dishion, T. J. (2012). The trajectories of adolescents' perceptions of school climate, deviant peer affiliation, and behavioral problems during the middle school years. Journal of Research on Adolescence, 22(1), 40-53.

Wang, J., Iannotti, R. J., Luk, J. W., & Nansel, T. R. (2010). Co-occurrence of victimization from five subtypes of bullying: Physical, verbal, social exclusion, spreading rumors, and cyber. *Journal of Pediatric Psychology*, 35(10), 1103-1112.

Wang, W., Vaillancourt, T., Brittain, H. L., McDougall, P., Krygsman, A., Smith, D., ... & Hymel, S. (2014). School climate, peer victimization, and academic achievement: Results from a multi-informant study. *School Psychology Quarterly*, *29*(3), 360.

White, B. A., Jarrett, M. A., & Ollendick, T. H. (2013). Self-regulation deficits explain the link between reactive aggression and internalizing and externalizing behavior problems in children. *Journal of Psychopathology and Behavioral Assessment*, *35*(1), 1-9.

Wray-Lake, L., & Syvertsen, A. K. (2011). The developmental roots of social responsibility in childhood and adolescence. *New Directions for Child and Adolescent Development*, *2011*(134), 11-25.

Williford, A. P., Brisson, D., Bender, K. A., Jenson, J. M., & Forrest-Bank, S. (2011). Patterns of aggressive behavior and peer victimization from childhood to early adolescence: A latent class analysis. *Journal of Youth and Adolescence*, 40(6), 644-655.

Wilson, D. (2004). The interface of school climate and school connectedness and relationships with aggression and victimization. *Journal of School Health*, *74*(7), 293-299.

Yeung, R. S., & Leadbeater, B. J. (2007). Does hostile attributional bias for relational provocations mediate the short-term association between relational victimization and aggression in preadolescence? *Journal of Youth and Adolescence*, 36(8), 973-983.

Yeung, R., & Leadbeater, B. (2010). Adults make a difference: the protective effects of parent and teacher emotional support on emotional and behavioral problems of peer‐victimized adolescents. *Journal of Community Psychology*, *38*(1), 80-98.

Yeung Thompson, R. S., & Leadbeater, B. J. (2013). Peer victimization and internalizing symptoms from adolescence into young adulthood: Building strength through emotional support. *Journal of Research on Adolescence*, 23(2), 290-303.

Zahn-Waxler C, Crick N, Shirtcliff EA, Woods K. (2006). The origins and development of psychopathology in females and males. In *Developmental Psychopathology*, ed. Cicchetti D, Cohen DJ, 1:76–138. Hoboken, NJ: Wiley

Zahn-Waxler, C., Shirtcliff, E. A., & Marceau, K. (2008). Disorders of childhood and adolescence: Gender and psychopathology. *Annu. Rev. Clin. Psychol.*, *4*, 275-303.

Zaykowski, H., & Gunter, W. (2012). Youth Victimization School Climate or Deviant Lifestyles? Journal of Interpersonal Violence, 27(3), 431-452.

Zwierzynska, K., Wolke, D., & Lereya, T. S. (2013). Peer victimization in childhood and internalizing problems in adolescence: a prospective longitudinal study. Journal of abnormal child psychology, 41(2), 309-323.

Appendix A: Peer Victimization Measure

Peer Victimization was measured using two subscales of the Social Experience Questionnaire (SEQ): relational victimization and physical victimization (Crick & Grotpeter, 1996). Each subscale contains five items. Children rate how often they experienced *relational victimization* and *physical victimization* on a 3-point Likert scale (0 = 'never', 1 = 'sometimes', and 2 = 'almost all the time').

Physical Victimization

1. How often are you hit by another kid at school?
2. How often does another kid yell at you or call you mean names?
3. How often do you get pushed or shoved by another kid at school?
4. How often does another kid kick you or pull your hair?
5. How often does another kid say they will beat you up if you don't do what they want you to do?

Relational Victimization

1. How often does another kid tell lies about you to make other kids not like you anymore?
2. How often does a kid try to keep others from liking you by saying mean things about you?
3. How often do other kids leave you out on purpose when it is time to play or do an activity?
4. How often does a kid who is mad at you try to get back at you by not letting you be in their group anymore?
5. How often does another kid say they won't like you unless you do what they want you to do?

Appendix B: Mental Health Measure

Teacher and parent's reports of children's mental health were assessed with items gathered from the Early School Behavior Rating Scale (Caldwell & Pianta, 1991) and the Behaviour Assessment System for Children (Reynolds & Kamphaus, 2004). Teachers and parents were asked to report on the same items. Participants were asked to rate on a 4-point scale (1 = hardly ever, 2 = sometimes, 3 = often, 4 = almost always) how often their child displayed the following behaviours.

Externalizing Problems

1. Destroys other children's property
2. Fights with other children
3. Kicks, bites, or hits other children.

Internalizing Problems

1. Has headaches or stomach aches
2. Appears unhappy or depressed
3. Cries easily
4. Worries

Appendix C: Social Competence Measure

Social competence was a combination of prosocial leadership and social responsibility. Teacher and parent's reports of children's prosocial leadership were assessed with items gathered from the Behaviour Assessment System for Children (Reynolds & Kamphaus, 2004). Teachers and parents were asked to report on the same items. Participants were asked to rate on a 4-point scale (1 = hardly ever, 2 = sometimes, 3 = often, 4 = almost always) how often their child displayed the following behaviours. Teachers were asked to rate the degree to which children met expectations of social responsibility on a 4-point Likert scale (0 = 'not yet within expectations', 1 = 'meets expectations', 2 = 'fully meets expectations', and 3 = 'exceeds expectations').

Prosocial Leadership

1. Offers help to other children
2. Shares toys or possessions with other children
3. Shows interest in others' ideas
4. Gives good suggestions for solving problem
5. Is a leader in groups
6. Is good at getting people to work together
7. Plays well with other children

Social Responsibility

1. Looks for chances to help and include others (e.g., consistently contributes and seeks out ways to include others)
2. Helps to solve peer conflicts (e.g., consistently generates appropriate strategies, weighs consequences, and evaluates actions)
3. Is friendly, caring, and helpful to others (e.g., consistently kind and welcoming; looks for opportunities to help others)
4. Knows when to seek help from an adult (e.g., consistently shows good judgement about when to get help, such as in escalating conflicts)
5. Accurately identifies and describes own and others' behaviors (e.g., consistently assesses own and others' actions as being effective of ineffective)
6. Shows sense of community responsibility (e.g., generally follow classroom rules).

Appendix D: School Climate Measure

School climate was measured using the School Climate Survey (SCS; Haynes, Emmons, & Comer, 1993) to assess the general social environment of the school and the quality of relationships that exist among students and adults in the school building. Students responded on a three-point scale, according to how much they agree with the statement (1 = disagree, 2 = not sure, 3 = agree).

School Climate Dimension	Items
Order and discipline	1.) Some children at my school often say that they will hit or beat others. 2.) Children at my school often get hurt in school 3.)My school is usually very noisy 4.) My school is usually clean and tidy 5.) Children at my school fight a lot 6.) Children at my school call each other bad names
Fairness	1.) At my school, all children are treated the same, even if their parents are rich or poor. 2.) Everyone is treated equally well at my school. 3.) At my school, children of all races are treated the same. 4.) At my school, boys and girls are treated equally well. 5.) At my school, teachers are fair to everyone.
Equity in sharing of resources	1.) When we have fun games at my school, the same children are always put in charge. 2.) At my school, the same person always gets to help the teacher. 3.) The same children always get to use things, like a computer, a ball or piano, when we play. 4.) At my school, the same children get chosen every time to take part in after-school or special activities.
Student-interpersonal relations	1.) The children at my school behave well. 2.) Children at my school are caring people. 3.) Children at my school like one another. 4.) Children at my school trust one another. 5.) At my school, children help one another. 6.) Children at my school respect the teachers. 7.) Children at my school respect one another.
Student-teacher relations	1.) My teachers work hard to get me to do well on tests. 2.) Teachers at my school help us children with our problems. 3.) I feel that I can do well in this school. 4.) My teachers care about me. 5.) I enjoy learning at this school. 6.) My teachers believe I can do well in my school work. 7.) Teachers at my school help us children with our school problems. 8.) I can talk to my teachers about my problems. 9.) My teachers make me feel good about myself.
Parent involvement	1.) At my school, parents often come to help in the classroom. 2.) My parent(s) often attend parent meetings at school. 3.) My parent(s) visits my school often 4.) Parents often come to my school to help with special projects 5.) My parent(s) often come to my school to meet with my teachers.