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A Latent Class Approach to Examining Forms of Peer Victimization

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Abstract

There is growing interest in gender differences in the experience of various forms of peer victimization; however, much of the work to date has used traditional variable-centered approaches by focusing on scales or individual forms of victimization in isolation. The current study explored whether there were discrete groups of adolescents who experience distinct forms of peer victimization by bullying (e.g., physical, verbal, relational) among middle and high school-age youth, and whether membership in a particular victimization group was associated with internalizing problems and aggression. Latent class analyses examining 10 different forms of victimization were conducted on a diverse sample of middle school (n = 11,408) and high school (n = 5,790) students. All forms of victimization were less common among high school students, except cyberbullying and sexual comments/gestures. The analyses revealed that there were 4 distinct victimization patterns for middle school students (Verbal and Physical; Verbal and Relational; High Verbal, Physical, and Relational; and Low Victimization/Normative), whereas high school students fell into a similar pattern with the exception of a Verbal and Physical class. These patterns of victimization were functionally associated with co-occurring internalizing problems and aggression. There were also some notable gender and developmental differences in the pattern of victimization and its relation with adjustment problems. These findings enhance our understanding of the complex patterns of peer victimization that are experienced by middle and high school students. Implications for educational researchers and school-based bullying interventions are discussed.

Keywords

bullying; peer victimization; latent class analysis; relational aggression; gender differences

Bullying is a distinct form of proactive aggression that is intentional, repeated, and involves a power imbalance between the perpetrator and victim (Olweus, 1993). It affects approximately one third of school-age youth, making it one of the most common forms of aggression and victimization experienced during childhood and adolescence (Bradshaw, Sawyer, & O'Brennan, 2007; Nansel et al., 2001). Being the victim of bullying has been

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linked to a range of negative short- and long-term effects on children's social-emotional functioning, behavior, health, and academic performance (see Card & Hodges, 2008). In spite of a growing literature on the consequences of being bullied, few studies have examined whether these effects are associated with specific forms of bullying experienced (e.g., direct or indirect victimization) and whether gender or age influence both the form of victimization and its impact on adjustment. In fact, there is some controversy regarding whether boys and girls experience different types of peer victimization during childhood and adolescence (Card, Stucky, Sawalani, & Little, 2008; Crick, 1997) and whether possible developmental differences exist in the association between distinct forms of victimization and adjustment problems. To address these gaps, we used a person-centered approach (Molenaar & Campbell, 2009) called latent class analysis (LCA), to examine developmental and gender differences in social-emotional functioning across discrete classes of victimized youth.

Forms of Bullying and Peer Victimization

Although there is general agreement on behaviors defined as physical bullying (e.g., hitting, pushing, shoving), there is less agreement on how best to classify nonphysical forms of bullying, most of which involve verbal aggression, including face-to-face name-calling and insults, as well as indirect behaviors, such as rumor spreading. Sexual comments or gestures are another common form of aggression; they can either be direct, such as making sexually explicit gestures, or indirect, such as the spreading of rumors about perceived sexual behavior or orientation (Ybarra, Espelage, & Martin, 2007). A distinction is often made between direct bullying and a specific type of indirect bullying commonly referred to as *relational aggression*, wherein harm is caused through damage to relationships or social status. It includes rumors, gossip, and social exclusion, which often are covert or indirect (Crick & Grotpeter, 1995). Technology also has ushered in a new form of bullying called *cyberbullying*, which involves threats and harmful actions via cell phones and the Internet (e.g., Williams & Guerra, 2007). However, there is considerable overlap in the experience of these different forms of bullying, which has rarely been considered in the extant research (see Nylund, Bellmore, Nishina, & Graham, 2007). This may be due in part to the general reliance on traditional variable-centered analytic approaches, such as factor analysis for assessing victimization, as compared with emerging interest in person-centered approaches (Molenaar & Campbell, 2009).

Developmental Differences

A number of studies suggest that children's risk for victimization varies with age, increasing in late childhood, peaking in early adolescence or middle school, and declining by high school (Bradshaw et al., 2007; Williams & Guerra, 2007). As a result, youth appear to be at the greatest risk for being the victim of bullying during the middle school years. Therefore, the transition from middle to high school marks an important turning point with regard to the developmental trajectory of peer victimization. It is likely that the specific form of victimization experienced also varies by age (Underwood, Beron, & Rosen, 2009). Further evidence of a potential developmental shift in the experience of peer victimization comes from research showing that adolescents are less likely to experience victimization through

verbal (e.g., called names), physical (e.g., hit), and relational forms (e.g., talked about) as they progress from sixth to eighth grade (Nylund, Bellmore, et al., 2007). Similarly, high school students tend to be less likely to experience physical forms of victimization, as physical aggression is less common among older as compared with younger adolescents (Pettit, 1997). In contrast, relational forms of victimization may be more common after youth transition from middle to high school, as their peer relationships increase in intensity, intimacy, and complexity, and their enhanced social-cognitive skills make it easier for them to bully others by manipulating social relationships (Sutton, Smith, & Swettenham, 1999). Furthermore, particular forms of bullying may be more embedded in adolescent culture by high school, such as negative sexual comments (Ybarra et al., 2007) and cyberbullying (Williams & Guerra, 2007). More information is needed regarding developmental differences in the forms and effects of bullying experienced among youth in middle versus high school, especially given that these differences have important implications for targeted prevention programs.

Gender Differences

The evidence for gender differences in peer victimization is somewhat mixed. Whereas a growing number of studies has examined potential gender differences in the perpetration of different forms of aggression (e.g., Card et al., 2008), there has been considerably less research investigating gender differences in the experience of different forms of peer victimization. Some research suggests that boys are more likely than girls to be victims of bullying (Nansel et al., 2001), whereas other studies have found no differences between boys' and girls' reports of victimization by peers (O'Brennan, Bradshaw, & Sawyer, 2009). A plausible explanation for these inconsistent findings is that gender differences in peer victimization may only be associated with specific types of victimization. For instance, boys may be more likely to experience physical victimization, whereas girls may be more likely to experience relational victimization (e.g., Crick, 1997). One of the few large-scale studies to examine gender differences in youths' experience of physical, verbal, and relational forms of bullying was conducted on 2,086 German students in Grades 5–10 (Scheithauer, Hayer, Petermann, & Jugert, 2006). Among youth who reported being victimized, only 7% had experienced purely physical acts, 37% purely verbal, 23% purely relational, and the remaining 33% had experienced a combination of types. In contrast to previous research (e.g., Crick, 1997), this study did not reveal gender differences in relational victimization. Specifically, boys and girls were equally likely to report being victims of both verbal and relational bullying; however, boys were more likely than girls to be victims of physical bullying.

One possible explanation for the inconsistencies regarding gender differences is that specific categories of behaviors defined by researchers (e.g., relational victimization, verbal victimization) may not parallel the definitions used by adolescents. A qualitative study of adolescents' experience of bullying and victimization found that most teenagers identified two broad types of bullying—physical and verbal—both of which included a range of behaviors (Guerra, Williams, & Sadek, 2011); this suggests heterogeneity and potential overlap among the different forms of victimization (Scheithauer et al., 2006). There may also be more nuanced patterns of victimization. For example, being the victim of rumors and

gossip may be distinct from being directly teased. A more complex and detailed exploration is needed to determine whether specific forms of victimization cluster together and whether these clusters vary by age and gender.

The Effects of Peer Victimization on Adjustment

Frequent victimization places youth at risk for social, emotional, health, and school-related problems (e.g., Card & Hodges, 2008; Nansel et al., 2001; O'Brennan et al., 2009). For example, victimization may contribute to increased withdrawal, anxiety, and related internalizing problems. Indeed, research has demonstrated linkages between physical victimization and social anxiety (Graham & Juvonen, 1998), as well as between relational victimization and internalizing symptoms (Crick & Grotpeter, 1995; Hodges, Boivin, Vitaro, & Bukowski, 1999).

The association between victimization and social-emotional problems may also vary as a function of the form of victimization experienced, as well as by the child's gender and age. Some researchers have posited that because social relationships are more important to girls, relational aggression is more hurtful to them (e.g., Crick, 1997; Crick & Grotpeter, 1995). The opposite is hypothesized for boys, who typically place greater significance on maintaining a position of high (physical) social status (Crick, 1997). Research by Vuijk, van Lier, Crijnen, and Huizink (2007) revealed that relational victimization was linked to depression, anxiety, and panic/agoraphobia among girls, whereas physical victimization was associated with the same among boys; however, this study focused on elementary school children. Felix and McMahon (2006) found both that middle school boys who experienced sexual comments and gestures had poor psychosocial functioning and that girls who experienced sexual harassment and overt forms of physical and verbal victimization were more likely to report internalizing symptoms. Thus, it is unclear whether there is a similar association among middle and high schoolers and whether the effect of different forms of victimization on social-emotional problems varies by gender.

Overview of the Current Study

An important next step in understanding the complex patterns of victimization experienced by youth and their associated risk for internalizing and externalizing symptoms is to examine the heterogeneity in the forms of victimization experienced during adolescence. This heterogeneity may account for some of the variation in social-emotional problems experienced by victims. In addition, it may explain some of the previous inconsistencies in findings, such as the potential gender differences in both the experience of different patterns of victimization and how these experiences relate to co-occurring social-emotional problems (Card & Hodges, 2008).

In order to understand the extent and impact of specific types of peer victimization by gender and age, it is important to appropriately establish specific victim subtype groups. Whereas most of the prior research has used continuous measures of broad forms of victimization, or preset cut points on scales to categorize participants into discrete groups on the basis of researcher-identified categories, in the current study, we used LCA to group youth who shared a common *pattern* of victimization. Person-centered approaches are

particularly appropriate for assessing "qualitatively different profiles of study variables that are not anchored on a linear or continuous scale" (Sturge-Apple, Davies, & Cummings, 2010, p. 1320), as is the case of different forms of victimization.

Specifically, LCA is an exploratory person-centered approach that assumes that a categorical latent factor (i.e., pattern of victimization) gives rise to manifest indicators of specific forms of victimization experienced (e.g., cyberbullying, rumor spreading). LCA models the heterogeneity in the data and groups participants who share a common pattern of responses into discrete latent classes (McCutcheon, 1987). As compared with traditional variable-centered approaches, such as confirmatory factor analysis (CFA) or structural equation modeling (SEM) that take a dimensional approach to examining a set of predictors, person-centered approaches, like LCA, enable researchers to model the intraindividual variation in the forms of victimization experienced (Molenaar & Campbell, 2009). Through an iterative process, we sequentially tested a number of continuous latent factors (i.e., classes) and used fit indices, theory, and substantive interpretation to select a best fitting "final model" (Nylund, Asparouhov, & Muthén, 2007); the resulting classes comprise participants with a common pattern of victimization.

In the current study, we aimed to address gaps in prior research regarding variation in forms of victimization experienced by gender and age. One unique feature of this study is that we modeled 10 specific forms of victimization in order to examine heterogeneity in individual behaviors experienced, rather than the typical focus on composite scales (e.g., relational vs. physical). Our focus on specific forms of victimization may also elucidate particular patterns that are more common among middle as compared with high school youth. We then examined the association between latent victimization classes and co-occurring internalizing problems and aggression in order to determine whether the pattern of classes and the association with social-emotional problems varied by gender and developmental level. We were particularly interested in differences between middle and high school-age youth, as the transition to high school may serve as either an important developmental turning point associated with a reduction in the overall experience of peer victimization (Nylund, Bellmore, et al., 2007) or a shift in the form of victimization experienced (Crick & Bigbee, 1998).

Our primary aim was to determine whether discrete classes of adolescents who experienced common patterns of peer victimization could be identified and whether these groupings paralleled commonly used researcher-identified categories. Unlike traditional CFA or SEM approaches, LCA does not confirm the fit of hypothesized substantive patterns of classes. Rather, it is used to fit a series of models with different numbers of classes (McCutcheon, 1987). Although our LCAs were largely exploratory in nature, we did expect four discrete classes of adolescents to emerge: (a) a class of adolescents characterized by the experience of relational and social victimization (e.g., rumor spreading, ignoring), (b) a class characterized by the experience of overt victimization (e.g., physical and verbal aggression), (c) a class of adolescents who experienced multiple forms of victimization, and (d) a large class composed of youth who had a low probability of experiencing any form of victimization. However, we expected that some forms of victimization (e.g., cyberbullying, sexual comments/gestures) may be more characteristic of high school students, whereas

physical forms may be more common among middle school students. This may lead to a different pattern of classes across middle and high school students.

A secondary aim of this study was to determine whether membership in a particular latent victimization class was associated with an increased risk for co-occurring internalizing problems and/or aggression and whether these relations also varied by age and gender. Specifically, we expected that adolescents experiencing multiple forms of victimization would report the highest levels of both internalizing problems and aggression. We further expected girls to be more sensitive to relational forms of victimization, and thus relationally victimized girls were expected to experience higher levels of internalizing problems and aggression than physically victimized girls (Crick, 1997). In contrast, we expected boys to be more sensitive to physical forms of victimization and thus hypothesized that physically victimized boys would experience higher levels of internalizing problems and aggression than relationally victimized boys.

Method

Sample

Data for this study came from an anonymous survey of bullying conducted with 17,198 students (Grades 6–12) at 19 middle schools and 12 high schools in a large Maryland public school district that includes urban (55%), suburban (32%), and rural (13%) schools. The schools were diverse with regard to size, student–teacher ratio, and student socioeconomic status. Student demographic characteristics are reported in Table 1. Approximately 76% of the students in the targeted grades participated.

Measures

Demographic information—Students responded to select demographic questions, including ethnicity/race, sex, grade, and school.

Forms of victimization—Participants responded to the following multiresponse format question regarding their experience as a victim of 10 different forms of bullying: *Within the last month, has someone repeatedly tried to hurt you or make you feel bad by …* calling you bad names; threatening to hit or hurt you; teasing, picking on, or making fun of you; pushing or shoving you; hitting, slapping, or kicking you; e-mailing/e-messaging you or posting a blog about you on the Internet (MySpace); spreading rumors or lies about you; ignoring or leaving you out on purpose; making sexual comments or gestures; stealing your things (Nansel et al., 2001). A dichotomous variable was created for each of the 10 response options (1 = *endorsed the item*, 0 = *did not endorse*).

Aggression—This scale included five questions (e.g., “I have threatened to hit or hurt someone”; “I get mad easily”; “It is ok to hit someone if they hit me first”), to which participants responded on a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). These items were derived from the physical items on the Aggression Questionnaire (Buss & Perry, 1992), a widely used and well-validated measure of aggression for research purposes. A subset of items with the highest factor loadings was selected. A CFA was

conducted in Mplus on the data from the current study and demonstrated adequate model fit (comparative fit index [CFI] = .98, Tucker-Lewis Index [TLI] = .97, root-mean-square error of approximation [RMSEA] = .14, standardized root-mean-square residual [SRMR] = .05). Responses were averaged to create a single subscale score (possible range = 1–4; M = 2.44, SD = .78; five-item α = .80).

Internalizing problems—This scale included five items from the Baltimore How I Feel-Child Version (BHIF; Ialongo, Kellam, & Poduska, 1999; e.g., “I am sad”; “I am worried something bad is going to happen”), to which participants responded on a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). This research instrument was derived from conceptually similar measures, such as the Brief Symptom Inventory and earlier versions of the Youth Self-Report. See Ialongo, Edelsohn, and Kellam (2001) for further information regarding the reliability and the validity of the BHIF. A CFA was conducted on the data from the current study and demonstrated adequate model fit (CFI = .99, TLI = .97, RMSEA = .04, SRMR = .01). Responses were averaged to create a single subscale score (five-item α = .76) (possible range = 1–4; M = 1.87, SD = .69).

Victimization frequency—In order to assess frequency of victimization, students were asked, “How often have you been bullied during the last month,” and indicated either “several times a week,” “once a week,” “2–3 times during the month,” “1 time during the month,” or “not at all (i.e., I was not bullied).” Higher scores indicated increased frequency of victimization.

Procedure

The anonymous online survey was administered by language arts teachers over a 3-week period in late November through December of 2006. The survey was accessible through a password-protected website and was administered in groups of 15–25 students during school hours. The testing session was led by the teacher and proctored by the guidance counselor or school psychologist to ensure that students were not discussing their answers and to reduce student distractions and interruptions. Teachers read aloud the bullying definition and indicated that the purpose of the survey was to understand students’ attitudes toward bullying at their school. The survey required a mean of 9.94 min for students to complete (Mdn = 9.0 min) and was conducted by the district using a passive consent process. The school informed parents that the district was conducting the anonymous survey of bullying behavior. The nonidentifiable data were obtained from the school district and have been approved for analysis by the university’s Institutional Review Board.

Overview of Data Analytic Strategy

After conducting descriptive analyses in Stata 9, we performed latent variable modeling using the Mplus 7.0 statistical package (Muthén & Muthén, 1998–2012). Following a two-stage analysis plan, we used LCA to group participants into discrete classes based on whether or not they reported experiencing each of the 10 different (dichotomous) forms of victimization. Specifically, LCA is a probabilistic, model-based method for classifying individuals, in which estimated posterior probabilities of class membership are used to group individuals into latent classes. An individual is assigned to the class for which their posterior

probability is the highest. These posterior probabilities are used to evaluate the precision of classification, such that a higher posterior probability value for one class, and lower values for the others, indicates good classification. Therefore, this approach enabled us to group participants into latent classes based on the extent to which they shared a common pattern of responses, but were different from the individuals in the other classes (McCutcheon, 1987; Nylund, Asparouhov, & Muthén, 2007).

Because there are no definitive tests of the "true" number of classes (Nylund, Asparouhov, & Muthén, 2007), model selection requires consideration of substantive theory as well as statistical support. Five indices of model fit were computed: Akaike's information criterion (AIC), Bayesian information criterion (BIC), sample size-adjusted Bayesian information criterion (SSA BIC), Lo-Mendell-Rubin adjusted likelihood ratio test (LMR), and sample size-adjusted LMR (SSA LMR) (Muthén & Muthén, 1998–2012). Models with the lowest AIC, BIC, and SSA BIC values, or the point at which these indices begin to level off (as shown in a scree plot), suggest the best fit (Muthén, 2004). The LMR and SSA LMR likelihood ratio tests compare the estimated model with a model with one less class ($k-1$), thus a nonsignificant p value suggests that the additional class does not result in a significant improvement in fit. For models with the same or similar levels of goodness of fit, the more parsimonious model is favored. An entropy score was also calculated for each model to determine the classification accuracy (Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993). Although the entropy score is not used to determine model fit, it represents the percentage of the sample accurately classified using a given class model. Because we were interested in both gender and developmental differences in the experience of victimization, first we stratified the LCA analyses school level; next we included gender as a covariate in the LCA model to examine whether there were significant gender differences within the classes.

After fitting the most appropriate number of classes through the iterative process outlined above, we tested whether there were significant differences in the mean levels of internalizing problems and aggression across the latent classes. We used the auxiliary function in Mplus (Muthén & Muthén, 1998–2012) to determine whether there were significant differences in internalizing symptoms, aggression, and frequency of victimization across the classes. We also explored the association between class membership and the frequency of victimization. Significant differences in these scores would provide some predictive validity of the individual classes, thereby suggesting that there were meaningful differences between the classes that were systematically associated with differentiation in outcomes. The standard errors were adjusted in all analyses to account for the clustering of students within schools using the Huber-White adjustment (Muthén & Muthén, 1998–2012). As a result of adjusting for the clustering using the "complex mixture" model in Mplus, the bootstrap likelihood ratio test is not provided by the software (Muthén & Muthén, 1998–2012).

Results

Descriptive Analyses of the Forms of Victimization

For descriptive purposes, we provided the percentage of participants who reported having experienced each form of victimization in Table 2. We computed a series of chi-square (χ^2) tests to examine whether there were differences by gender and school level and applied a Bonferroni correction to adjust for multiple tests ($p < .001$). As expected, there were several differences in the forms of victimization experienced by both gender and school level. Specifically, the rates of victimization were higher among middle school (MS) than high school (HS) students for all forms, except for cyberbullying and sexual comments/gestures. There were significant gender differences ($p < .001$) between the full sample of boys and girls for all forms, except teasing and name-calling. These findings further corroborated our decision to stratify by school level and examine the possibility of gender differences by including it in the LCA model as a covariate.

Model Selection

To explore our first hypothesis that there would be distinct groups or classes of adolescents who experienced similar patterns of victimization, we fit a series of latent classes separately for MS and HS youth. The best fitting models (see Table 3) were composed of four classes for MS youth and three classes for HS youth. Next, we included gender as a covariate in the LCA models. Details regarding model selection and a description of the pattern of classes observed in the best fitting models are provided below. An underlying assumption of LCA is conditional independence, whereby within class, the measured indicators are uncorrelated with each other (Xue & Bandeen-Roche, 2002). The overall prevalence estimates and conditional probabilities of endorsement of items within each class were relatively consistent across final model groups. Conditional independence was evaluated and met by checking pairwise odds ratios among selected items within each class. Under this assumption, within each class, items previously correlated were unrelated to each other (Xue & Bandeen-Roche, 2002).

Middle school—The LMR supported selection of the four-class over the five-class model (see Table 3). Inspection of scree plots (not provided) of the AIC, BIC, and SSA BIC showed a flattening of scores after four classes, indicating that adding a fifth class did not significantly improve in fit. Next, gender was regressed on class membership, which did not substantively change the class proportions, thus indicating the stability of the classes (Lubke & Muthén, 2007).

High school—The LMR supported selection of the three-class model and indicated that adding a fourth class did not significantly improve in fit. Inspection of scree plots (not provided) of the AIC, BIC, and SSA BIC showed a flattening of scores after three classes, corroborating the three-class solution. The inclusion of gender in the high school model also did not substantively change the class proportions, providing further validation of the classes (Lubke & Muthén, 2007).

Description of the Classes

For both MS and HS youth, there was a sizable group of youth who displayed relatively low probability of endorsing any of the victimization indicators; therefore, we labeled this class the *Low Victimization/Normative* group, which comprised 49.5% of MS youth and 62% of HS youth (see Figure 1 and Figure 2, respectively). For MS youth, there were three remaining classes, and 10.3% of the sample was in a class that had a high probability of endorsing all forms of victimization; we labeled this class *High Verbal, Physical, and Relational* because they displayed a mixture of different forms of victimization. This group's probabilities for item endorsement ranged from .70 for sexual comments to .99 for being called names, except for cyberbullying that had a lower probability (.36; see Figure 1). A third class of MS youth displayed a higher probability of endorsing verbally aggressive behaviors (i.e., names and teasing) as well as relationally aggressive behaviors (i.e., rumors and ignoring); however, they had a lower probability of endorsing physically aggressive behaviors such as being pushed or hit (see Figure 1). Due to these defining characteristics, we labeled this class *Verbal and Relational;* it comprised 26% of the MS youth. Finally, approximately 14% of MS youth were in a class we labeled *Verbal and Physical*, whereby they had a higher probability of endorsing being pushed, called names, teased, and hit, yet a lower probability of endorsing rumors or being ignored (.26 and .15, respectively; see Figure 1).

Among the HS youth, there were a total of three classes, the first of which was similar to the MS *Low Victimization/Normative* and comprised 62% of HS respondents. Approximately 29% of the HS sample was in a class in which being called names, teased, and having rumors spread about them were the highest endorsed items (.68, .62, and .43, respectively; see Figure 2). Due to these defining characteristics, we labeled this class *Verbal and Rumors.* The smallest class among the HS youth had a relatively high probability of endorsing all forms of victimization, with a slightly higher probability for endorsing verbal and physical forms (range = .97–.99) than relational (range = .85–.88), with cyberbullying being the least likely to be endorsed (.61). We labeled this mixture class *High Verbal, Physical, and Relational,* as it was similar in many ways to the *High Verbal, Physical, and Relational* class observed in the MS sample.

Gender Differences

With regard to the gender breakdown of the classes, among the MS youth, the *Low Victimization/Normative* class was 46.7% female and 52.4% male. The *Verbal and Relational* class was 69.2% female and 30.8% male, whereas the *Verbal and Physical* forms class was mostly males (72.1% male, 27.9% female). The *High Verbal, Physical, and Relational* class was 45% female and 54% male. Compared with being in the *Verbal and Relational* class, males were more likely to be in the *Verbal and Physical* class (OR = 5.29, $p < .001$); males were also more likely to be in the *High Verbal, Physical, and Relational* class (OR = 2.48, $p < .001$).

Among the HS sample, the *Low Victimization/Normative* class was evenly split, with 50.8% female and 49.2% male. The *Verbal and Rumors* class was 54.8% female and 45.2% male, whereas the *High Verbal, Physical, and Relational* class was 72% male. Compared with

being in the *Verbal and Rumors* class, males were more likely to be in the *High Verbal, Physical, and Relational* class than females (OR = 2.99, $p < .001$).

Internalizing Problems, Aggression Problems, and Frequency of Victimization

We used the auxiliary function to compare mean scores for internalizing problems, aggression, and frequency of victimization by class membership for both middle and high school youth (see Table 4). We applied a conservative threshold for statistical significance and effect size, which required $p < .001$ and a Cohen's $d > .50$ in order to adjust for multiple tests and the large sample size, respectively. Among middle schoolers, those in the *High Verbal, Physical, and Relational* class had significantly higher internalizing and aggression scores than those in all other classes. Moreover, those in the *High Verbal, Physical, and Relational* class reported that they were victimized significantly more often than those in all other classes. MS youth in the *Verbal and Physical* class had significantly higher mean ratings on aggression as compared with the *Verbal and Relational* class; however, these two classes did not significantly differ on their mean scores on internalizing problems or how frequently they were victimized (see Table 4). Similar to the MS youth, HS youth in the *High Verbal, Physical, and Relational* class reported significantly higher mean internalizing and aggression problems, and they were more frequently victimized as compared with youth in all other classes. HS youth in the *Verbal and Rumors* class were more frequently victimized than those in the *Low Victimization/Normative* class and reported higher internalizing and aggression problems.

Discussion

In the current study, we aimed to advance prior research on bullying and peer victimization by using LCA to examine the heterogeneity in the specific forms of victimization experienced among middle and high school-age youth. We extended prior research by exploring this variability within age groups and examining the functional relationship with co-occurring internalizing problems and aggression. As discussed below, a unique feature of this study was the focus on particular patterns of 10 forms of victimization experienced, rather than levels, frequency, or broad categories.

Victimization and Associated Problems Across Age Groups

All forms of victimization were less common among HS students, except cyberbullying and sexual comments/gestures. This is consistent with prior research showing that the rates of victimization tend to peak in middle school and decline slightly by high school (Bradshaw et al., 2007; Nansel et al., 2001). As expected, the LCA results revealed multiple distinct latent classes of victimization. The majority of youth fell into the *Low Victimization/Normative* class (50% MS youth, 62% HS youth), and as expected, this class reported the lowest levels of internalizing problems and aggression. The cross-sectional nature of these data precludes us from determining that nonvictimized youth are less likely to experience emotional and behavioral problems, or whether perhaps more well-adjusted youth are less likely to be targeted by bullies. Similarly, prior research suggests that youth with social-emotional problems (e.g., impulsive behavior, emotion regulation problems, poor social skills) are more likely to display behaviors that may provoke negative peer interactions, including

victimization (Juvonen, Graham, & Schuster, 2003). In either case, patterns of victimization and adjustment were significantly associated, providing support for the importance of effective bullying prevention programs to reduce both victimization and social-emotional problems.

There was a smaller (9% MS youth, 10% HS youth) but discrete group of children who experienced all of the forms of victimization, which we labeled the *Verbal, Physical, and Relational* class. There was, however, one exception: Cyberbullying had the lowest probability of being endorsed across all the identified classes, although over 60% of the HS youth in the *Verbal, Physical, and Relational* class endorsed cyberbullying. Consistent with prior research examining forms of bullying and social-emotional functioning (Crick & Bigbee, 1998), across both MS and HS youth, those in the *Verbal, Physical, and Relational* class reported the highest level of internalizing problems and aggression as compared with youth in the *Low Victimization/Normative* class. Recent studies suggest that when youth experience multiple forms of bullying, specifically relational/indirect forms, they have more difficulty coping with the bullying experience (Waasdorp & Bradshaw, 2011). According to Graham and Juvonen's (1998) attribution theory of peer victimization, youth tend to experience heightened social-emotional difficulties (i.e., social anxiety, low self-worth, loneliness) when they blame themselves for their chronic victimization. Youth in the *Verbal, Physical, and Relational* class may attribute these multiple forms of bullying to be related to characteristics innate in their personality, thus further instilling their identity as a victim. A similar finding was observed by Nylund, Bellmore et al. (2007), who also used LCA to examine patterns of victimization. However, they examined fewer forms of victimization and only found high, medium, and low classes of victimization (i.e., ordered classes), as compared with the substantively different classes observed in the current study (i.e., unordered classes). It is unclear whether the problematic correlates of multiple forms of victimization are due to the diversity of experiences or the frequency of being bullied (Nylund, Bellmore, et al., 2007).

Gender and Developmental Differences

Several gender differences emerged within and between the MS and HS subsamples. Interestingly, the LCA revealed no "pure" or distinct relational group for the MS or HS youth. It appears that students experience a co-occurrence of relational victimization with other forms (e.g., name-calling, physical). In general, MS girls were significantly more likely to be in the *Verbal and Relational* class as compared with the *Verbal and Physical* class. Among MS youth, both the *Verbal and Relational* class (the majority of this class consisting of girls) and the *Verbal and Physical* class (the majority of this class consisting of boys) reported similar levels of internalizing symptoms and patterns of victimization, therefore suggesting that the experience of relational victimization for girls and physical victimization for boys is equally harmful. This is consistent with prior studies indicating that for girls, relational aggression is more emotionally taxing for them due to the importance of social relationships (Crick, 1997); yet, for boys who typically place greater significance on maintaining a position of high (physical) social status (Crick, 1997), physical bullying is generally more damaging. These gender differences between forms of bullying align with prior research on elementary-aged youth (e.g., Vuijk et al., 2007), thus suggesting the

negative effects of physical victimization for males and relational aggression for females hold true for MS youth.

For both MS and HS youth, those in the *Verbal, Physical, and Relational* class (consisting predominately of boys) experienced the highest levels of internalizing symptoms, which is similar to other studies of middle school youth (e.g., Felix & McMahon, 2006). This could suggest that boys who experience relational forms of victimization in concert with other forms of victimization have the highest risk for adjustment difficulties. In line with the gender nonnormative theory of aggression (e.g., Crick, 1997), this finding may indicate that the gender-atypical experiences of relational forms of bullying for boys places them at an increased risk for internalizing symptoms. It is also important to note that this group of students tended to support the use of aggressive behavior. These highly victimized youth may fall into the subcategory of "bully/victims" or aggressive victims. Bully/victims tend to be at elevated risk for a number of adjustment problems, including attention problems, impulsivity, hyperactivity, anger, and aggression (Veenstra et al., 2005). And although we focused solely on youth's reports of victimization in the current study, it is possible that the combination of perpetrating aggressive behavior and experience of frequent victimization is the driving force behind the social maladjustment.

Limitations and Future Directions

It is important to note some limitations when interpreting these findings. Although the data were self-report, anonymous web-based surveys have been found to be reliable and valid, particularly for sensitive topics like victimization (e.g., Wang et al., 2005). Furthermore, research suggests that adolescents are best able to report their own victimization experiences (Ladd & Kochenderfer-Ladd, 2002). The design and overall scale of the study precluded administration of full clinical assessments, so the extent to which the children's pattern of victimization was associated with clinical impairment is unclear. The cross-sectional data only allowed us to examine concurrent internalizing symptoms, aggression, and victimization. Longitudinal studies are needed in order to assess the temporal relationships between patterns of victimization and social-emotional problems (Juvonen et al., 2003; Ladd & Kochenderfer-Ladd, 2002). As noted above, it is unclear whether the social-emotional problems examined in this study are a potential cause or consequence of bullying (Veenstra et al., 2005).

Potential limitations of LCA are the lack of a definitive test of the "true" number of classes (Nylund, Asparouhov, & Muthén, 2007) and its exploratory nature; however, this made it particularly attractive for use in the current study, as it enabled us to identify latent classes or patterns of victimization, rather than traditional variable-centered approaches, which mask this type of heterogeneity (McCutcheon, 1987). Conducting the LCAs within the latent framework in Mplus allows us to account for this type of classification (i.e., measurement) error, which in our case is low, as indicated by the high entropy scores (Muthén & Muthén, 1998–2012; Nylund, Asparouhov, & Muthén, 2007). Notably, the classes are more heterogeneous than implied by the names we assigned. We selected class labels that we believed best characterized the defining features of the class and that generally mapped onto prior research, much of which has focused on composite scales, rather than specific forms of

victimization. As a result, the labels we assigned for the classes may not fully encompass the full range of experiences and thus should be interpreted with caution. However, there may be greater variability in the forms of victimization experienced and that this heterogeneity may be obscured when traditional composite scale approaches are used. We conducted contrasts between MS and HS youth in generally analogous classes; however, the classes were not identical. These slight differences suggest a need for additional research on developmental factors that might influence the experience of different forms of victimization.

Conclusions and Implications

The current research enhances our understanding of patterns of peer victimization that are most common among MS and HS students. Whereas most studies only explore verbal, physical, and/or relational forms of victimization using researcher-imposed criteria, our findings suggest that these approaches may not be sensitive to the variety of complex ways in which adolescents are victimized. The results suggest that there may be both developmental and gender differences, not only in the experience of physical, verbal, and relational victimization but also in the combination of forms experienced (Card & Hodges, 2008; Hawker & Boulton, 2000). However, there may be subtle, yet important age-and gender-related measurement noninvariance in the forms of victimization experienced (Vandenberg & Lance, 2000), such that there may be inconsistency in the way in which different forms of aggression are measured across boys and girls, or across developmental levels. These results support the findings of Scheithauer et al. (2006) regarding the co-occurrence among different forms of victimization.

Taken together, these results revealed that youth who experience multiple forms of victimization are at the greatest risk for social-emotional problems. Furthermore, there appear to be important differences in adolescents' adjustment based on the particular *pattern* of victimization experienced, beyond just the experience of multiple forms of victimization. Developmental differences in adolescents' experience of victimization are also important to consider in future research. Additional research also is needed to understand the extent to which the forms of victimization experienced may vary by gender and developmental level, and whether they are differentially associated with social-emotional problems. Such work may inform the development or selection of interventions strategies that best match the needs of the victim or the particular pattern of victimization experienced (Espelage, Mebane, & Swearer, 2004).

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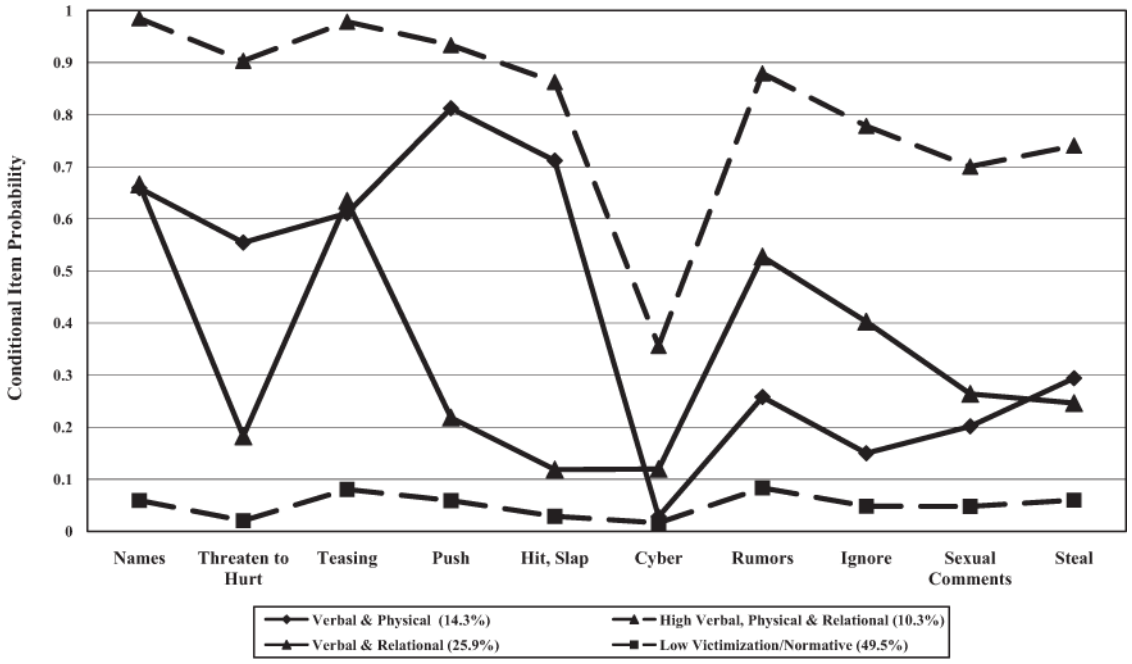

Figure 1.

Conditional item probability plot for middle school youth. The 10 victimization items comprising the latent classes for middle school youth are listed. The probability of endorsing each item is provided by class membership.

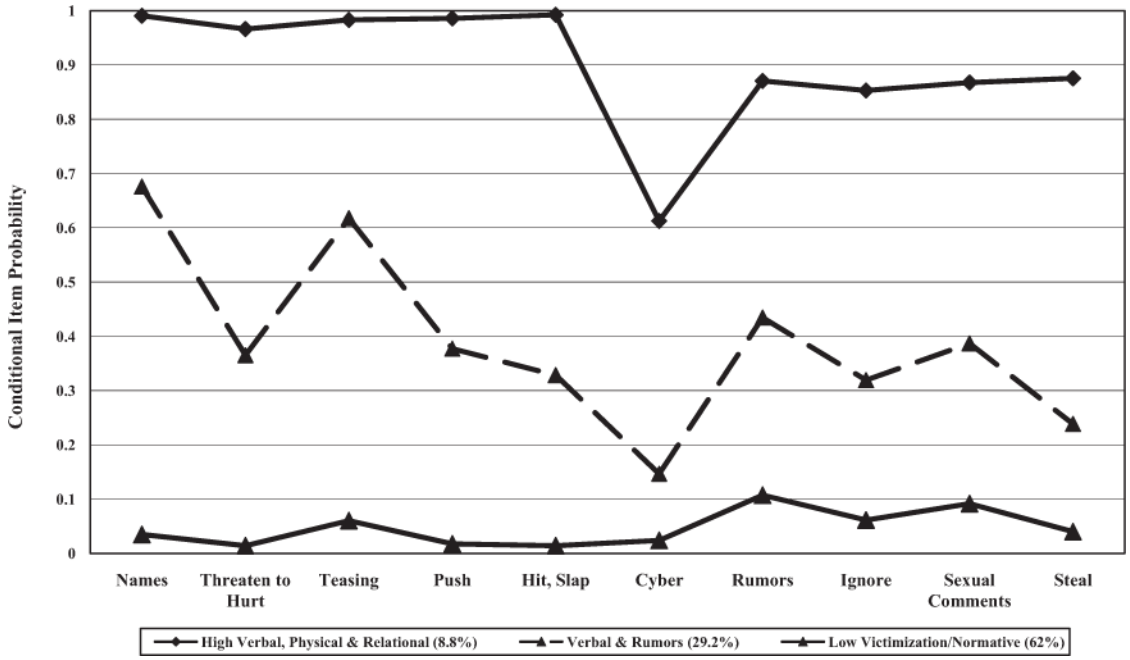

Figure 2.

Conditional item probability plot for high school youth. The 10 victimization items comprising the latent classes for high school youth are listed. The probability of endorsing each item is provided by class membership.

Table 1

Sample Demographic Characteristics

	Middle school		High school	
Characteristics	**%**	***n***	**%**	***n***
Total	66.3	11,408	33.7	5,790
Gender				
Males	49.9	5,688	50.1	2,899
Females	50.1	5,720	49.9	2,891
Ethnicity				
Caucasian	60.8	6,933	69.9	4,046
African American	19.4	2,215	14.7	853
Hispanic/Latino	4.5	517	4.0	231
Asian/Pacific Islander	3.5	401	3.6	207
Other	11.8	1342	7.8	453

Note. Data were collected from 17,198 students attending 19 middle schools and 12 high schools.

Table 2

Form of Victimization Experienced by Boys and Girls in Middle School and High School

	Middle school			High school		
Form of bullying reported	**Boys (*n* = 5,688) *n* (%)**	**Girls (*n* = 5,720) *n* (%)**	**Total (*n* = 11,408) *n* (%)**	**Boys (*n* = 2,891) *n* (%)**	**Girls (*n* = 8,611) *n* (%)**	**Total (*n* = 5,790) *n* (%)**
Called bad names	2,243 (39.43)	2,288 (40.00)	4,531 (39.72) *ns*	956 (32.98)	815 (28.19)	1,771 (30.59)*
Threaten to hurt/hit	1,510 (26.55)	1,107 (19.35)	2,617 (22.94)*	731 (25.22)	428 (14.80)	1,159 (20.02)*
Teased	2,151 (37.82)	2,321 (40.58)	4,472 (39.20) *ns*	923 (31.84)	837 (28.95)	1,760 (30.40) *ns*
Push/shove	1,896 (33.33)	1,502 (26.26)	3,398 (29.79)*	734 (25.32)	468 (16.19)	1,202 (20.76)*
Hit/slap/kick	1,567 (27.55)	1,118 (19.55)	2,685 (23.54)*	727 (25.08)	383 (13.25)	1,110 (19.17)*
Cyberbullied	385 (6.77)	522 (9.13)	907 (7.95)*	329 (11.35)	316 (10.93)	645 (11.14) *ns*
Spread rumors/lies	1,518 (26.69)	1,960 (34.27)	3,478 (30.49)*	700 (24.15)	862 (29.82)	1,562 (26.98)*
Exclude/ignore	1,084 (18.42)	1,569 (27.43)	2,617 (22.94)*	587 (20.25)	607 (21.00)	1,194 (20.62) *ns*
Sexual comments	956 (16.81)	1,242 (21.71)	2,198 (19.27)*	628 (21.66)	796 (27.53)	1,424 (24.59)*
Stole property	1,263 (22.20)	1,149 (20.09)	2,412 (21.14) *ns*	571 (19.70)	421 (14.56)	992 (17.13)*

Note. Numbers indicate those who experienced that form of victimization (i.e., responded yes). An asterisk indicates significant gender difference on chi-square test within school-level at $p < .001$, whereas *ns* indicates nonsignificant difference. A separate set of chi-square tests indicated that there were significant differences ($p < .001$) between the full sample of middle and high school students on all 10 items. There also were significant gender differences ($p < .001$) between the full sample of boys and girls for all variables except called bad names and teased.

Table 3

Latent Class Analysis Fit Indices for Middle School and High School Youth

No. of classes	BIC	SSA BIC	AIC	LMR	Entropy	Smallest class
Middle school (*n* = 11,408)						
1	24936.22	124904.44	124862.80	—	—	
2	105282.14	105215.40	105127.95	<.00001	0.84	3,870 (33.9)
3	102340.23	102238.54	102105.29	<.00001	0.79	1,412 (12.4)
4	**101314.60**	**101177.95**	**100998.89**	**0.04**	**0.77**	**1,143 (10.3)**
5	100896.04	100724.44	100499.57	0.25	0.77	590 (5.2)
High school (*n* = 5,790)						
1	60154.79	60123.01	60088.15	—	—	
2	47067.46	47000.73	46927.52	0.001	0.91	1,467 (25.3)
3	**44960.69**	**44859.01**	**44747.45**	**0.018**	**0.87**	**508 (8.8)**
4	44305.56	44168.92	44019.01	0.29	0.87	396 (6.8)

Note. No. = Number; BIC = Bayesian information criterion; SSA BIC = sample size-adjusted Bayesian information criterion; AIC = Akaike's information criterion; LMR = Lo-Mendell-Rubin adjusted likelihood ratio test. Bolding indicates best fitting model. Dashes indicate not applicable to the one-class model.

Table 4

Means for Internalizing Symptoms, Aggressive Behaviors, and Victimization Frequency by Latent Class Membership

Middle school variable	**High VA, PA, RA**	**Verbal & Relational**	**Verbal & Physical**	**Low Victimization/Normative**
Internalizing	2.48 (.03)	1.96 (.01)[a]	1.93 (.02)[a]	1.63 (.01)
Aggression	2.83 (.03)	2.41 (.02)	2.53 (.02)	2.35 (.01)
Victimization frequency	3.89 (.05)	2.42 (.03)[a]	2.53 (.04)[a]	1.30 (.01)
High school variable	High VA, PA, RA	Verbal & Rumors		Low Victimization/Normative
Internalizing	2.66 (.04)	2.06 (.02)		1.75 (.01)
Aggression	3.05 (.04)	2.64 (.02)		2.42 (.01)
Victimization frequency	4.12 (.07)	2.41 (.04)		1.25 (.01)

Note. Values presented in table are means with standard errors in parentheses. Higher scores are indicative of higher levels of behavior. Means in rows sharing superscripts are not significantly different at $p < .001$. VA = verbal aggression; PA = physical aggression; RA = relational aggression.