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PROFILES OF INTERNALIZING AND EXTERNALIZING SYMPTOMS ASSOCIATED WITH BULLYING VICTIMIZATION

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Abstract

This study identified profiles of internalizing (anxiety and depression) and externalizing (delinquency and violence against peers) symptoms among bullying victims and examined associations between bullying victimization characteristics and profile membership. The sample consisted of 1196 bullying victims in grades 8–10 (M_{age}=14.4, SD=1.01) who participated in The Context Study in three North Carolina counties in Fall 2003. Five profiles were identified using latent profile analysis: an asymptomatic profile and four profiles capturing combinations of internalizing and externalizing symptoms. Associations between bullying characteristics and membership in symptom profiles were tested using multinomial logistic regression. More frequent victimization increased odds of membership in the two high internalizing profiles compared to the asymptomatic profile. Across all multinomial logistic regression models, when the high internalizing, high externalizing profile was the reference category, adolescents who received any type of bullying (direct, indirect, or dual) were more likely to be in this category than any others.

Keywords

bullying victimization; latent profile analysis; depression; anxiety; delinquency

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Bullying is a pervasive public health problem. Between 20–40% of children experience bullying at least once during their school careers (Shetgiri, Lin, & Flores, 2013). Numerous studies have found that bullying victimization has negative effects in childhood and adolescence and, furthermore, evidence suggests that victims of bullying are at heightened risk for psychological maladjustment in adulthood (Arseneault, Bowes, & Shakoor, 2010; Copeland, Wolke, Angold, & Costello, 2013; Hawker & Boulton, 2000; Menard, 2002).

Not all victims respond to bullying the same way (Arseneault, Bowes, & Shakoor, 2010). For some, being bullied may result in internalizing problems (i.e., those harmful to self). These negative impacts include a range of deleterious mental health conditions including heightened social isolation, depression, and anxiety (Faris & Felmlee 2014; Kaltiala-Heino, Fröjd, & Marttunen, 2010; Nansel et al., 2001; Reijntjes, Kamphuis, Prinzie, & Telch, 2010; Zweirzynska, Wolke, & Lereya, 2013). Others may experience externalizing sequelae (i.e., those harmful to others). These include violent behavior towards others, carrying a weapon, and becoming a perpetrator of bullying behaviors (Arseneault et al., 2006; Barker, Arseneault, Brendgan, Fontain, & Maughan, 2008; Kim, Leventhal, Koh, Hubbard, & Boyce, 2006; Nansel, Overpeck, Haynie, Ruan, & Scheidt, 2003; Reijntjes et al., 2011; Ttofi, Farrington, & Lösel, 2012; Valdebenito, Ttofi, Eisner, & Gaffney, 2017). Another set of victims may experience both types of symptoms simultaneously (Arseneault, et al., 2010). For example, Hemphill and colleagues (2011) found that being victimized by bullying in grade 10 predicted a twofold increased likelihood of depressive symptoms *as well as* increased likelihood weapon-carrying, theft, and violent behavior in grade 11 (Hemphill et al., 2011). Lastly, some victims of bullying show very few signs of internalizing or externalizing and this has been attributed to the presence of other sources of support in (e.g., social connections, family relationships) in the victims' lives (Sapouna & Wolke, 2013).

This variation in response to bullying victimization suggests that there may be different typologies, or profiles, of symptoms associated with victimization. Many studies examining psychopathology associated with bullying victimization focus on either internalizing or externalizing symptoms. Such variable-centered approaches focusing on a single outcome ignore underlying heterogeneity in symptoms among bullying victims and exclude more complex symptom constellations that incorporate internalizing and externalizing elements. By grouping individuals into categories based on similarity with one another and differences from those in other categories, person-centered approaches can unmask this underlying heterogeneity to reveal group differences in symptom patterns (Laursen & Hoff, 2006;Muthén & Muthén, 2000).

Latent profile analysis (LPA) is a person-centered statistical approach used to determine the number of subpopulations—or profiles--that exist for a given set of indicators, with what probability each individual is in each profile, and which variables are most strongly associated with profile membership (Collins & Lanza, 2010). Kretschmer and colleagues (2015) conducted a latent profile analysis of maladjustment in a sample of students in early-mid adolescence and assessed the influence of peer victimization on membership in the latent profiles, finding that peer victimization increased risk for internalizing problems. Their latent profile analysis, however, was conducted on a sample that included both victims and non-victims limiting the ability to describe victims' maladjustment. For example, it is

possible that the nature of the maladjustment profiles of victims could be distinct from the nature of the profiles of non-victims. The focus of the present study, therefore, is solely on the victims of bullying. Furthermore, we build upon the work of Kretschmer and colleagues by using more finely grained measures of bullying that allow for evaluation of associations between type and frequency of bullying and the identified profiles. The aims of this study were to 1) determine whether there are different profiles of internalizing (depression and anxiety) and externalizing (peer violence perpetration and delinquency) symptoms in a sample of 8th-10th grade self-identified victims of bullying and 2) examine whether characteristics of the bullying victimization (i.e., type of bullying and frequency) are associated with symptom profile membership. The goal of these aims was to identify symptom co-morbidity in victims of bullying and to understand whether bullying characteristics are associated with these symptoms.

Bullying *types* are defined based on the mode through which harm is perpetrated against the victim. Although numerous terms have been used in the literature to describe *types* of bullying (e.g. physical, verbal, overt, covert, relational), the terms “direct” and “indirect” bullying, the terms used in this study, capture this variation. Direct bullying includes anything requiring direct interaction between the bully and victim such as physical acts of aggression and name calling. Indirect bullying comprises spreading rumors, attempts at social exclusion, and talking behind the victim’s back (Arseneault et al., 2010; Dukes et al., 2009). In variable-centered studies, bullying victims’ symptoms have been found to differ depending on the type of bullying experienced. Specifically, a 2017 meta-analysis by Casper and Card found direct victimization to be more strongly associated with direct aggression, whereas relational victimization was more strongly related to internalizing problems, underscoring the importance of measuring these different types of victimization and understanding their differential associations with psychopathology (Casper & Card, 2017).

Victims’ symptoms have also been found to vary with the frequency of victimization. *Frequency* of bullying is defined here as the number of times a person has been bullied over a reference time period. Penning et al. (2010) found that frequency of being bullied (with no distinction made between bullying types) was associated with higher mean scores on five trauma subscales (anxiety, depression, posttraumatic stress, dissociation, and anger) of the Trauma Symptom Checklist for Children (TSCC). Similarly, Klomek and colleagues (2009) found that the more frequent involvement in bullying (either as a victim or a perpetrator; no distinction made between bullying types), the more likely an individual was to be depressed, to have serious suicide ideation, or to have attempted suicide (Klomek et al., 2009). Champion and Clay (2007) also found that more frequently victimized children responded to victimization with more intense feelings of anger, more motivation to retaliate, less motivation to improve the situation, and more frequent intentions to aggress (Champion & Clay, 2007). Taken together, these studies suggest that greater frequency of victimization is associated with more intense internalizing *and* externalizing symptoms among victims.

Hypotheses

Based on extant literature on internalizing and externalizing symptoms among bullying victims as well as Kretschmer and colleagues’ (2015) maladjustment profiles in early

adolescence, we hypothesized (Hypothesis 1) that the following profiles would be identified through LPA: one profile low on both internalizing and externalizing (an asymptomatic profile, corresponding to Kretschmer et al.'s "Low" profile), one profile high on internalizing and low on externalizing (corresponding to Kretschmer et al.'s "Internalizing" profile), one profile low on internalizing and high on externalizing (corresponding to Kretschmer et al's "Externalizing" profile), and one profile high on both internalizing and externalizing (corresponding to Kretschmer et al.'s "Comorbid" profile).

We hypothesized (Hypothesis 2) that adolescents who experienced any *direct* victimization would have a greater likelihood of membership in profiles characterized by high externalizing symptoms than in profiles not characterized by high externalizing symptoms. This hypothesis is supported by the empirical literature meta-analyzed by Casper and Card (2017), but also by Social Cognitive Theory (SCT) which posits that individuals model behavior they witness and experience in their social contexts (Bandura, 1986). If an adolescent experiences direct bullying, SCT suggests that he/she may copy this behavior and respond by victimizing peers or externalizing in some other way. Furthermore, Casper and Card (2017) suggest a unique association between risk-taking behavior, lack of impulse control, and direct victimization such that victims of direct aggression are likely to respond in kind to direct attacks.

In contrast, we hypothesized (Hypothesis 3) that adolescents who experienced any *indirect* victimization would have greater likelihood of membership in profiles characterized by high internalizing symptoms than in profiles characterized by low internalizing symptoms. This hypothesis is supported by the empirical literature (e.g., Casper & Card, 2017), but also reflects the subtle nature of indirect bullying. Because the harm is perpetrated not via direct attack, but rather through manipulation of social relationships, an effective external target for response may be difficult to identify. Direct confrontation with the perpetrator even if a perpetrator is identifiable, for example, would not necessarily be effective in extinguishing a socially harmful rumor. Without an effective external target, frustrated victims may internalize the experience, leading to depression and anxiety. Additionally, loneliness, which has been correlated with depression and lower self-worth, may result from the social exclusion concomitant with indirect aggression (Prinstein, Boergers, & Vernberg, 2001). Victims of indirect aggression may experience a vicious cycle wherein internalizing problems and fewer opportunities to develop appropriate social skills elicit further victimization and self-blame (Juvonen & Graham, 2014).

Reflecting Hypotheses 2 and 3 we further hypothesized (Hypothesis 4) that adolescents who experienced *dual* victimization (i.e., both direct and indirect victimization) would have greater likelihood of membership in the profile characterized by high internalizing and high externalizing than in the other profiles, thereby exhibiting victim characteristics of both direct and indirect bullying.

Whereas previous LPA analysis (i.e., Kretschmer et al., 2015) has used a dichotomous bullying measure to identify victimization over the past 2 years, the present study assessed the frequency with which victims experienced bullying over the measurement period, enabling us to measure the effects of frequency—regardless of bullying type—on symptom

profile. Based on literature suggesting an intensifying effect of increased frequency of bullying victimization on internalizing and externalizing symptoms (or vice versa), we hypothesized (Hypothesis 5) that greater frequency of victimization would be associated with greater likelihood of membership in the symptomatic profiles than in the asymptomatic profile.

Method

Data were collected on paper questionnaires in the Fall 2003 from adolescents in the public school systems of three primarily rural counties in North Carolina as part of The Context Study on adolescent risk behaviors which has been described in detail elsewhere (Ennett et al. 2008; Foshee et al., 2011). All 6342 adolescents in grades 8 to 10 in these school districts (eight middle schools, two K-8 schools, three alternative schools and six high schools) were eligible to participate except for those who were unable to complete the questionnaire in English, in special education programs, or who were in long-term suspension or expulsion. A total of 5017 adolescents (79.1% of those eligible) completed the questionnaire. 6.3% of eligible students were absent the day of the questionnaire, 7.9% had parents who refused, 4.4% of eligible students refused prior to administration, and 2.3% of eligible students could not be contacted (i.e., no viable address was available to obtain parent consent). Parents had the opportunity to refuse consent for their child's participation by returning a written form or by calling a telephone number. Assent was obtained from all individual adolescents included in the study immediately prior to the survey administration from students whose parents had consented. The Institutional Review Board for the University of North Carolina at Chapel Hill approved the study.

Analytic Sample

At the time of questionnaire administration, data collectors provided each student with a Student Directory that alphabetically listed students along with a unique four-digit peer identification number for each student. Bullying victimization was assessed by asking students to identify up to five peers *who had been mean to them or who had picked on them in the past 3 months*. This question deliberately excluded the term "bullying" because youth tend to hold stereotypes of bullying as direct physical violence (Naylor, Cowie, Cossin, Bettencourt & Lemme, 2006). Previous research using these data found that this measure of victimization is associated with subsequent increases in anxiety and depression, and decreases in school attachment and social integration (Faris & Felmlee, 2014).

The analytic sample was limited to the 1196 adolescents (23.8% of those who completed questionnaires) who indicated that any school peer had bullied them. The sample was 59.8% female. Fifty-six and nine tenths percent reported their race as White, 27.5% Black or African-American, 4.1% Hispanic or Latino, 2.4% American Indian or Native American, 1.3% Asian or Pacific Islander, 4.7% Multiracial (mixed race), and 1.7% Other (total 41.7% Non-white). Mean age was 14.4 years (SD=1.01).

Measures

Anxiety—Four items from the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1979) assessed anxiety (e.g., "I worried about what was going to happen" and "I worried when I went to bed at night") within the past three months. Responses ranged from 0 ("strongly disagree") to 4 ("strongly agree"). Responses for the four anxiety items were summed to create the anxiety score (Cronbach's α =.86, *M*=8.34, *SD*=4.95, range=0–16);

Depression—Four items from the Short Mood and Feelings Questionnaire (Angold, Costello, Messer, & Pickles, 1995) assessed feelings of depression (e.g., "I did everything wrong" and "I was tired a lot"). Responses for the four depression items were summed to create the depression score (Cronbach's α= .86, *M*=6.47, *SD*=4.96, range=0–16).

Delinquency—Delinquency was measured with four items that asked the respondent to report the frequency with which he or she skipped school, damaged property, threatened a teacher, or threatened someone with a weapon (Farrell, Kung, White, & Valois, 2000). Response options were: 0=none; 1=1–2 times; 2=3–5 times; 3=6–9 times; and 4=10 times or more. Responses to these items were summed to create a composite delinquent behaviors score (Cronbach's α =.80, *M*=1.16, *SD*=2.77, range=0–16).

Violence against Peers—Physical violence against peers was measured with six items that asked the respondent to report how often in the past 3 months he or she pushed, grabbed, shoved, or kicked a peer; slapped or scratched a peer; twisted a peer's arm or bent back a peer's fingers; hit a peer with a fist or with something else hard; beat up a peer; or assaulted a peer with a knife. Response options were: 0=none; 1=1–2 times; 2=3–5 times; 3=6–9 times; and 4=10 times or more. These six items were summed to create a composite physical violence against peers score (Cronbach's α=0.88, *M*=1.93, *SD*=4.18, range=0–24).

The distributions of the delinquency and violence against peer scores were heavily right-skewed, violating the assumption of normality required for LPA. The indicators were trichotomized such that 0=none, 1=some, and 2=a lot of externalization. Cutoffs for the categories were based on univariate statistics so that the "a lot" category captured individuals at approximately the 90th percentile for the outcome and above, the "none" category consisted of individuals reporting no externalization, and individuals with scores between 0 and the approximate 90th percentile cutoff fell into the "some" category.

Direct bullying victimization—Adolescents were asked to indicate whether each student identified as someone who had been mean to them or picked on them in the past 3 months had "physically attacked you in any way (hitting, shoving, tripping)?", "made fun of you or called you names to your face," and or "talked badly about you behind your back or tried to get others not to be friends with you". A dichotomous direct bullying victimization type variable was created such that 1 indicated that a peer had physically attacked them, made fun of them, or called them names to their face and 0 indicated that a peer had not done these things to them. Direct victimization was reported by 87.7% of bullying victims.

Indirect bullying victimization—A dichotomous indirect bullying victimization type variable was created such that 1 indicated that a peer had talked badly about them behind

their back or tried to get others not to be friends with them and 0 indicated that a peer had not done these things to them. Indirect victimization was reported by 75.8% of bullying victims.

Dual bullying victimization—A dichotomous dual victimization type variable was created where 1 indicated that the adolescent was both directly and indirectly bullied and 0 indicated that the adolescent experienced only one type of victimization. Dual victimization was reported by 63.6% of bullying victims.

Bullying frequency—Adolescents were asked to indicate the frequency with which each identified peer was mean to or picked on them. Response categories included: 1=2 times in the past 3 months, 2=1 to 2 times per month, 3=1 to 2 times per week, 4=3 to 5 times per week, and 5=6 or more times per week. Frequency of bullying victimization was calculated by summing the frequency of victimization across all identified peers (up to five). The bullying victimization frequency ranged from 1 to 25; M=8.72, SD=6.75.

Analysis Strategy

The analytic approach consisted of two major steps. First, LPA was conducted in Mplus 7 using the expectation maximization algorithm with the robust maximum likelihood (MLR) estimator for the four indicators of anxiety, depression, delinquency, and physical violence against peers. Missing data were handled using full information maximum likelihood (FIML). A one-profile model was estimated first, followed by a two-profile model, and additional profiles were added sequentially until there was no improvement in model fit. Several criteria were used to evaluate the fit of latent profile models: Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), sample size adjusted BIC, bootstrapped likelihood ratio test (BLRT), Vuong-Lo-Mendell-Rubin (VLMR) likelihood ratio test, and entropy. After the number and nature of the profiles were identified, individuals were assigned to their most likely profile based on their posterior probabilities (that is, the set of values describing the likelihood of being assigned to that profile, given the data).

The second step was to conduct a series of multinomial logistic regressions using SAS v9.4 to test the hypotheses regarding associations between bullying type (direct, indirect, or dual) and frequency with symptom profile membership. All models controlled for gender, race, grade, and parent education. Because some studies have found that the consequences of bullying victimization vary by gender (e.g. Sullivan, Farrell, & Kliewer, 2006), we first tested for significance of interactive effects of gender and bullying characteristics on profile membership. In all cases, the interactions were non-significant; therefore, interactions with gender were dropped from subsequent models. Rather than selecting a single reference profile for all models, the reference profile for the logistic regression models necessarily varied according to the hypothesis being tested. In all cases, resulting odds ratios represent the likelihood of membership in each profile relative to the specified reference profile. Missing data for the covariates used in the multinomial logistic regressions were imputed using PROC MI, and PROC MIANALYZE was used to pool the results from the models fit on the imputed datasets.

Results

Latent Profile Analysis of Internalizing and Externalizing Symptoms

Table 1 shows parameters of model fit for the 1–6 profile models that were tested (Hypothesis 1). Because the AIC, BIC, LRT results for the two-profile model indicated improved fit over the one-profile model, a three-profile model was estimated, and so on, up to a six-profile model. Note, however, that the entropy value, an indicator of the amount of separation between profiles, was worse in the six-profile model as compared to the five-profile model despite improved AIC, BIC, and LRT results. This suggests that the five-profile model had better separation between profiles than the six-profile model. The five-profile model also demonstrated superior interpretability; the six-profile model did not provide conceptually meaningful distinctions because it produced multiple profiles with very similar moderate amounts of internalizing and externalizing symptoms. Taking together the parameters of fit and these conceptual considerations, the five-profile model was determined to best represent the data.

The five profiles showed distinct characteristics (see Table 2) and we describe them according to level of symptoms (lowest to highest). Profile 1, named “asymptomatic,” consisting of 27% of the sample, had the lowest mean levels of anxiety and depression, and its members had the greatest probability of reporting no externalizing behaviors. Profile 2 was the second largest profile, consisting of 24.8% of the sample. This profile showed moderately high levels of anxiety, yet comparatively low levels of depression. These adolescents, in the “moderate anxiety, moderate externalizing” profile, had medium probabilities of reporting “some” delinquency and violence against peers and low probabilities of reporting “a lot” of externalizing behaviors. Profile 3 consisted of 22.4% of the sample and reflects internalizing scores that are in the middle when compared to other profiles and levels of externalizing behaviors similar to Profile 2. These “moderate internalizing, moderate externalizing” victims reported medium mean levels of depression and anxiety and medium probabilities of reporting “some” and “a lot” of delinquency and violence against peers. Profile 4, “high internalizing, moderate externalizing”, comprising 14% of the sample, consisted of adolescents reporting high levels of anxiety and depression with an appreciable probability of reporting “some” or “a lot” of externalizing behaviors. Lastly, Profile 5 was the smallest, consisting of 11.7% of the sample, and included adolescents with the highest mean levels of anxiety and depression and also the highest probabilities of reporting “a lot” of delinquency and violence against peers. Profile 5, therefore, was named “high internalizing, high externalizing”.

Associations between Bullying Type and Frequency with Symptom Profiles

Table 3 summarizes the results from the five multinomial logistic regression models used to test Hypotheses 2–5, with each line representing results from a different model.

Direct victimization—Our first multinomial logistic regression model tested Hypothesis 2 that adolescents who experienced any *direct* victimization would have a greater likelihood of membership in profiles characterized by high externalizing symptoms than in profiles not characterized by high externalizing symptoms. This hypothesis required comparing Profile 5

(high internalizing, high externalizing) against each of the other profiles. Profile 5, therefore, was used as the reference category in the regression model testing Hypothesis 2. As shown in the first line of Table 3, comparisons of each Profile with Profile 5 were significant. Adolescents who experienced direct victimization had 70% lower odds of membership in Profile 1, 72% lower odds of membership in Profile 2, 73% lower odds of membership in Profile 3, and 59% lower odds of membership in Profile 4 compared to Profile 5. Thus, Hypothesis 2 was supported.

Indirect victimization—The next set of regression models tested Hypothesis 3 that adolescents who experienced any *indirect* victimization would have greater likelihood of membership in profiles characterized by high internalizing symptoms than in profiles characterized by low internalizing symptoms. LPA identified two profiles with higher internalizing symptoms: Profile 4 (high internalizing, moderate externalizing) and Profile 5 (high internalizing, high externalizing). Three profiles have lower internalizing symptoms: Profile 1 (asymptomatic), Profile 2 (moderate anxiety, moderate externalizing), and Profile 3 (moderate internalizing, moderate externalizing). Our multinomial logistic regression, therefore, required two sets of contrasts: Profile 4 compared to Profile 1, 2, and 3 and Profile 5 compared to Profile 1, 2, and 3. As shown in line 2 of Table 3 and contrary to Hypothesis 3, indirect bullying victimization was not significantly associated with membership in any of the lower internalizing profiles when compared to Profile 4. However, as shown in line 3, there was a significant association between indirect victimization and membership in the lower internalizing profiles as compared to Profile 5. Adolescents who experienced indirect victimization had 49% lower odds of membership in Profile 1, 58% lower odds of membership in Profile 2, and 48% lower odds of membership in Profile 3 compared to Profile 5. Thus, Hypothesis 3 was partially supported.

Dual victimization—Our next multinomial logistic regression model tested Hypothesis 4, which was that adolescents who experienced *both* direct and indirect victimization would have greater likelihood of membership in the profile characterized by high internalizing and high externalizing (Profile 5) than in the other profiles. To do so, we fit a model with Profile 5 as the reference profile. Consistent with Hypothesis 4 and as shown in line four of Table 3, adolescents who experienced both types of victimization were indeed more likely to be in Profile 5 (high internalizing, high externalizing) than in any of the other symptom profiles. Compared to profile 5, adolescents who experienced both types of bullying had 57% lower odds of membership in Profile 1, 63% lower odds of membership in Profile 2, 58% lower odds of membership in Profile 3, and 44% lower odds of membership in Profile 4.

Frequency of victimization—Our last regression model tested Hypothesis 5 that greater frequency of victimization would be associated with greater likelihood of membership in all of the symptomatic profiles than in the asymptomatic profile. To test this hypothesis, Profile 1 (asymptomatic) was used as the reference category. There was only partial support for this hypothesis. As shown in line five of Table 3, frequency of victimization was significantly associated with membership in the high internalizing profiles (Profiles 4 and 5), with each one-unit increase in bullying frequency being equivalent to a 4% and 9% respective increase in odds of profile membership compared to Profile 1. Frequency of victimization did not

increase odds of membership in Profiles 2 and 3, neither of which included high levels of internalizing.

Discussion

LPA results confirmed the presence of subgroups of symptoms within our sample of victims of bullying. In contrast to our hypothesized four profiles and the profiles found by Kretschmer and colleagues in a sample of victims and non-victims combined, the data supported a five-profile model consisting of a profile low on internalizing and externalizing (Profile 1), a profile of moderate anxiety, moderate externalizing (Profile 2), a profile of moderate internalizing and externalizing (Profile 3), a profile of high internalizing and moderate externalizing (Profile 4), and a profile characterized by high levels of internalizing and externalizing (Profile 5). The profiles that emerged reflect a more nuanced picture than the hypothesized four profiles, identifying more moderate levels of internalizing and externalizing symptoms and, in one case (Profile 2, moderate anxiety, moderate externalizing), distinguishing between the two types of internalizing symptoms measured in this study: anxiety and depression. Of note, internalizing and externalizing problems coexist in all profiles, underscoring the importance of secondary interventions that address both types of symptoms among victims of bullying. This is consistent with the only other study to use LPA to examine profiles of maladjustment to bullying, which found comorbidity of internalizing and externalizing symptoms in each profile (Kretschmer et al., 2015).

Overall, we found little support for the differentiating effects of indirect, direct, and dual victimization on symptom profile membership, despite support or partial support for the specific hypotheses tested. Thus, the findings contrast with metanalytic results by Casper and Card (2017) which found that indirect victimization is more strongly associated with internalizing whereas direct victimization is more strongly associated with externalizing maladjustment. Across all multinomial logistic regression models that specified Profile 5 (high internalizing, high externalizing) as the reference category, adolescents who received any type of bullying (direct, indirect, or dual) were more likely to be in this category than any others. Direct victimization over and above indirect victimization, indirect victimization over and above direct victimization, and both types of victimization in combination (i.e., dual victimization), were each significantly associated with membership in the highest symptom profile. There are a couple of potential interpretations of this finding. First, it is possible that Profile 5 represents a group particularly sensitive to bullying victimization of any type, perhaps due to biological liability or psychosocial vulnerability factors. Testing the influence of such factors as predictors of membership in the latent symptom profiles would illuminate this possibility. Second, it is possible that adolescents who exhibit high levels of internalizing and externalizing symptoms evoke bullying behavior of multiple types from their peers. A meta-analysis by Cook and colleagues (2010), suggests such a bidirectional relationship between displays of internalizing and externalizing behaviors and victimization (Cook, Williams, Guerra, Kim, & Sadek, 2010). The cross-sectional design of the present study precludes testing this bidirectionality.

We found that frequency of bullying victimization significantly increased the likelihood of membership in the two highest symptom profiles, Profile 4 (high internalizing, moderate

externalizing) and Profile 5 (high internalizing, high externalizing), compared to the asymptomatic profile (Profile 1). This is consistent with variable-centered studies that have found bullying victimization frequency to be associated with internalizing symptoms (Penning et al., 2010) and externalizing (Champion and Clay, 2007). However, we note that since both Profile 4 and Profile 5 are high on internalizing symptoms, our results could suggest that internalizing symptoms are particularly sensitive to repetitive victimization.

This study has several strengths. First, our large sample size of victims (n=1196) enhances confidence in our ability to identify latent profiles of symptoms. Second, we used previously validated measures with high internal consistency reliability to measure anxiety, depression, delinquency, and violence against peers. Third, we used a person-centered approach, LPA, which enabled us to holistically and simultaneously examine internalizing and externalizing symptoms among bullying victims. In doing so, we identified four subtypes of symptoms (and one asymptomatic profile) that may be overlooked in variable-centered, single outcome studies. In all subtypes, internalizing and externalizing symptoms co-exist. It seems that adolescents are not *either* internalizers *or* externalizers. Victims of bullying should be screened for both types of symptoms to ensure appropriate treatment for their specific symptom constellation. Also, the measure of bullying victimization used was finely grained and allowed for analysis of effects of different types of bullying and their frequency, not performed in a previous LPA (Kretschmer et al., 2015). Lastly, our study is hypothesis driven; thus, the reference profiles in the multinomial regression analyses were set to match the theoretically- and empirically- based hypothesized comparisons. As a result, however, we did not test for differences between all combinations of profiles on each of the bullying characteristics. Future studies may consider testing other comparisons if justified.

Mixture models, including LPA, are not without methodological and substantive controversy. For example, Bauer and Curran (2003) note that overextraction of discrete classes or profiles is likely when data are non-normal. We have guarded against this possibility by using either normal or categorical indicators in the identification of our profiles. In addition to this methodological concern, critics of mixture modeling question whether true clustering of people along behavioral and psychological phenomena exists or whether the identification of such clusters is a statistical artifact using arbitrary cut points (see Eysenck, 1986, Meehl 1992, and Pickles & Angold, 2003 for more on this debate). We acknowledge this controversy and recognize that the profiles emerging from our data are based on probability and membership is subject to error; however, we believe that unmasking and describing subtypes of internalizing and externalizing symptoms among bullying victims has both theoretical and practical utility.

The primary limitation of the study is that we cannot attribute the internalizing and externalizing symptoms solely to the experience of bullying victimization. It is possible that the victims in our dataset were anxious, depressed, delinquent, or violent prior to their reported victimization. Longitudinal data are needed to confirm the temporality of the relationship. Although we used one wave of data from a multi-wave longitudinal study, we were limited in doing a longitudinal assessment of the hypotheses for several reasons. First, the bullying victimization measure was not added until this fourth wave of data collection. Also, the assessment of bullying was of the three months prior to the survey administration,

rather than of a longer history of bullying victimization, which would have been needed to establish that the bullying happened prior to symptom development. Despite this limitation, the identification of profiles in this study can be used as the basis for future longitudinal research to test stability and transitions of symptom profiles among bullying victims over time.

Skewness of our externalizing measures required trichotomization, leading to loss of information which could have influenced our ability to identify the number and nature of latent profiles. Also, our definition of bullying deviates from one of the most common definitions of bullying used in the literature, that bullying 1) occurs between individuals of the same age group; 2) is characterized by an imbalance of power between the aggressor and the victim; and 3) occurs over a period of time (Olweus, 1978). However, some researchers have observed that even an action that is not intended by the perpetrator to cause harm may be interpreted by the victim as bullying (Guerin & Hennessy, 2002) and repetition of aggression may not need to be a criterion for bullying because one incident may cause the fear of repetition (Guerin & Hennessy, 2002). Additionally, Corvo and deLara (2010) suggest that measuring an imbalance of power between victim and perpetrator is unnecessary because children do not view a power differential as a dimension of bullying (Corvo & deLara, 2010). Finally, our profiles do not encapsulate all symptoms that bullying victims may present, such as substance use, eating disorders, and suicidality.

Conclusion

While the largest profile in our sample consisted of adolescent victims of bullying with few internalizing or externalizing symptoms (Profile 1, 27%), most of our sample fell into one of the four other profiles, demonstrating varying levels of internalizing and externalizing. This comorbidity of internalizing and externalizing symptoms must be considered in secondary interventions to reduce symptoms of psychopathology among victims of bullying. Future person-centered analyses of internalizing and externalizing symptoms of bullying victims should examine the stability and directionality of associations, as well as identify risk and protective factors that minimize psychopathology among victims of bullying.

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Table 1

Parameters of fit for 1 −6 profile solutions for internalizing and externalizing symptoms

# of Profiles	AIC	BIC	Sample-size adjusted BIC	LL	*p*-value for BLRT	*p*-value for VLMR LRT	Entropy
1	17204.014	17244.708	17219.297	−8594.007	--	--	--
2	16623.936	16700.237	16652.591	−8296.968	<0.0001	0.0001	.678
3	16266.324	16378.232	16308.352	−8111.162	<0.0001	0.0001	.741
4	16134.471	16281.986	16189.871	−8038.235	<0.0001	0.0008	.751
5	**15925.759**	**16108.881**	**15994.532**	**−7926.879**	**<0.0001**	**0.0001**	**.843**
6	15878.925	16097.655	15961.071	−7896.463	<0.0001	0.0060	.808

Note: Aikake Information Criterion (AIC; Akaike, 1974) and Bayesian Information Criterion (BIC; Schwarz, 1978) and sample-size adjusted BIC (Tofighi & Enders, 2007) are relative fit statistics where lower numbers indicate improved model fit as compared to higher numbers. These statistics are based upon the log likelihood (LL)—the logarithm of the likelihood ratio--which expresses how many times more likely the data fit under a *k* profile model than a *k-1* profile model. The *p* value for the bootstrapped likelihood ratio test (BLRT; McLachlan & Peel, 2000) and for the Vuong-Lo-Mendell Rubin (VLMR) likelihood ratio test (LRT; Lo, Mendell & Rubin, 2001) represent the results of tests that assess whether a model of *k* profiles represents a better fit for the data than a model of *k-1* profiles. P values of <.05 indicate that the *k* profile model better suits the data than a model of *k-1* profiles. Lastly, entropy is a criterion that measures classification certainty and can range from 0–1 (Celeux & Soromenho, 1996). Higher values indicate that profiles have good separation; that is, that profiles are more distinct from one another. An entropy value of .80 represents good separation between the profiles (Ramaswamy et al, 1993).

Note: Best fitting model in bold.

Table 2

Profile prevalences, means (for internalizing symptoms), item response probabilities (for externalizing symptoms), and classification probabilities for the 5 symptom profiles

	Profile 1: Asymptomatic	Profile 2: Moderate anxiety, moderate externalizing	Profile 3: Moderate internalizing, moderate externalizing	Profile 4: High internalizing, moderate externalizing	Profile 5: High internalizing, high externalizing
N(%)	323 (27.0)	297(24.8)	269 (22.4)	167(14.0)	140(11.7)
Anxiety	2.75	8.11	9.16	11.69	13.76
Depression	.38	3.76	7.80	11.26	15.40
Delinquency					
None	.76	.66	.66	.57	.46
Some	.16	.26	.23	.34	.23
A lot	.08	.08	.11	.10	.31
Violence					
None	.71	.62	.64	.56	.57
Some	.23	.30	.24	.31	.25
A lot	.07	.09	.12	.13	.19
Classification probability	.95	.86	.86	.88	.92

Table 3

Adjusted associations[a] between bullying victimization characteristics and symptom profile membership; results from five multinomial logistic regression models used to test Hypotheses 2-5, with each line representing results from a different model

Victimization characteristic	Profile 1		Profile 2		Profile 3		Profile 4		Profile 5	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Direct[b]	**.30**	**(.13,.68)** **	**.28**	**(.13,.63)** **	**.27**	**(.12,.60)** **	**.41**	**(.17,.97)** *		Reference
Indirect[c]	.80	(.50,1.28)	.66	(.42,1.06)	.81	(.50,1.32)		Reference		--
Indirect[b]	**.51**	**(.30,.87)** *	**.42**	**(.25,.72)** **	**.52**	**(.30,.90)** *		--		Reference
Dual[b]	**.43**	**(.27,.69)** **	**.37**	**(.23,.60)** ***	**.42**	**(.26,.68)** **	**.56**	**(.33,.94)** *		Reference
Frequency[d]		Reference	1.01	(.99,1.04)	1.02	(.99, 1.05)	**1.04**	**(1.01,1.07)** **	**1.09**	**(1.06,1.12)** ***

Note: Profile 1= Asymptomatic; Profile 2= Moderate anxiety, moderate externalizing; Profile 3= Moderate internalizing, moderate externalizing; Profile 4= High internalizing, moderate externalizing; Profile 5= High internalizing, high externalizing.

[a]Adjusted odds ratios (OR) estimated from a multinomial logistic regression of symptom profile membership on specified bullying victimization characteristic adjusting for gender, race, parental education, and grade. The model testing association between direct victimization and symptom profile membership also controls for indirect victimization. The models testing associations between indirect victimization and symptom profile membership also control for direct victimization.

[b]Reference is Profile 5, high internalizing, high externalizing.

[c]Reference is Profile 4, high internalizing, moderate externalizing.

[d]Reference is Profile 1, asymptomatic

*p<05

**p<01

***p<.0001