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Modifiable Kindergarten Factors that Predict Being a Bully, Victim, or Bully-victim by the Upper Elementary Grades

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Author's Note

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Abstract

The investigators analyzed a population-based cohort (*N* range=7,182-8,210; kindergarten M_{age} =67.5 months) to identify modifiable factors by kindergarten predictive of being a bully, victim, or bully-victim during third, fourth, or fifth grade. Chi-squared analyses supported the bully-victim subtype. Greater academic achievement lowered children's risk for being bullies (odds ratio [OR] range = .66 to .75), victims (OR =.83 to .85), and bully-victims (OR = .72 to .76). Externalizing problem behaviors increased children's risk for being bullies (OR = 1.84 to 2.16), victims (OR = 1.35 to 1.43), and bully-victims (OR = 1.90 to 2.17). Internalizing problem behaviors and parenting did not consistently predict children's bullying victimization. Achievement and behavior but not parenting constitute modifiable targets of early bullying victimization interventions.

Modifiable Kindergarten Factors that Predict Being a Bully, Victim, or Bully-victim by the Upper Elementary Grades

Bullying victimization increases children's risks for academic, behavioral, and socio-emotional difficulties during school (Delprato et al., 2017; Lereya et al., 2013; Sigurdson et al., 2015) as well as delinquency, depression, anxiety, panic disorders, suicidality, psychotic experiences, antisocial behavior, substance abuse, economic hardship, and poor quality of life into adulthood (Arseneault, 2018; Brendgen & Poulin, 2018; Klomek et al., 2015; Wolke et al., 2014). About 30% of children report being a bully, victim, or both a bully and a victim (i.e., bully-victim) in U.S. schools (Nansel et al., 2001). Screening and intervention efforts delivered by the elementary grades may help prevent children from experiencing bullying victimization's sequalae (Kljakovi & Hunt, 2016; Wolke et al., 2014).

Bullying victimization is typically characterized by the frequent occurrence of negative actions (e.g., hitting, pushing, spreading lies, teasing, calling names) (Olweus, 2005; Rose et al., 2018). Bullying victimization is currently operationalized as belonging to one of three groups. These are (a) being a bully, and so committing negative actions against other children, (b) being a victim so being the target of negative actions; or (c) being a bully-victim and so both bullying others and also being bullied (Cook et al., 2010; Farmer et al., 2012; Lereya et al., 2015). Bully-victims are at especially high risk for bullying victimization's sequalae including psychosocial maladjustment (Lereya et al., 2015; Nansel et al., 2001).

Modifiable Factors Associated with Bullying Victimization

Academic achievement, externalizing and internalizing problem behaviors, and parenting behaviors are modifiable factors associated with bullying victimization (Cook et al., 2010; Hemphill et al., 2012; Košir et al., 2019; Mundy et al., 2017; Shetgiri et al., 2012; Turunen et al.,

2019). Lower academic achievement may result in greater frustration, antisocial behaviors, and lower social standing (Morgan et al., 2012; Turunen et al., 2019), thereby increasing children's risks for bullying victimization (Knack et al., 2012; Mundy et al., 2017). Engaging in externalizing problem behaviors may lead to physical or verbal aggression towards other children and so result in lower social standing and increased risks for being a bully, victim, and/or bully-victim (Reijntjes et al., 2011). Being anxious, lonely, or socially withdrawn may result in victimization by aggressive children (Reijntjes et al., 2010). In contrast, specific parenting behaviors (e.g., warmth, cognitive stimulation, engagement) may help children adopt better coping strategies in school and so lower their risks for being a bully, victim, or bully-victim (Lereya et al., 2013; Rios et al., 2020; Shetgiri et al., 2013).

Methodological and Substantive Limitations in the Extant Knowledge Base

Yet whether these modifiable factors constitute potential targets of bullying screening and intervention efforts during the elementary grades is unknown (Zarate-Garza et al., 2017). Empirical evidence of bullying victimization's predictors is currently limited and inconsistent (Kljakovic & Hunt, 2016) including for subtypes of bullies, victims, and bully-victims (Hemphill et al., 2012). The modifiable factors for these known subtypes may differ (Cook et al., 2010; Veenstra et al., 2005). Identifying modifiable factors specifically for bullies, victims, or bully-victims should contribute to better targeted screening and intervention efforts.

To date, available studies have mostly analyzed adolescent samples (Hemphill et al., 2012). Most of these studies (i.e., 13 of 19, or about 70%) make no adjustments for confounding, primarily focus on victimization, and examine risk rather than protective factors (Kljakovic & Hunt, 2016). Unadjusted risk factor estimates may be misdirecting bullying interventions including those designed specifically to help children at greater risk of being bullies, victims, or

bully-victims (Moore et al., 2017). Although there is "a robust association between bullying victimization in childhood or adolescence and poor academic achievement," (Moore et al., 2017, p. 69), nine of 10 (i.e., 90%) of meta-analyzed studies reporting this association are cross-sectional. Whether confounds including lower behavioral self-regulation explain achievement's association with bullying victimization has yet to be examined (Nakamoto & Schwartz, 2010). Most of the available studies report general associations between externalizing or internalizing problem behaviors and bullying victimization (Reijntjes et al., 2010; Reijntjes et al., 2011). Whether and to what extent these problem behaviors specifically predict being a bully, victim, or bully-victim is therefore unknown (Kljakovic & Hunt, 2016). Studies examining parenting's association with bullying victimization have mostly used cross-sectional designs (i.e., 62 of 70 or 89% of meta-analyzed studies) (Lereya et al., 2013).

Additional potential confounds of observed associations between academic achievement, externalizing and internalizing problem behaviors, or parenting and children's bullying victimization risks include biological sex, race/ethnicity, disability status, family socioeconomic status (SES), and school racial and economic composition (Hong & Espelage, 2012; Shetgiri et al., 2010; Shetgiri et al., 2012). Children who are Black are reported to be at greater risk for being bully-victims (Peskin et al., 2006), possibly due to engaging in greater rates of reactive aggression towards other children engaging in racial acts (Goldbach et al., 2018). Being a language minority may lower the risk for bullying victimization as a result of greater bicultural competencies, enhanced flexibility in socio-cognitive functioning, and lower assimilation (Almeida et al., 2011; Bacallao & Smokowski, 2005; Smokowski et al., 2009). Of studies analyzing elementary-aged samples, most examine the transition to middle school (Espelage et al., 2015; Haltigan & Vaillancourt, 2014), use no or minimal statistical control, are cross-

sectional or use short-term (e.g., one year) longitudinal designs (Hellfeldt et al., 2018), analyze convenience or non-U.S. samples (Jansen et al., 2011; Ladd et al., 2017), or do not report risk factor estimates as early as kindergarten (Košir et al., 2019). To our knowledge, no prior study has reported on modifiable factors for being a bully, victim, or bully-victim in multivariate analyses of a nationally representative cohort of kindergarten children followed into the upper elementary grades. Despite their greater risk for bullying victimization's sequelae, most studies of bully-victims analyze older samples (Lereya et al., 2015; Nansel et al., 2001). No study has yet analyzed a population-based cohort of U.S. elementary schoolchildren to empirically evaluate to what extent bully-victims is evident as a distinct subtype by the primary grades (Veenstra et al., 2005).

Study's Purpose

We examined whether and to what extent the modifiable factors of academic achievement, externalizing and internalizing problem behaviors, and parenting predict kindergarten children's risks of being a bully, victim, or bully-victim by third, fourth, or fifth grade. We analyzed these grades separately to internally replicate our results and to examine to what extent these factors consistently predicted children's risks for bullying victimization across the upper elementary grades. We also empirically examined whether a bully-victim subtype was evident by the primary grades. We hypothesized that this would be the case. We further hypothesized that children experiencing lower academic achievement, more frequent externalizing and internalizing problem behaviors, and lower quality parenting during kindergarten would be at consistently higher risk for being bullies, victims, or bully-victims during each of these upper elementary grades including conditionally on potential confounds. We expected that socio-demographic factors including biological sex, family SES, race/ethnicity,

and language minority status would also predict children's risks for bullying victimization while attending U.S. elementary schools.

Method

Sample and Procedure

We analyzed the Early Childhood Longitudinal Study: Kindergarten Cohort of 2010-2011 (ECLS-K: 2011), a dataset maintained by the U.S. Department of Education's National Center for Education Statistics (NCES). The ECLS-K: 2011 followed a nationally representative cohort of U.S. children from the fall of kindergarten until the spring of fifth grade. We used factors measured by kindergarten to predict bullying victimization separately during the spring of third (N = 8,210), fourth (N = 7,714), and fifth grade (N = 7,182) survey waves. The study was approved by an Institutional Review Board.

All analyses were conducted in Stata 15.1. The average amount of missing data of the study's predictors was 4% with a maximum of 16% at each grade. We multiply imputed 40 datasets in each grade using Stata's *mi impute chained* command to address missing data and adjust for bias due to attrition. We clustered standard errors by schools and used sampling weights to ensure the estimates were nationally representative of U.S. children entering kindergarten in the fall of 2010.

Measures of Bullying Victimization

We identified children as belonging to one of four bullying victimization groups. These were: 1=*neither*, 2=*victim only*, 3=*bully only*, and 4=*bully-victim*. We identified children who did not experience victimization often or very often and who were not reported to bully others often or very often as either bullies, victims, or bully-victims as neither bullies nor victims. These children served as the reference group in the study's regression models. We identified children

experiencing victimization often or very often in any of the four domains but who were not reported to bully others as victims. Those children reported to bully others often or very often in any of these four domains but who did not self-report victimization were identified as bullies. We identified children who both self-reported experiencing victimization as well as who were reported by their teachers to also bully others often or very often in any of these four domains as bully-victims. We report further on the child self-report measure of victimization and the teacher report of bullying below.

Victims. We used child self-report to identify victims. Children are thought to be more sensitive to victimization than teachers or parents (Averdijk et al., 2016), with self-report considered a valid indicator (Bradshaw, 2015). Victimization self-report shows both consistency and predictive validity with cross-informant behavioral measures (Averdijk et al., 2013). Teachers and parents may underreport victimization including of behaviors resulting in social exclusion because "individual experiences at school and with friends are better known to students than to their teachers or parents" (Rupp et al., 2018, p. 464).

Four items were adapted for use in the ECLS-K based on a psychometrically validated scale of specific victimization behaviors (Espelage & Holt, 2001). In the spring of third, fourth, and fifth grade, children self-reported whether others had (a) "teased you, made fun of you, or called you names?" (b) "left you out from playing with them on purpose?" (c) "told lies or untrue stories about you?" and (d) "pushed, shoved, slapped, hit, or kicked you?" during this school year. These items measured (a) verbal, (b) social, (c) reputational, and (d) physical victimization. The four items loaded onto a common victimization factor in both exploratory and confirmatory factor analyses (Cronbach's $\alpha = .88$; Espelage & Holt, 2001) and had good reliability among

middle schoolers (e.g., Cronbach's α = .79-.80; Rose et al., 2011; Rose et al., 2015). The items also displayed good reliability in the ECLS-K: 2011 (Cronbach's α = .79-.80).

Bullies. We used teacher ratings to identify bullies. Children are believed to be less willing to self-report bullying others on school surveys because of social desirability bias and to avoid being consequenced by their teachers (Totura et al., 2009). Elementary school teachers are considered be particularly good assessors of bullying because they spend many hours working with the same students (Elliott et al., 2019). Third, fourth, and fifth grade teachers were administered the same four items and asked to respond to indicate how often each child victimized others. Specifically, the teachers reported how often the child teased others, told lies or untrue stories about others, pushed, shoved, slapped, hit, or kicked others, and intentionally left others out from playing with them. These items also loaded onto a common factor with high reliabilities at each grade in the ECLS-K: 2011 (.89, 90, and .90 in third, fourth, and fifth grade, respectively). Child and teacher responses ranged from "never" to "very often" based on a 5-point scale.

Measures of the Kindergarten Predictors

Academic Functioning. The ECLS-K: 2011 includes individually administered, untimed, and item-response theory-scaled (IRT) measures of general reading and mathematics achievement. The reading achievement measure assessed skills such as print familiarity, letter recognition, beginning and ending sounds, recognition of common words, and decoding multisyllabic words; vocabulary knowledge and reading comprehension. The mathematics achievement measure assessed conceptual knowledge, procedural knowledge, and problem solving. Both measures used involved 18 routing items administered to all children. Scores on these items determined whether the children were subsequently administered questions of either

low, middle, or high difficulty. Both achievement measures had good reliability with Cohen's α =.92 and were highly correlated at school entry. We therefore averaged children's reading and mathematics achievement to indicate their general academic achievement.

Behavioral Functioning. Behavioral functioning was measured in the ECLS-K: 2011 by a modified version of the psychometrically validated Social Skills Rating System (SSRS; Gresham & Elliot, 1990). We used subscales of children's externalizing and internalizing problem behaviors and their behavioral self-regulation. Items were rated on a 4-point scale ranging from "never" to "very often." The Externalizing Problem Behaviors subscale consisted of five items indicating aggressive or impulsive behaviors (e.g., argues, fights, acts impulsively, gets angry). The Internalizing Problem Behaviors subscale consisted of four items indicating anxious or withdrawal behaviors (e.g., is the child lonely, sad, or anxious). The Approaches to Learning subscale consisted of seven items that capture how often a student displayed behavioral self-regulation (e.g., works independently, easily adapts to changes in routine). The kindergarten internal consistency reliability coefficients for the externalizing, internalizing, and behavioral self-regulation subscales were .88, .79, and .91, respectively.

Parenting. We included measures of four specific types of parenting. Cognitive stimulation was a standardized composite variable of nine items (α = .72) measuring the frequency (not at all/once or twice a week/3-6 times a week/every day) that parents participated in activities in the fall of kindergarten that were cognitively stimulating (e.g., playing games, practicing reading, writing or working with numbers with the child). The parent-child activities scale was a standardized sum of 18 parent-reported items (α = .65) from the spring of kindergarten. Six of the 18 items assessed whether any family member had attended specific activities with the child over the past month (e.g., visiting a library, bookstore, or zoo). The other

12 items assessed whether the child had ever participated in specific types of classes or programs outside the school (e.g., academic activities, organized athletic activities, music lessons).

The parental warmth scale was created from four standardized items (α = .65) in the spring of kindergarten asking to what extent (completely true/mostly true/somewhat true/not at all true) items indicated to what extent parents showed affection with their child. The early reading activities scale summed and standardized five parent-reported items measuring their weekly literacy activities in the fall of kindergarten (α = .46). Example items assessed how often the parent read to their child, how often the child read picture books outside the school, and the time the parent spent reading to their child.

Socio-demographic Factors. We included whether children were in a household with an unmarried (e.g., divorced, single) parent in the fall of kindergarten and children's age in months in the fall of kindergarten achievement measure's administration. Children's race and ethnicity were coded as White, Black, Hispanic, or Other. Children's biological sex and whether English was the primary language spoke in the home were reported during kindergarten. Parental education and household income in the spring of kindergarten were analyzed as continuous variables. Children were identified as having a disability if either the parent reported a disability or school staff reported that an Individualized Education Program (IEP) was on file in the spring of kindergarten.

School Contextual Factors. We included two measures of school-level racial and economic composition. These were percentage of non-White children in a school and the school percentage of children eligible for free or reduced lunch. Both measures were reported by the school administrator in the spring of kindergarten. These variables were standardized to a mean of 0 and standard deviation of 1.

Statistical Analyses

We began our analyses by conducting, separately for third, fourth, and fifth grade, chi-squared tests of the independence of being a bully or victim, thereby empirically evaluating whether the bully-victim category had a larger prevalence than expected if the two outcomes were independent. We found an over-prevalence in this category, measured its magnitude, and examined the over- or under-prevalence of each of the other categories in the four cells of the bully x victim cross-tabulation. These analyses showed a large over-prevalence of bully-victims, supporting this category as a distinct subtype. We then used multinomial logistic regression to estimate the effects of the predictors on the odds of membership in each of the three bullying victimization subtypes.

Results

Prevalence of Bullying, Victimization, and Bully-Victims

Table 1 shows cross-tabulations of bully and victim subtypes. In third grade, 56% of children report experiencing only victimization. This declined to about 25% of children in fourth grade, and 23% of children in fifth grade. In contrast, the prevalence rates of the other subtypes were relatively constant across grade levels. The bullies subtype increased from 2% to 3% from third to fifth grade. Bully-victims were relatively constant at approximately 3.5% across these grades.

Testing the Independence of Bullying and Victimization

Table 1 shows the results of the chi-squared tests. For each of the four cells of these tables, we report the observed count of children, the count of children expected under the assumption of independence, and the "overage" or the percentage by which the observed count exceeded the expected count in each cell. All three of the chi-square tests were significant. These

values were 178.3 (p<.001), 284.9 (p<.01), and 230.2 (p<.001), indicating that these variables were very far from being independent of one another at each of the grade levels. We also noted a very strong pattern of large overages for the (1,1) bullying-victimization cell. These were the largest discrepancies between observed and expected cases in these tables, at 63%, 101%, and 99% over their expected values in third, fourth, and fifth grades, respectively. This is strong evidence for the existence of an unusually large number of bully-victims in the ECLS-K: 2011 data. This indicated that the bully-victim status should be treated as a distinct subtype, rather than just an artifact of the prevalence of each of the separate statuses.

The next largest discrepancies were for the (0,1) cell—children who were bullies but not victims. For third, fourth, and fifth grade these were -38%, -40%, and -35%, respectively. Thus, the underlying processes by which children become bullies and/or victims indicated that the category of "bully only" was under-represented, whereas "bully-victims" were over-represented. These children would have been identified as bullies if we had not also allowed for the possibility of the bully-victim subtype. The next largest discrepancies were for the (1,0) cell—children who were victims but not bullies. These were modestly under-represented by 4%, 7%, and 6% in third, fourth, and fifth grade, respectively. The (0,0) cell representing children who were neither bullies nor victims was slightly over-represented by 2%, 3%, and 2% for each of the grade levels.

Regressions Predicting the Bullying Victimization Subtypes

We next conducted multinomial logistic regressions models of children's risks for being bullies, victims, or bully-victims, separately for third, fourth, and fifth grade. Table 2 displays descriptive statistics of these analytical samples. Table 2 indicates that kindergarten children who were neither bullies nor victims displayed relatively high academic achievement, low

externalizing behavior problems, and high behavioral self-regulation. Their parents had relatively high levels of parental education and income. These children attended schools with the lowest percentage of children on free or reduced-prince lunch. In contrast, bullies and bully-victims had the lowest achievement and behavioral self-regulation in kindergarten, and the highest rates of externalizing behavior problems. Their parental education and income were among the lowest. We observed similar descriptive statistics for each of the grade levels.

Table 3 shows the odds ratio coefficients from the multinomial logistic regressions predicting the odds of membership in each of the bullying victimization groups. Higher kindergarten academic achievement consistently functioned as a modifiable protective factor for being a bully, victim, or bully-victim in the upper elementary grades. We observed this to be the case for each of the three grades in regressions that were adjusted for potential confounds. These odds ratios varied from .66 (p<.01) to .85 (p<.001) across the subtypes and the three grade levels. Higher achievement consistently predicted lower bullying victimization risks.

Higher externalizing behavior problems in kindergarten consistently functioned as a modifiable risk factor for bullying victimization. This variable was positively and significantly predictive for all three subtypes and across all three grade levels in adjusted analyses. These coefficients are largest for being a bully and bully-victim, and smaller (although still positive and significant) for being a victim. At each grade level the strongest predictive effect is for bully-victims. These coefficients were 2.17 (p<.001), 1.90 (p<.001), and 2.10 (p<.001) for third, fourth, and fifth grade, respectively. Higher externalizing problem behaviors consistently predicted higher bullying victimization risks. Higher internalizing problem behaviors inconsistently lowered kindergarten children's risks for being victims or bully-victims. Parenting

was not consistently predictive of bullying victimization in analyses adjusted for potential confounds.

Socio-demographic factors also predicted children's risks for bullying victimization. Black children were at greater risk for being bully-victims. These coefficients were 2.37 (p<.001), 2.23 (p<.001), and 1.95 (p<.05), in the third, fourth, and fifth grade, respectively. Being from a non-English speaking household predicted lower odds of being a bully, victim, or bully-victim. These lower risks were observed in separate analyses of each of the study's three grades. The predicted relations with being a bully or bully-victim were particularly strong. Seven of the nice coefficients were statistically significant. The bully-victim odds ratios were .41 (p<.01), .24 (p<.001), and .37 (p<.01) for third, fourth, and fifth grade, respectively. Being male consistently increased the odds of being a bully. Other, less consistent kindergarten factors predictive of bullying victimization by the upper elementary grades included children's behavioral self-regulation, their disability status, being raised in an unmarried household, parental education, income, and the percentage of children in the school on free or reduced-price lunch.

Discussion

To address recently identified methodological and substantive limitation in the extant work (Kljakovic & Hunt, 2016; Moore et al., 2017), we analyzed a population-based cohort to identify modifiable factors by kindergarten predictive of children's risks of being bullies, victims, or bully-victims by the upper elementary grades. We also empirically evaluated these subtypes using chi-square tests. Results supported the subtypes as distinct including bully-victims. Multinomial regressions predicting membership in each of the three bullying victimization subtypes indicated that the modifiable factors of kindergarten academic

achievement and externalizing problem behaviors consistently predicted children's risks for being bullies, victims, or bully-victims during the upper elementary grades. Higher achieving kindergarten children were at lower risk for later bullying victimization. Kindergarten children engaging in more frequent externalizing problem behaviors were at higher risk. We observed these multiyear predictive relations across multiple measures of bullying victimization separately administered in third, fourth, and fifth grade as well as in analyses simultaneously controlling for potential confounds including biological sex, race/ethnicity, family SES, and school contextual variables.

In contrast, internalizing problem behaviors and self-regulation inconsistently predicted lower risks for being victims or bully-victims. Parenting was not a consistent predictor of children's risks for being bullies, victims, or bully-victims. We also observed the socio-demographic factors were predictive of children's risks for bullying victimization. Children who are Black were consistently at greater risk for being bully-victims (Goldbach et al., 2018). Boys were at greater risk for being bullies (Hong & Espelage, 2012). Consistent with prior work (Almeida et al., 2011), children who are language minorities were consistently less likely to be victims or bully-victims.

Strengths and Limitations

Strengths of our study include analyses of a large population-based cohort followed from the beginning of kindergarten to the end of fifth grade. Estimates based on analyses of a longitudinal cohort generalizable to the population of U.S. elementary school have been previously unavailable (Kljakovic & Hunt, 2016). To our knowledge, no prior study has reported on kindergarten risk and protective factor estimates for being a bully, victim, or bully-victim by the upper elementary grades (Shetgiri et al., 2012). We also extensively adjusted the estimates

for factors previously identified as potential confounds including other types of behavioral functioning, biological sex, family SES, and school context factors. For internal replication and to better identify kindergarten factors consistently predictive of bullying victimization during the upper elementary grades, we separately analyzed samples of children attending third, fourth, and fifth grade.

Yet our study also has limitations. We were unable to analyze data from direct observations. We instead analyzed child- and teacher-reports of bullying victimization. Children and teachers can reliably report on bullying victimization (Connell et al., 2019). The ECLS-K: 2011's data collection ended at the end of fifth grade. We were unable to examine whether these predictive relations were evident as children entered middle and high school. Bullying victimization's risk and protective factors may change across later developmental time periods (Cillessen & Lansu, 2015) including during transitions to middle or high school (Troop-Gordon, 2017). Our results are not causal. We instead report the extent to which specific factors predict being a bully, victim, or bully-victim, conditional on the other factors included in the regression models. Measures of bullying victimization were not administered during kindergarten in the ECLS-K: 2011. Although we included three measures of behavioral functioning as predictors in the regression models, we were unable to control for baseline rates of bullying victimization. Experimental studies are necessary to conclusively establish that intervening upon academic achievement and externalizing problem behaviors results in children experiencing less bullying victimization.

Contributions and Implications

To date, the field's emphasis on victims rather than bullies or bully-victims, risk rather than protective factors, and analyses of convenience samples has limited intervention

development as well as the generalizability (Kljakovic & Hunt, 2016). Additional limitations include use of cross-sectional or short-term longitudinal designs, analyses of adolescent samples, and no or minimal adjustment for potential confounds. Our use of a multiyear longitudinal design and extensive adjustment for potential confounds provides more rigorous estimates of bullying victimization's modifiable factors than those currently available.

Our analyses help clarify that kindergarten children's academic achievement and externalizing problem behaviors constitute modifiable factors for experimentally evaluated screening and intervention efforts delivered during the elementary grades including those specifically targeting those at risk of being bullies, victims, or bully-victims. Our results also provide stronger empirical support for prior theoretical and applied work suggesting that higher academic achievement functions as a protective factor for bullying victimization, possibly as result of providing children with greater social status and lessening their likelihood for socio-emotional maladjustment (Morgan et al., 2012; Turunen et al., 2019). Our results are also consistent with children engaging in externalizing problem behaviors being more likely to be physically or verbally aggressive and so bully others as well as to be more likely to be victims and bully-victims due to their resulting lower social status (Cook et al., 2010; Elliott et al., 2019).

Although some previous studies reported that parenting is associated with bullying victimization (Lereya et al., 2013), our results are consistent with several other studies find that control for potential confounds helps explain initially observed associations between parenting and children's bullying victimization risks (Veenstra et al., 2005; Zimmerman et al., 2005). We did not find that internalizing problem behaviors in kindergarten were associated with a higher risk for later bullying victimization. Instead, and contrary to prior work (Reijntjes et al., 2010), we found that such behaviors were inconsistently associated with a lower risk for being victims

or bully-victims. To our knowledge, that higher internalizing problem behaviors lowers the risk for bullying victimization during the upper elementary grades has not been previously reported. However, we caution that this relation was somewhat inconsistent. Because we do not find that internalizing problem behaviors increase the risk for bullying victimization, our study suggests that children who are anxious, lonely, or socially withdrawn may not be more likely to be victimized by aggressive children during the upper elementary grades (Reijntjes et al., 2010). One explanation for this finding is that being socially withdrawn only beings to increases the risk for victimization during adolescence. This is consistent with prior meta-analysis, which finds a stronger relation between bullying and externalizing than internalizing problem behaviors (Cook et al., 2010), with the relation with externalizing problem behaviors especially strong during elementary school (r = .40). A relation with internalizing problem behaviors becomes more evident during adolescence (r = .19) than during elementary school (r = .03). In addition to our analyses of elementary schoolchildren, our control for additional confounds and examination of risk and protective factors attributable specifically to being a bully, victim, or bully-victim may explain the lack of observed consistent associations between parenting quality, internalizing problem behaviors, or behavioral self-regulation and children's risks for bullying victimization.

Our study extends the field's knowledge base in other ways. To date, prior findings that Black children are at elevated risk for being bully-victims have been based on cross-sectional designs and analyses of middle or high school students (Goldbach et al. 2018). Our longitudinal analyses help strengthen this limited evidence base and also support existing theoretical accounts that children who are Black experience heightened risks for bullying and victimization. For instance, systemic racism in the U.S. has led to Black children being over-represented in communities that experience greater exposure to violence and family conflict, which could lead

to Black children being especially likely to engage in violence (DuRant et al., 1994) and reactive aggression towards peers who may be engaging in racial acts (Goldbach et al., 2018). This finding is of developmental concern given that bully-victims are at greatest risk of experiencing bullying victimization's most adverse sequelae (Kumpulainen & Räsänen, 2000; Wolke et al., 2013). Our findings advance the evidence base by establishing that Black children's increased risk for being bully-victims is already evident by elementary school. Relatedly, prior work finding that language minorities may be at lower risk for bullying victimization has also been based on cross-sectional designs and analyses of older samples (Shetgiri et al., 2010). Our multiyear longitudinal study finds that the lower risk for bullying victimization attributable to being a nemergent bilingual also is already evident by elementary school. This finding is consistent with theoretical accounts of children who are bicultural or recent immigrants being less likely to engage in or experience violence while attending school (Almeida et al., 2011; Bacallao & Smokowski, 2005; Smokowski et al., 2009).

Conclusion

Achievement and externalizing problem behaviors by kindergarten modifiable factors for reducing kindergarten children's risks for becoming bullies, victims, and bully-victims by the upper elementary grades. In contrast, internalizing problem behaviors, behavioral self-regulation, or parenting were not consistent predictors of these risks. Specific socio-demographic factors consistently predicted children's risk for bullying victimization. Collectively, our findings strengthen the currently limited knowledge base by identifying promising modifiable factors by kindergarten predictive of being a bully, victim, or bully-victim by the upper elementary grades in multiyear analyses adjusted for potential confounds of a population-based cohort.

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Table 1.

Chi-squared Tests of Independence Between Bullying and Victimization

	3rd Grade Bullying		4th Grade Bullying		5th Grade Bullying	
Victimization	No	Yes	No	Yes	No	Yes
No						
Observed *n*	7103	270	7539	286	7312	305
Expected *n*	6937.3	435.7	7349.3	475.7	7150.6	466.4
Overage	2%	-38%	3%	-40%	2%	-35%
Yes						
Observed *n*	4010	428	2705	377	2331	324
Expected *n*	4175.7	262.3	2894.7	187.3	2492.4	162.6
Overage	-4%	63%	-7%	101%	-6%	99%

Note: 3rd grade chi-square = 178.29, p = .000; 4th grade chi-square = 284.94, p = .00; 5th grade chi-square = 230.24, p = .000. Overage=(Expected-Observed)/Expected. Table uses unimputed data. Bullying = teacher reported that child engaged in bullying behavior often or very often in at least one domain (verbal, social, reputational, physical); Victimization = child reported experiencing victimization often or very often in at least one domain (verbal, social, reputational, physical).

Table 2.

Means of Student, Family, and School Characteristics, Separately by Bullying x Victimization Status

	3rd Grade					4th Grade					5th Grade				
	None	Bully	Victim	Bully-Victim	Total 3rd Grade	None	Bully	Victim	Bully-Victim	Total 4th Grade	None	Bully	Victim	Bully-Victim	Total 5th Grade
Achieve	0.17	-0.30	-0.10	-0.35	0.05	0.16	-0.30	-0.13	-0.35	0.06	0.15	-0.22	-0.10	-0.32	0.06
Extern	-0.20	0.60	0.12	0.95	-0.03	-0.17	0.88	0.18	0.84	-0.02	-0.16	0.63	0.21	0.85	-0.01
Intern	-0.05	0.04	0.01	0.21	-0.02	-0.06	0.34	0.04	0.08	-0.02	-0.03	0.14	0.03	0.22	0.00
Approaches	0.19	-0.39	-0.09	-0.67	0.05	0.16	-0.53	-0.12	-0.72	0.04	0.14	-0.44	-0.13	-0.54	0.04
Age at K	0.02	0.03	-0.03	0.03	0.01	0.02	0.02	0.00	0.17	0.02	0.01	0.08	0.03	-0.08	0.02
Parent Educ	0.07	-0.15	-0.12	-0.23	-0.01	0.07	-0.27	-0.15	-0.26	-0.01	0.05	-0.32	-0.12	-0.15	-0.01
Income	0.06	-0.31	-0.15	-0.42	-0.04	0.08	-0.28	-0.23	-0.53	-0.03	0.07	-0.27	-0.25	-0.39	-0.03
Cog. Stim	-0.03	-0.14	0.02	0.04	-0.01	-0.03	-0.13	0.05	0.06	-0.01	-0.03	-0.06	0.03	0.11	-0.01
Parent-Child Activities	0.02	-0.15	-0.08	-0.13	-0.03	0.02	-0.14	-0.11	-0.27	-0.03	0.02	-0.20	-0.12	-0.16	-0.03
Warmth	0.00	-0.04	0.00	-0.08	0.00	-0.01	0.01	-0.01	0.04	-0.01	-0.02	-0.02	0.02	-0.08	-0.01
Early Read	-0.02	-0.15	-0.02	-0.04	-0.02	-0.01	-0.14	-0.02	-0.02	-0.02	-0.02	-0.12	0.02	0.08	-0.01
School % Free Lunch	-0.07	0.22	0.10	0.34	0.01	-0.11	0.24	0.18	0.32	-0.01	-0.09	0.20	0.16	0.42	0.00
School % Non-White	-0.13	0.19	-0.05	0.19	-0.08	-0.19	0.07	0.00	0.18	-0.13	-0.15	0.04	-0.02	0.27	-0.10
Male	0.49	0.66	0.52	0.72	0.51	0.50	0.72	0.50	0.65	0.51	0.50	0.72	0.52	0.59	0.51
White	0.53	0.41	0.51	0.39	0.52	0.54	0.41	0.49	0.37	0.52	0.53	0.43	0.50	0.38	0.52
Black	0.10	0.25	0.15	0.37	0.13	0.10	0.24	0.17	0.36	0.13	0.10	0.24	0.18	0.36	0.13
Hispanic	0.26	0.25	0.24	0.19	0.25	0.25	0.26	0.24	0.18	0.25	0.26	0.28	0.22	0.18	0.25
Other	0.11	0.08	0.10	0.05	0.10	0.11	0.09	0.09	0.09	0.1	0.11	0.05	0.09	0.08	0.10
Unmarried Parent	0.26	0.50	0.34	0.55	0.31	0.26	0.54	0.36	0.51	0.3	0.26	0.37	0.38	0.51	0.30
Disability	0.20	0.27	0.25	0.28	0.22	0.20	0.29	0.27	0.35	0.22	0.20	0.25	0.27	0.28	0.22
Non-English Home	0.17	0.10	0.14	0.09	0.16	0.16	0.15	0.15	0.06	0.15	0.17	0.18	0.13	0.08	0.16

Neither B/V	1.00	0.00	0.00	0.00	0.60	1.00	0.00	0.00	0.00	0.69	1.00	0.00	0.00	0.00	0.70
Bully Only	0.00	1.00	0.00	0.00	0.02	0.00	1.00	0.00	0.00	0.03	0.00	1.00	0.00	0.00	0.03
Victim Only	0.00	0.00	1.00	0.00	0.34	0.00	0.00	1.00	0.00	0.25	0.00	0.00	1.00	0.00	0.23
Bully-Vict.	0.00	0.00	0.00	1.00	0.04	0.00	0.00	0.00	1.00	0.04	0.00	0.00	0.00	1.00	0.04

Note: Data were imputed into *m*=40 datasets separately for 3rd, 4th, and 5th grade. Continuous variables were standardized to M=0, SD=1 for comparability across grades. Data are weighted using the panel weight for analysis of data from children and teachers in the spring of each grade as well as from parents in the fall or spring of kindergarten (*W*C1*P_*T*0*, where *=7 for 3rd grade, 8 for 4th grade, and 9 for 5th grade).

Table 3.

Multinomial Logistic Regression Coefficients (Odds Ratios) Predicting Bullying Victimization Status

	3rd Grade (*n* = 8,210)			4th Grade (n = 7,714)			5th Grade (*n* = 7,182)		
Kindergarten Predictors	**Bully Only**	**Victim Only**	**Bully-Victim**	**Bully Only**	**Victim Only**	**Bully-Victim**	**Bully Only**	**Victim Only**	**Bully-Victim**
Achievement	0.66**	0.84***	0.73**	0.75*	0.83***	0.76*	0.84	0.85***	0.72*
Externalizing	1.95***	1.35***	2.17***	2.16***	1.43***	1.90***	1.84***	1.42***	2.10***
Internalizing	0.82	0.93*	0.87	1.06	0.96	0.77*	0.91	0.91*	0.88
Approaches	0.99	0.94	0.81	1.02	0.99	0.66***	0.91	0.98	0.89
Unmarried	1.61*	1.06	1.6**	2.05***	1.02	1.00	0.90	1.12	1.25
Age at K	1.07	0.95	1.01	1.03	1.01	1.19	1.08	1.03	0.95
Black	1.36	1.09	2.37***	1.70	1.08	2.23***	2.31**	1.13	1.95*
Hispanic	0.94	0.81*	0.75	1.02	0.71**	0.78	1.00	0.64***	0.65
Others	0.93	1.01	0.65	1.14	0.89	1.25	0.58	0.83	0.94
Male	1.57*	0.99	1.88***	1.89**	0.86+	1.16	1.96**	0.94	1.06
Parent Educ	0.97	0.88***	0.85	0.79	0.93	0.92	0.74*	1.01	1.07
Income	0.97	0.94	1.01	1.15	0.88**	0.73+	0.99	0.81***	0.92
Disability	1.04	1.12	0.93	1.00	1.27**	1.39	0.86	1.21	0.96
Non-English	0.34***	0.67***	0.41**	0.72	0.74*	0.24***	0.86	0.75*	0.37**
Cog Stim	0.94	1.06	1.13	0.95	1.12**	1.15	1.05	1.06	1.15
Child Act	1.00	0.98	1.01	1.00	0.95	0.82	1.00	0.94	0.93
Par Warmth	0.97	0.99	0.90	1.06	0.99	1.03	1.01	1.02	0.89
Early Read	0.95	1.01	0.98	0.97	1.00	1.00	0.99	1.05	1.09
% Free Lunch	1.00	1.08	1.20	1.00	1.13*	1.08	1.00	1.15*	1.44**
% Non-White	1.32+	1.01	1.09	1.03	1.13*	1.27+	0.94	1.06	1.19
_cons	0.02***	0.61***	0.03***	0.01***	0.43***	0.03***	0.03***	0.35***	0.04***

Note: ***$p < .001$, **$p < .01$, *$p < .05$, +p not significant after correction for multiple comparisons. Achievement, behavior, age, parent marital status, cognitive stimulation, and early reading were measured in the fall of kindergarten; income, disability, percent free lunch, percent non-white, parent-child activities, and parental warmth were measured in the spring of kindergarten; male, race or ethnicity, parent education, home language were constructed by ECLS-K: 2011 staff during kindergarten.

Appendix

Unimputed descriptive sample information and proportion of missing data.

	3rd Grade		4th Grade		5th Grade	
	% Missing	M (SD) or %	% Missing	M (SD) or %	% Missing	M (SD) or %
Achieve	1.49	45.45 (10.66) [0.05]	1.45	45.56 (10.69) [0.06]	1.32	45.58 (10.67) [0.07]
Extern	6.97	1.58 (0.61) [-0.03]	7.08	1.59 (0.61) [-0.02]	7.39	1.60 (0.62) [-0.01]
Intern	7.93	1.45 (0.49) [-0.02]	8.08	1.45 (0.49) [-0.02]	8.13	1.46 (0.49) [-0.01]
Approaches	4.76	2.98 (0.67) [0.04]	4.77	2.97 (0.67) [0.04]	5.03	2.97 (0.67) [0.04]
Age (mo) at K	0.33	67.47 (4.43) [0.00]	0.35	67.55 (4.46) [0.02]	0.33	67.52 (4.47) [0.02]
Parent Educ	0.17	4.58 (1.84) [-0.01]	0.22	4.58 (1.85) [-0.01]	0.28	4.58 (1.86) [-0.01]
Income	10.43	10.48 (5.48) [0.00]	10.4	10.51 (5.47) [0.01]	10.01	10.52 (5.47) [0.01]
Cognitive Stim	7.64	-0.00 (0.99)	7.45	0.02 (0.99)	7.85	0.00 (0.99)
Parent-Child Activities	11.58	-0.01 (0.99)	11.56	-0.01 (0.99)	11.1	-0.01 (0.99)
Parent Warmth	14.84	-0.00 (1.00)	14.71	-0.01 (1.01)	14.45	-0.01 (1.01)
Early Reading	8.78	-0.00 (1.00)	8.71	0.00 (0.99)	9.15	0.01 (0.99)
School % Free Lunch	0.04	43.46 (31.42) [0.01]	0.04	42.91 (31.80) [-0.01]	0.04	43.12 (31.54) [-0.00]
School % Non-White	0.07	46.11 (33.11) [-0.08]	0.05	44.68 (33.31) [-0.13]	0.07	45.54 (33.10) [-0.10]
Male	0.00	51.4	0.00	51.4	0.00	51.4
White	0.00	51.8	0.00	51.8	0.00	51.7
Black	0.00	13.4	0.00	13.4	0.00	13.3
Hispanic	0.00	24.7	0.00	24.8	0.00	24.9
Other	0.00	10.1	0.00	10.1	0.00	10.1
Unmarried Parent	7.22	30.1	7.09	29.9	7.44	29.7
Disability	16.03	21.7	15.97	21.9	15.78	21.9
Non-English Home	0.21	15.9	0.23	15.3	0.22	15.7
Any Victimization	0.73	37.4	0.75	28.8	0.78	26.3
Any Bullying	0.77	6.1	1.17	6.2	0.97	7.1

Neither Bully/Victim	1.49	60.3	1.91	68.7	1.75	70.2
Bully Only	1.49	2.3	1.91	2.5	1.75	3.4
Victim Only	1.49	33.6	1.91	25.2	1.75	22.7
Bully-Victim	1.49	3.7	1.91	3.6	1.75	3.6

Note: [standardized mean] presented alongside M (SD) to indicate departure from full unweighted ECLS-K sample.