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Stability of Early Identified Aggressive Victim Status in Elementary School and Associations with Later Mental Health Problems and Functional Impairments

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Abstract

Aggressive victims – children who are both perpetrators and victims of peer aggression – experience greater concurrent mental health problems and impairments than children who are only aggressive or only victimized. The stability of early identified aggressive victim status has not been evaluated due to the fact that most studies of aggressor/victim subgroups have focused on preadolescents and/or adolescents. Further, whether children who exhibit early and persistent patterns of aggression and victimization continue to experience greater mental health problems and functional impairments through the transition to adolescence is not known. This study followed 344 children (180 girls) previously identified as socially adjusted, victims, aggressors, or aggressive victims at Grade 1 (Burk et al., 2008) to investigate their involvement in peer bullying through Grade 5. The children, their mothers, and teachers reported on children's involvement in peer aggression and victimization at Grades 1, 3, and 5; and reported on internalizing symptoms, externalizing symptoms, inattention and impulsivity, as well as academic functioning, physical health, and service use at Grades 5, 7, and 9. Most children categorized as aggressive victims in Grade 1 continued to be significantly involved in peer bullying across elementary school. Children with recurrent aggressive victim status exhibited higher levels of some mental health problems and greater school impairments across the adolescent transition when compared to other longitudinal peer status groups. This study suggests screening for aggressive victim status at Grade 1 is potentially beneficial. Further early interventions may need to be carefully tailored to prevent and/or attenuate later psychological, academic, and physical health problems.

School bullying is recognized internationally as a significant public health concern (Haynie et al., 2001; Solberg & Olweus, 2003) because of increased risk for involved children to experience mental and physical health problems, and social impairments (Haynie et al., 2001; Kumpulainen et al., 1998; Rigby, 2003; Solberg & Olweus, 2003; Wolke, Woods, Bloomfield, & Karstadt, 2001) extending into adolescence and adulthood (Kumpulainen & Rasanen, 2000). Significantly, aggressive victims – children who are both perpetrators and targets of peer aggression – experience greater impairments than children who are only aggressive or only victimized (Arseneault et al., 2006; Haynie et al., 2001; Schwartz, 2000). Because most studies have focused on older children and adolescents much less is known

about the development of aggressive victim status among younger children. Yet the early identification of such problems might improve significantly the effectiveness of preventive interventions.

The current study addresses this issue, building on the work of Burk and colleagues (2008), which used a bioecological approach (Bronfenbrenner & Morris, 2006) to identify aggressive victims in Grade 1 based on individual and contextual risk factors present in the infancy, preschool, and school transition periods. Poor social perceptiveness in kindergarten conferred unique risk for aggressive victim status. Further, for children with better social perceptiveness, lower SES and exposure to negative family expressiveness in preschool emerged as salient risk factors. Importantly, early identified aggressive victims exhibited mental health problems and functional impairments similar to those observed in older children and adolescents. Together, these findings suggest early screening and targeted intervention for at-risk groups may help attenuate long term problems associated with the aggressive victim behavioral pattern.

There is general agreement that to inform public policy the prevalence of a problem must be established to estimate need; the causal risk and protective factors must be identified in order to design screening, prevention, and treatment programs; and that limited public resources should be applied to individuals most in need and likely to develop ongoing problems in order to increase overall efficiency (Jenkins, 2001; Offord, Kraemer, Kazdin, Jensen, & Harrington, 1998). Early screening of problematic peer social behavior, such as suggested by Burk et al., (2008), would be most beneficial and cost effective when early identified children are also those most likely to be impaired and in greatest need of services later in life. However, it is not known whether early identified aggressor/victim status persists across the elementary school years.

Previous independent studies of aggression or victimization have found trajectories of aggression and victimization tend to decline from toddlerhood to preadolescence (Broidy et al., 2003; Kochenderfer-Ladd & Wardrop, 2001; NICHD Early Child Care Research Network, 2004); children's modal transition is toward less aggression (Beran, 2008; Brame, Nagin, & Tremblay, 2001) and only a small percentage exhibit significant stability of aggression or victimization across childhood and adolescence (Broidy et al., 2003; Pepler, Jiang, Craig, & Connolly, 2008; Scholte, Engels, Overbeek, de Kemp, & Haselager, 2007). The evidence as to whether *co-occurring* aggression and victimization decrease over time is less conclusive. Results of a large cross-sectional study (Solberg, Olweus, & Endresen, 2007) suggest the prevalence of aggressive victim status does decline with age, but longitudinal studies suggest roughly half of preadolescent aggressive victims maintain this status over one to four years (Camodeca, Goossens, Terwogt, & Schuengel, 2002; Hanish & Guerra, 2004; Kochenderfer-Ladd, 2003).

Additionally, little is known about how recurrent patterns of childhood aggressor/victim classifications are associated with adolescent mental and physical health problems, and school impairments. Although there is indication that the negative effects of childhood aggressive victim status extend into adulthood (Kumpulainen & Rasanen, 2000), other studies typically span shorter time periods [e.g., (Goldbaum, Craig, Pepler, & Connolly, 2003; Juvonen, Nishina, & Graham, 2000; Schwartz, Gorman, Nakamoto, & Toblin, 2005)], focus on older children [e.g., (Haynie et al., 2001; Solberg et al., 2007)], or do not explicitly consider co-occurring or recurrent co-occurring aggression and victimization [e.g., (Brame et al., 2001; Pepler et al., 2008; Schaeffer et al., 2006; Scholte et al., 2007)].

Evidence for long term impairments is provided by studies of mental and physical health, school, and peer outcomes of children who are persistently aggressive *or* persistently

victimized. Persistent aggression toward peers across preschool and elementary school is associated with greater oppositionality and poor school performance (van Lier & Crijnen, 2005), impaired social adjustment (Campbell, Spieker, Burchinal, & Poe, 2006; Kumpulainen & Rasanen, 2000; Scholte et al., 2007; van Lier & Crijnen, 2005), poor emotional regulation, inattention and depression (Campbell et al., 2006), and adolescent antisocial attitudes and behavior (Barker, Arseneault, Brendgen, Fontaine, & Maughan, 2008; Broidy et al., 2003; Harachi et al., 2006; Pepler et al., 2008; Schaeffer et al., 2006). Persistent victimization is associated with poor school performance (Juvonen et al., 2000; Kochenderfer & Ladd, 1996a; Schwartz et al., 2005) and impaired social adjustment (Goldbaum et al., 2003; Scholte et al., 2007), including greater loneliness, withdrawal, internalizing (Boivin, Hymel, & Bukowski, 1995; Goldbaum et al., 2003; Kochenderfer-Ladd & Wardrop, 2001) and reactive aggression (Camodeca et al., 2002). Finally, adolescents with increasing or stable trajectories of aggression and victimization tend to exhibit greater delinquency (Barker et al., 2008). Additionally, more frequent health problems are observed in children who are victims or aggressive victims (Fekkes, Pijpers, Fredriks, Vogels, & Verloove-Vanhorick, 2006; Williams, Chambers, Logan, & Robinson, 1996; Wolke et al., 2001), adolescent female aggressive victims report greater self-injurious behavior (Barker et al., 2008), and victimization over time appears to amplify these effects (Rigby & Slee, 1999).

Present Study

Using longitudinal data from a large community sample the present study sought first to investigate the stability of aggressor/victim subgroup classifications across elementary school by following groups of children identified in Grade 1 as socially adjusted, aggressors, victims, or aggressive victims across Grades 3 and 5. Observations that children maintained a particular peer status at multiple time points in elementary school would support the utility of early screening. Second, the patterns of mental and physical health symptoms, and school function across Grades 5, 7, and 9 were investigated to determine if children with recurrent aggressive victim status would experience increasing and/or more persistent negative outcomes compared to children who are predominantly socially adjusted, aggressive-only, or victimized-only. Greater impairments for persistent aggressive victims would support the positive predictive value of the risk factors observed by Burk et al., (2008), and increase the sensitivity of screening based on those risks (Offord, 2000), information important to the cost/benefit trade-off of intervention.

Based on previous studies of adolescent aggressive victims, recurrent childhood aggressive victims were expected to report greater problems with mental and physical health, school adjustment, and more service use as adolescents. It is not clear if recurrent aggressive victims will exhibit greater impairments or service use than recurrent only-aggressors or recurrent only-victims. Past cross-sectional studies suggest recurrent aggressive victim status is associated with increasing impairments. Thus, we hypothesized recurrent aggressive victims would exhibit increasing problems across Grades 5, 7, and 9. No specific hypotheses regarding symptom levels for recurrent aggressors or recurrent victims are offered. Finally, child sex was explicitly considered in all analyses to investigate its' role in the stability of aggressor/victim typologies and in adolescent outcomes. Previous studies have observed sex differences in the frequency and chronicity of independent aggression and victimization; males generally maintain or increase aggressive behaviors while females experience greater victimization (Hanish & Guerra, 2004; Scholte et al., 2007; Snyder et al., 2003; Solberg et al., 2007).

Methods

Participants

A total of 760 women and their husbands/partners were contacted during the second trimester of pregnancy through obstetric/gynecology and low income clinics in and around Milwaukee (80%) and Madison (20%) Wisconsin, for participation in the Wisconsin Maternity Leave and Health Project (now called the Wisconsin Study of Families and Work, WSWF). Because the original project focused on parental employment, family stress, and women's mental health during the first postnatal year, female participants met the following inclusion criteria: (a) over age 18; (b) living with the baby's biological father; (c) at least one member of the couple working for pay or profit; (d) not a student; and (e) not unemployed [see (Hyde, Klein, Essex, & Clark, 1995) for details]. Twenty-five percent of those contacted refused or were screened out, yielding an initial sample of 570 women, of which 560 had live births. At recruitment, 16% of mothers had a high school degree or less; 29% had some college or advanced technical training; 36% had a college degree; 19% had post-graduate education. Mother's average age was 29.6 ($SD = 4.3$, range = 20 – 43). Most mothers were married (95%) and most families were Caucasian (89% Caucasian, 4% African American, 3% Native American/Alaskan Native, 2% Asian/Pacific Islander, 1% Hispanic, 1% Other). Mean annual family income was \$51,022 ($SD = \$23,180$, range = < \$10,000 to >\$200,000). Children's average age at Grade 1 was 7 years ($SD = 0.29$).

At Grade 9 389 families (68% of the original 570) remained in the study. Of those 389 families, 344 children (180 girls; 164 boys) had sufficient data at Grades 1, 3, and 5 to receive aggressor/victim subgroup assignments. These 344 families were not significantly different from the original 570 families in terms of maternal education, marital status, family income, minority status, or distribution of boys and girls. Further, these 344 children were not significantly different from the remainder of the 570 in terms of internalizing, externalizing, ADHD symptoms, and academic functioning at Grades 5, 7, and 9, with 2 exceptions; at Grade 5 non-participants had lower scores on academic competence than participants ($F = 5.02$, $df = 359$, $p = 0.03$: participants, $M = 0.33$, $SD = 0.94$; non-participants, $M = -0.04$, $SD = 1.00$); at Grade 7 non-participants had fewer Global Physical Health Problems than participants ($F = 7.13$, $df = 357$, $p = .008$: participants, $M = 0.34$, $SD = 1.20$; non-participants, $M = -0.06$, $SD = 0.95$).

Informed consent was obtained from parents and teachers at each point of participation; child assent was obtained beginning at Grade 5 in accordance with the policies of the University of Wisconsin Institutional Review Board.

Measures

Aggression, Victimization, and Aggressor/Victim Subgroups—Although peer nomination is considered the gold standard for assessing aggressor/victim classifications (Perry, Kusel, & Perry, 1988) this approach was not feasible in the present study as children were enrolled in over 300 classrooms. Thus, a multi-informant approach based on mother, teacher, and child reports of peer aggression and victimization was utilized (Burk et al., 2008). Adult interview versions of the MacArthur Health and Behavior Questionnaire [HBQ; (Boyce et al., 2002; Essex et al., 2002)] and modules from the Berkeley Puppet Interview (BPI) developed in tandem with the HBQ to provide parallel child self-reports (Ablow, Measelle, & MacArthur Working Group on Outcome Assessment, 2003) yielded scores for Overt Aggression, Relational Aggression, and Bullied by Peers. Mothers and teachers were interviewed at Grades 1, 3, and 5. Children completed the BPI at Grade 1 and an age-appropriate questionnaire modeled on the BPI, the HBQ-Child form (HBQ-C), at Grades 3 and 5.

On the mother and teacher HBQ interviews, 4 items tapped Overt Aggression (OA; e.g., “Gets in many fights”), 6 items tapped Relational Aggression (RA; e.g., “Tries to get others to dislike a peer”), and 3 items tapped Bullied by Peers (BP; e.g., “Is teased and ridiculed by other children”). Overt Aggression and Relational Aggression items were rated on a 3-point scale ranging from 0 (*never or not true*) to 2 (*often or very true*). Items from the Bullied by Peers scale were rated on a 4-point scale ranging from 1 (*not at all like*) to 4 (*very much like*). Scale scores were calculated separately for each reporter. Coefficients α were acceptable for all scales and are presented for mothers and teachers, respectively: OA (Grade 1, 0.63 and 0.76; Grade 3, 0.62 and 0.79; Grade 5, 0.50 and 0.63); RA (Grade 1, 0.76 and 0.86; Grade 3, 0.85 and 0.92; Grade 5, 0.82 and 0.90); and BP (Grade 1, 0.77 and 0.73; Grade 3, 0.82 and 0.85; Grade 5, 0.80 and 0.72).

For the child BPI, 7 items tapped Overt Aggression (e.g., “I fight with other kids a lot/I don’t fight with other kids a lot”), 6 items tapped Relational Aggression (e.g., “If I don’t like a kid, I say bad things about them to my friends/If I don’t like a kid I don’t say bad things about them to my friends”), and 4 items tapped Bullied by Peers (e.g., “Kids at school pick on me/Kids at school don’t pick on me”). During the BPI, two dog hand puppets presented opposing positive and negative statements and children indicated which puppet was more like them. Responses were videotaped and coded on a 6-point scale based on whether the child selected a positive or negative statement and whether the response was a straight endorsement (5 if positive, 2 if negative), amplification (6 if positive, 1 if negative), qualification (4 if positive, 3 if negative), or unqualified, “both” (3.5). On the HBQ-C, completed at Grades 3 and 5, 7 and 8 items, respectively, tapped Overt Aggression; 6 items tapped Relational Aggression; and 4 and 5 items, respectively, tapped Bullied by Peers. Children chose the one statement from each pair that was most like them and then marked that statement as being “*sort of like me*,” “*mostly like me*,” or “*really like me*.” These responses were coded on a 6-point scale based on which statement the child selected (positive or negative) and whether the response was “*really like me*” (6 if positive, 1 if negative), “*mostly like me*” (5 if positive, 2 if negative), or “*sort of like me*” (4 if positive, 3 if negative). Overall child-report α coefficients were acceptable for each scale at each time point: OA (Grade 1 = 0.82; Grade 3 = 0.81; Grade 5 = 0.82); RA (Grade 1 = 0.67; Grade 3 = 0.80; Grade 5 = 0.78); and BP (Grade 1 = 0.73; Grade 3 = 0.87; Grade 5 = 0.89).

Separately for OA, RA, and BP, multi-informant scores were computed using the PCA-based approach outlined by Kraemer and colleagues (2003), which by carefully selecting reporters who view the child from different perspectives (e.g., child self-view vs. adult view) and in different contexts (e.g., home vs. school) can be used to measure a core characteristic (e.g., behavioral symptoms) that is free of systematic error associated with reporters’ different perspectives and contexts. The resulting first component of each PCA (designated the core scores for OA, RA, and BP) represented the variance in reported symptoms shared among the three reports (see (Kraemer et al., 2003) for details). The resulting HBQ OA multi-informant scores accounted for 47% (Grade 1), 52% (Grade 3), and 56% (Grade 5) of the total variance, respectively. HBQ RA multi-informant scores accounted for 47% (Grade 1), 48% (Grade 3), and 48% (Grade 5) of the total variance, respectively. HBQ BP multi-informant scores accounted for 48% (Grade 1), 56% (Grade 3), and 56% (Grade 5) of the total variance.

Due to budget constraints at the Grade 1 assessment, only three-quarters of participating children completed the BPI; all mothers and teachers completed the HBQ. Because of this, aggression and victimization multi-informant scores were not available for many children who did participate fully at later assessment times. To retain the largest possible sample, missing core scores were replaced with alternate scores calculated by PCA of mother-teacher (MT), mother-child (MC), and child-teacher (CT) reports at Grades 1, 3, and 5. The

use of unrotated PCA reduces the number of predictors and the risk of multicollinearity in predictive models by transforming correlated variables into fewer, uncorrelated principal components. The first component accounts for the majority of variability, exhibits greater variability than a simple average, and is retained as the best representation of the construct (Duntzman, 1989).

These alternate scores correlated highly with the multi-informant scores (MTC): Overt Aggression (all r s 0.85 – 0.95); Relational Aggression (all r s 0.86 – 0.92); Bullied by Peers (all r s 0.87–0.93). Missing scores were replaced with the available alternate score: OA (*Grade 1* 240-MTC, 95-MT, 9-MC, 0-CT; *Grade 3* 328-MTC, 5-MT, 11-MC, 0-CT; *Grade 5* 321-MTC, 3-MT, 20-MC, 0-CT); RA (*Grade 1* 236-MTC, 97-MT, 11-MC, 0-CT; *Grade 3* 328-MTC, 5-MT, 11-MC, 0-CT; *Grade 5* 321-MTC, 3-MT, 20-MC, 0-CT); BP (*Grade 1* 240-MTC, 95-MT, 9-MC, 0-CT; *Grade 3* 328-MTC, 5-MT, 11-MC, 0-CT; *Grade 5* 321-MTC, 3-MT, 20-MC, 0-CT).

These peer aggression and victimization scores were used to define aggressor/victim subgroup status. A 33% cut-point was selected because it was used in the original study (Burk et al., 2008) and in other studies of aggressive victims (Haynie et al., 2001; Schwartz, 2000). Because we aimed to track whether previously identified aggressor/victim subgroups maintained that status, the same categorization scheme was utilized at Grade 3 and 5. This approach also yielded subgroups of sufficient size for comparative analyses. To check the robustness of our results, analyses were conducted using cut-points of 25% and 16% (1SD); no differences in the pattern of results were obtained (analyses not shown). Children were defined as Aggressive Victims if they were in the upper 33% for Overt or Relational Aggression and Bullied by Peers; Aggressors if they were in the upper 33% for Overt or Relational Aggression but not Bullied by Peers; and Victims if they were in the upper 33% for Bullied by Peers but not Overt or Relational Aggression. Children in the lower 67% for all 3 scales were defined as Socially Adjusted. The resulting group composition follows: *Grade 1* - 75 Aggressive Victims (AV; 35 girls; 40 boys), 83 Aggressors (AG; 38 girls; 45 boys), 39 Victims (VI; 24 girls; 15 boys), and 147 Socially Adjusted (SA; 83 girls; 64 boys); *Grade 3* - 77 AV (36 girls; 41 boys), 84 AG (43 girls; 41 boys), 37 VI (13 girls; 24 boys), and 146 SA (88 girls; 58 boys); *Grade 5* - 75 AV (34 girls; 41 boys), 80 AG (37 girls; 43 boys), 39 VI (19 girls; 20 boys), and 150 SA (90 girls; 60 boys).

Mental Health, School, Physical Health, and Service Use Outcomes—Children's mental and physical health symptoms, and school problems were assessed using mother, teacher and child HBQ scales from Grades 5, 7, and 9. For Internalizing Symptoms mothers and teachers rated 16 (Grades 5 and 7), or 18 items (Grade 9) measuring Depression (e.g., "Cries a lot"); 11 (Grade 5), 12 (Grade 7), or 14 items (Grade 9) measuring Generalized Anxiety (e.g., "Worries about things in the future"). For Externalizing Symptoms mothers and teachers rated 9 items (Grades 5, 7, and 9) measuring Oppositional Defiant Disorder (e.g., "Argues a lot with adults") and 15 (Grade 5) or 14 items (Grades 7 and 9) measuring Conduct Disorder (e.g., "Lies or cheats"). Mothers and teachers rated 6 (Grade 5), 7 (Grade 7), or 9 items (Grade 9) measuring Inattention (e.g., "Does not seem to listen"), and 9 items (Grades 5, 7, and 9) measuring Impulsivity (e.g., "Interrupts or butts in on others"). All mental health items were rated on a 3-point scale ranging from 0 (*never or not true*) to 2 (*often or very true*). For Academic Competence, mothers rated 6 items (e.g., "How good would you say your child is in reading") at Grades 5, 7 and 9 on a 5-point scale ranging from 1 (*poor*) to 5 (*excellent*). At Grades 5, 7, and 9 teachers rated 5 items (e.g., "How would you rate this child's current performance in reading") on a 5-point scale ranging from 1 (*not well at all, poor student*) to 5 (*very well, excellent student*). For School Engagement mothers rated 8 items (e.g., "Currently, how much is your child excited about school") on a 4-point scale ranging from 1 (*not at all*) to 4 (*quite a bit*). Teachers rated 8 items (e.g., "Is

interested and engaged in classroom activities”) on a 3-point scale ranging from 0 (*does not apply*) to 2 (*certainly applies*). For global physical health problems, mothers and teachers rated 5 items (e.g., “In general would you say this child’s physical health is excellent, good, fair, or poor?”) on a 4-point scale ranging from 1 (*excellent*) to 4 (*poor*).

For the HBQ-C participating children completed 30 (Grade 5), 34 (Grade 7), or 38 items (Grade 9) for Internalizing Symptoms (e.g., “I worry about things I’ve done/I don’t worry about things I’ve done”); 20 (Grade 5) or 22 items (Grades 7 and 9) for Externalizing Symptoms (e.g., “I do what adults ask me to do/I don’t do what adults ask me to do”); and 12 (Grade 5), 15 (Grade 7), or 17 items (Grade 9) tapping Attention and Impulsivity (e.g., “I have a hard time paying attention/I don’t have a hard time paying attention”). Children rated 12 items for Academic Competence at Grades 5, 7, and 9 (e.g., “Schoolwork is easy for me/Schoolwork is not easy for me,”) and 11 (Grade 5) or 10 items (Grades 7 and 9) for School Engagement (e.g., “I like school/I don’t like school”). For Global Physical Health Problems children rated 6 item pairs (e.g., “I’m a healthy teen/I’m not a healthy teen”). Children rated each item using the previously described HBQ-C scale. Coefficients α for mental health, physical health, and school problems subscale scores ranged from 0.70 to 0.96 for all reporters across all assessments.

Multi-informant core-scores were created for each construct at each grade using the procedures outlined above (Kraemer et al., 2003). The resulting scores for Internalizing Symptoms, Externalizing Symptoms, Inattention/Impulsivity, Academic Competence, School Engagement, and Global Physical Health Problems accounted for 50% to 76% of the total variance at Grades 5, 7, and 9. To facilitate repeated measures analysis, missing multi-informant scores were replaced with alternate scores as described above. Alternate scores were highly correlated with multi-informant scores: Internalizing (all r s 0.87–0.93); Externalizing (all r s 0.89–0.93); Inattention/Impulsivity (all r s 0.92–0.94), Academic Competence (all r s 0.96–0.97); School Engagement (all r s 0.92–0.93); Global Physical Health Problems (all r s 0.90–0.93). Final scores were as follows: *Grade 5* 321-MTC, 3-MT, 20-MC, 0-CT; *Grade 7* 305-MTC, 18-MC, 4-CT, 16-missing; *Grade 9* 287-MTC, 4-MT, 21-MC, 6-CT, 26-missing.

Using maternal reports of child height and weight, children’s raw BMI was calculated at Grades 5, 7, and 9. Raw BMI scores were standardized for gender and age against U.S. norms (Ogden et al., 2002) before inclusion in analysis. To ascertain use of health services, mothers reported on the number of school-based behavioral and academic services received, the number of medications used for physical or mental health problems, and if the child attended psychotherapy. One point was assigned for any use of school services, one point for any medication use, and one point for any use of psychotherapy. Points were summed as a Total Service Use score ranging from 0 to 3, and standardized as a z-score. Three hundred fifteen cases (91.6%) were available for the analysis of Internalizing, Externalizing, Inattention/Impulsivity, Academic Competence, and School Engagement. Two hundred seventy nine cases (81.1%) were available for the analysis of BMI, Global Physical Health Problems, and Total Service Use.

Data Analysis—Because the primary purpose of this study was to investigate the stability of early identified aggressor/victim subgroups, groups were created at Grades 1, 3, and 5 reflecting Socially Adjusted, Victim, Aggressor, and Aggressive Victim status. Matrices reflected aggressor/victim subgroup transitions from Grades 1 to 3 and Grades 3 to 5. These transition matrices were then used to observe the patterns of aggressor/victim subgroup membership and to define longitudinal peer status groups. Descriptive analyses and between-group comparisons examined differences by sex in both aggressor/victim subgroup membership and longitudinal peer status group membership. Profile analysis of functional

outcomes by longitudinal peer status group over time was accomplished using multivariate analysis of variance (MANOVA) with repeated measures; peer status group and child gender were between-subjects variables, and time served as the within-subjects variable. Follow-up Bonferroni corrected comparisons determined the significance of differences at Grades 5, 7, and 9.

Results

Descriptive Statistics and Group Stability

First, the overall stability of the socially adjusted and aggressor/victim subgroups from Grades 1, 3, and 5 was analyzed. Table 1 presents the transition matrices from Grade 1 to Grade 3 and from Grade 3 to Grade 5. Over each transition the majority of Socially Adjusted children maintained this status. Similarly, the majority of children with Aggressive Victim status remained as such. Children with Grade 1 Aggressive Victim status who did not remain aggressive victims were more likely to be assigned to the Aggressor or Victim group rather than the Socially Adjusted group (Grade 1 to Grade 3, $\chi^2 = 136.4$, $df = 9$, $p < 0.001$; Grade 3 to Grade 5, $\chi^2 = 153.5$, $df = 9$, $p < 0.001$). Aggressors-only tended to maintain that status or move to the Socially Adjusted group. Victims were less stable with only 28% and 27% of children maintaining this status across transitions, and over one-third attaining Socially Adjusted status at each subsequent observation. Thus Aggressive Victims exhibited the highest stability over time compared to Aggressors and Victims. No significant differences were observed in the distribution of boys and girls across subgroups at Grade 1 ($\chi^2 = 4.72$, $df = 3$, $p = 0.193$) or Grade 5 ($\chi^2 = 6.40$, $df = 3$, $p = 0.094$). At Grade 3 girls were more likely to have Socially Adjusted status ($\chi^2 = 9.08$, $df = 3$, $p = 0.028$).

Next, longitudinal patterns of aggressor/victim subgroups were explored. First the number of children exhibiting the same social status at all 3 time points was determined: 17 were Aggressive-Victims, 12 were Aggressors, and 2 were Victims. Because requiring absolute stability yielded groups too small for statistical comparison, the 64 potential patterns (i.e., all possible combinations of socially adjusted and aggressor/victim subgroups across all time points) were reduced through the creation of meaningful longitudinal peer status groups. First, children never involved in bullying were assigned to the Never group ($n = 72$; 25 boys, 47 girls). Second, children classified as a Victim, Aggressor, or Aggressive Victim at only 1 of the 3 time points were assigned to the Isolated group ($n = 83$; 39 boys, 44 girls). Three groups were defined by recurrent involvement with bullying. In each of these groups children exhibited the same status at all 3 or any 2 time points: Recurrent Victim ($n = 22$; 11 boys, 11 girls), Recurrent Aggressor ($n = 72$; 35 boys, 37 girls), and Recurrent Aggressive Victim ($n = 66$; 36 boys, 30 girls). Finally, 29 children exhibited mixed patterns of involvement in bullying relationships, 7 of whom never exhibited Socially Adjusted status and 22 with Socially Adjusted status one time. This group was labeled Recurrent Mixed ($n = 29$; 18 boys, 11 girls). Chi-square analysis revealed no significant gender differences in the make-up of longitudinal peer status groups ($\chi^2 = 8.59$, $df = 5$, $p = 0.127$).

Finally, the 6 longitudinal peer status groups were arrayed against the original Grade 1 subgroups [Table 2] to determine the percentage of children initially identified as members of an aggressor/victim subgroup who continued to experience significant peer problems over time. Socially Adjusted children exhibited the greatest stability of classification compared to Grade 1 Aggressors ($\chi^2 = 128.4$, $df = 5$, $p < 0.001$), Victims ($\chi^2 = 66.75$, $df = 5$, $p < 0.001$), and Aggressive Victims ($\chi^2 = 113.9$, $df = 5$, $p < 0.001$). Almost half of Socially Adjusted children ($n = 72$, 49%) remained so, while the majority of the remainder exhibited only Isolated peer problems ($n = 46$, 31%). Victim status was least stable, in comparison to Aggressors ($\chi^2 = 55.37$, $df = 4$, $p < 0.001$) and Aggressive Victims ($\chi^2 = 51.06$, $df = 4$, $p < 0.001$); 36% ($n = 14$) of Grade 1 Victims exhibited Isolated peer problems while 41% ($n =$

16) were Recurrent Victims. Sixty-nine percent of Grade 1 Aggressors ($n = 57$) were classified as Recurrent Aggressors, and 17% ($n = 17$) experienced other chronic or recurrent peer problems. Similarly, 64% ($n = 48$) of Grade 1 Aggressive Victims belonged to the Recurrent Aggressive Victim group. Compared to Aggressive Victims, Aggressors exhibited greater stability of involvement in peer aggression ($\chi^2 = 75.47$, $df = 4$, $p < 0.001$). However 85% of Aggressive Victims continued to have significant involvement in peer aggression, victimization, or both through Grade 5

Examination of Mental Health, School, Physical Health, and Service Use—

Profile analyses of children's mental health symptoms and school outcomes from Grades 5, 7, and 9 were conducted using the longitudinal peer status groups to determine whether Recurrent Aggressive Victims exhibited significantly worse adjustment over time. A multivariate analysis of variance with repeated measures was performed on the multi-informant scores of 5 dependent variables: Internalizing, Externalizing, Inattention/Impulsivity, Academic Competence, and School Engagement. Longitudinal peer status group (Never, Isolated, Recurrent Mixed, Recurrent Victim, Recurrent Aggressor, Recurrent Aggressive Victim) as well as Child Sex formed the between-subjects independent variables. The within-subjects independent variable was Time (repeated measures at Grades 5, 7, and 9). Trend analysis was planned for the main effect of Time as well as the Group-by-Time interaction. Table 3 presents the means and standard deviations of measured outcomes for each longitudinal peer status group.

Twenty-nine cases were excluded due to extensive missing data; thus 315 cases were included in the analysis. There were no univariate or multivariate outliers at $\alpha = 0.01$. Results of evaluation of assumptions were satisfactory, except that tests of homogeneity of variance indicated significant differences between groups ($F = 1.58$, $df(960, 43454)$, $p < 0.001$); therefore, Pillai's Criterion is reported for multivariate tests as it is more robust in the face of this violation. Results of the repeated measures analysis are presented in Table 4. Although significant between-subjects effects for Child Sex and Longitudinal Peer Status Group were observed, the two-way Sex-by-Group interaction was not significant. Considering the within-subjects effects, Time [flatness] and the three-way Sex-by-Group-by-Time interaction were not significant, but the Group-by-Time interaction [deviation from parallelism] was statistically significant. These results suggest that levels of mental health symptoms and functional impairments were meaningfully different between longitudinal peer status groups over time ($\eta^2 = 0.05$, large effect). [Values of η^2 in relation to Cohen's effect sizes are as follows: η^2 of 0.0099 is equivalent to Cohen's "small effect (0.2)"; η^2 of 0.0588 is equivalent to Cohen's "medium effect (0.5)"; and η^2 of 0.1379 is equivalent to Cohen's "large effect (0.8)" (Smithson, 2003).]

To determine if dependent variables exhibited significant change across the adolescent transition, a Roy-Bargmann stepdown analysis was performed on the trend analysis of the dependent variables for the Group-by-Time interaction term. An experimental-wise error rate of 5% was achieved by setting $\alpha = 0.01$ to compensate for inflated Type I error with five dependent variables. The only significant stepdown effects for the Group-by-Time interaction were the linear trend of Academic Competence (*Stepdown* $F = 2.39$, $df(5, 297)$, $p = 0.038$), partial $\eta^2 = 0.01$ (confidence limits from 0.00 to 36.5) and the quadratic trend of Academic Competence (*Stepdown* $F = 2.39$, $df(5, 296)$, $p = 0.005$), partial $\eta^2 = 0.05$ (confidence limits from 0.00 to 36.5). For most groups Academic Competence showed minor variation or was stable. Inspection of the graphs (Figure 2) indicates that while the problems of Recurrent Aggressive Victims did not worsen over time, they were consistently worse in comparison to other the groups.

Follow-up multivariate analysis of variance (MANOVA) with post-hoc Bonferroni correction was used to explore differences in Mental Health and School Outcomes between the longitudinal peer status groups at each time point. The overall multivariate test was significant ($F = 3.24$, $df(75, 1495)$, $p < .001$). Observation of the comparison of the Recurrent Aggressive Victims group to all others revealed Recurrent Aggressive Victims exhibited significantly greater Internalizing at Grades 5 (p 's = .029 to $< .001$) and 7 (p 's $< .001$) with the exception of the Recurrent Victims group, from which they did not differ. At Grade 9 the Recurrent Aggressive Victims group was only significantly different from the Never and Isolated groups (p 's $< .001$). Recurrent Aggressive Victims exhibited the highest levels of Externalizing and of Inattention/Impulsivity of all the longitudinal groups at Grades 5, 7, and 9 (p 's = .013 to $< .001$). Further this group always exhibited lower Academic Competence than the Never, Isolated, and Recurrent Aggressor group (p 's $< .001$), but not from the Recurrent Victims, or Recurrent Mixed groups. Recurrent Aggressive Victims also exhibited lower School Engagement than the Never, Isolated, and Recurrent Aggressor groups at Grades 5 and 7 (p 's = .026 to $< .001$), but was only significantly lower than the Never group ($p < .001$) at Grade 9.

Because of extensive missing health and service use data, a separate profile analysis for these outcomes across Grades 5, 7, and 9 was conducted using the same specifications presented above. Sixty-five cases were excluded due to extensive missing data; 279 cases were included in the analysis. There were no univariate or multivariate outliers at $\alpha = 0.01$. Results of evaluation of assumptions were satisfactory, except that tests of homogeneity of variance indicated significant differences between groups ($F = 1.82$, $df(405, 19927)$, $p < 0.001$); therefore, Pillai's Criterion is reported for multivariate tests as it is more robust in the face of this violation. Results of the repeated measures analysis are presented in Table 5. Although there were significant between-subjects effects for Child Sex, Longitudinal Peer Status Group, and the two-way Sex-by-Group interaction, no significant within-subjects effects were observed for Time [flatness], the Group-by-Time interaction [deviation from parallelism], or the Sex-by-Group-by-Time interaction. These results suggest that levels of Global Physical Health Problems, BMI, and Total Service Use did not vary meaningfully between longitudinal peer status groups over time.

Finally, follow-up multivariate analysis of variance (MANOVA) with post-hoc Bonferroni correction was used to explore the significance of between groups differences in Physical Health and Service Use Outcomes at each time point. The overall multivariate test was significant ($F = 1.87$, $df(45, 1345)$, $p = .001$). Subgroup comparisons revealed no statistically significant differences in BMI at Grades 5, 7, or 9. At Grades 5 and 7 the Recurrent Aggressive Victims Group exhibited significantly higher Global Physical Health Problems than the Never, Isolated, and Recurrent Aggressor groups (p 's = .024 to $< .001$). However at Grade 9 the Recurrent Aggressive Victims group was not significantly different from the others. Considering Total Service Use, the Recurrent Aggressive Victims group had greater service use than the Recurrent Aggressors group at Grade 5 ($p = .003$), the Never group at Grade 7 ($p = .023$), and the Recurrent Mixed group at Grade 9 ($p = .026$). No other comparisons between the Recurrent Aggressive Victims group and other longitudinal peer status groups were statistically significant.

Discussion

Past studies of co-occurring aggression and victimization have reported both greater (Camodeca et al., 2002; Hanish & Guerra, 2004; Kochenderfer-Ladd, 2003) and less (Solberg et al., 2007) stability of aggressive victim status over time. Most studies have focused on the peer relationships of preadolescents and adolescents and have not investigated the stability of co-occurring aggression and victimization identified in early

elementary school. Further, the relationship of recurrent aggressive victim status in elementary school to the mental health, physical health, and school outcomes across the adolescent transition has not been explored. Importantly, this study addressed two major issues and showed 1) children identified as aggressive victims at Grade 1 were more frequently categorized as aggressive victims at least once more in elementary school, and more broadly, were highly likely to continue their involvement in peer bullying even if they did not maintain their aggressive victim status; and 2) the symptom levels, school outcomes, and service use of all aggressor/victim subgroups tended to remain stable over the adolescent transition, and in general recurrent aggressive victims exhibited greater externalizing and inattention/impulsivity symptoms, lower academic competence, and greater service use than most other longitudinal peer status groups.

The finding that children identified as aggressive victims at Grade 1 were more frequently categorized as aggressive victims at least once more in elementary school is similar to studies of older children (Camodeca et al., 2002; Hanish & Guerra, 2004; Kochenderfer-Ladd, 2003). Overall, aggressive victim status was quite stable across elementary school: over 60% of children classified as aggressive victims in Grade 1 belonged to the recurrent aggressive victim group, meaning they were identified as aggressive victims two or three times over their elementary school career. Moreover, 85% of children identified as aggressive victims at Grade 1 continued to be involved in peer bullying relationships through Grade 5 even if they did not maintain aggressive victim status. Those who did transition away from aggressive victim status were more likely to subsequently be only aggressive or only victimized rather than socially adjusted. Thus, early identified aggressive victim status was supported as a significant risk factor for continued involvement in peer bullying, suggesting a need for early screening and intervention. Identification of peer problems and service delivery early in elementary school would, theoretically, maximize the investment made in such actions by improving peer relationships before consequent symptoms (such as impaired school performance) emerge.

Both transient and chronic childhood involvement in peer bullying relationships have been observed to be detrimental to mental health and social development (Campbell et al., 2006; Goldbaum et al., 2003; Scholte et al., 2007; van Lier & Crijnen, 2005). It was hypothesized children with recurrent aggressive victim status would experience increasing and/or more persistent mental and physical health problems, school problems, and total service use across the adolescent transition. However, profiles of symptom levels by group were more or less flat, indicating the measured outcomes remained relatively stable. Thus, it appears recurrent aggressive victims do not develop increasingly worse outcomes, but rather maintain relatively higher levels of symptoms and impairments when compared to other groups of children.

This observation was supported by the profile graphs on which recurrent aggressive victims exhibited generally higher levels of symptoms, school problems, and service use. Specific subgroup comparisons at each adolescent time point revealed recurrent aggressive victims did indeed evidence significantly greater externalizing symptoms and problems with attention and impulsivity at Grades 5, 7, and 9. Recurrent aggressive victims also evidenced greater internalizing symptoms than all others (except the recurrent victims group) at Grades 5 and 7, but not at Grade 9. Such a result is not completely unexpected, as research has linked internalizing symptoms more closely to victimization experiences (Boivin et al., 1995; Goldbaum et al., 2003; Kochenderfer-Ladd & Wardrop, 2001; Kochenderfer & Ladd, 1996b). Additionally, internalizing symptoms tend to increase at mid-adolescence (Kessler et al., 2007) and so increasing similarity in levels of internalizing symptoms between recurrent aggressive victims and their peers may be explained in part by common developmental changes and experiences. Further, all longitudinal groups experiencing

victimization (recurrent victims, recurrent mixed, recurrent aggressive victims) exhibited similar low levels of academic competence and school engagement, suggesting a common role of victimization to poor school adjustment. This was true for global physical health problems as well, at Grades 5 and 7; children with victimization experiences reported more health problems than children without (Baldry, 2004; Fekkes et al., 2006; Rigby, 2003; Wolke et al., 2001).

Finally, although recurrent aggressive victims exhibited greater symptoms and impairments and higher service use vis-à-vis the profile graph, no consistently significant differences in total service use for learning, behavioral, and emotional problems emerged. It is interesting that although many recurrent aggressive victims were receiving services, their overall impairments were not reduced over time. Although the current study was unable to assess the effects of specific treatments, the question remains as to whether current interventions are effective. Future research should more carefully explore this issue.

Limitations and conclusions

The present study has several limitations. First, because it is largely exploratory, no standardized cut-points for determining high or low involvement in aggression and victimization have been developed for the HBQ. Instead, a 33% cutoff at each time point was used to define groups. As such at each grade children were assigned aggressor/victim status relative to the levels of aggression and victimization observed in the rest of the sample. However, this limitation does not negate the fact that children identified as aggressive victims at Grade 1 were more likely to maintain this status or that recurrent aggressive victim status was associated with particular negative outcomes. Also, the HBQ question sets have slight differences depending on the age of the child. These differences could possibly influence the equivalence of the multi-informant scores across time. A series of comparisons (analyses not shown) established metric invariance (Hofer, Horn, & Eber, 1997; Meredith, 1993; Meredith & Teresi, 2006) for the HBQ factors, however the fact remains that differences in equivalence of multi-informant scores may have altered results. Second, although the present study included relational aggression in the definition of aggressive behaviors, it did not include a measure of relational victimization (i.e., being the object of peers' relationally aggressive acts). Additional longitudinal work is needed to determine how overt and relational aggression *and* overt and relational victimization jointly affect children's development. Finally, although this study showed that aggressive victims generally had the highest symptom and impairment levels (particularly when compared to the Never and Isolated groups), it was unable to demonstrate whether membership in any peer status group is the cause or the consequence of differences in physical or mental health, or school performance.

Because social support and social acceptance are important to the prevention and treatment of mental health problems, recurrent aggressive victims, whose peer relationships are consistently poor, are at a disadvantage and likely more vulnerable to developmental stressors. Across the adolescent transition, aggressive victims exhibited relatively high levels of mental health symptoms, school problems, and service use. It appears early identification of and intervention on this group may afford the opportunity to ameliorate both immediate and long term social deficits and psychological problems. Future work should focus on developing maximally effective intervention strategies and investigating the relationship of early identified aggressor/victim status to treatment response and effectiveness.

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Figure 1.
Representation of mental health symptom profiles, academic adjustment profiles, and physical health outcome profiles for longitudinal peer status groups

Table 1

Transition Matrices for Socially Adjusted and Aggressor/Victim Subgroups

Transition from Grade 1 to Grade 3					
<i>Grade 3</i>					
<i>Grade 1</i>	Socially Adjusted	Victims	Aggressors	Aggressive Victims	Total
Socially Adjusted	101 (69%)	13	21	12	147
Victims	17	11 (28%)	6	5	39
Aggressors	16	3	42 (51%)	22	83
Aggressive Victims	12	10	15	38 (51%)	75
Total	146	37	84	77	344
Transition from Grade 3 to Grade 5					
<i>Grade 5</i>					
<i>Grade 3</i>	Socially Adjusted	Victims	Aggressors	Aggressive Victims	Total
Socially Adjusted	106 (73%)	10	25	5	146
Victims	14	10 (27%)	3	10	37
Aggressors	24	13	32 (38%)	15	84
Aggressive Victims	6	6	20	45 (58%)	77
Total	150	39	80	75	344

Table 2

Longitudinal Peer Group by Grade 1 Peer Status

Grade 1 Classification	Never	Isolated	Longitudinal Peer Status Group			
			Recurrent Mixed	Recurrent Victim	Recurrent Aggressor	Recurrent Aggressive Victim
Socially Adjusted	72 (49%)	46 (31%)	12 (8%)	3 (2%)	7 (5%)	7 (5%)
Victim	0	14 (36%)	3 (8%)	16 (41%)	4 (10%)	2 (5%)
Aggressor	0	12 (15%)	4 (5%)	1 (1%)	57 (69%)	9 (11%)
Aggressive Victim	0	11 (15%)	10 (13%)	2 (3%)	4 (5%)	48 (64%)

Table 3

Descriptive statistics of multi-informant outcomes by grade, longitudinal peer status, and child gender

	Grade 5M(SD)		Grade 7M(SD)		Grade 9M(SD)	
	Full Sample / Girl / Boy		Full Sample / Girl / Boy		Full Sample / Girl / Boy	
Internalizing						
Never	-0.63 (0.76) / -0.54 (0.85) / -0.79 (0.52)	-0.50 (0.74) / -0.38 (0.77) / -0.73 (0.63)	-0.41 (0.84) / -0.18 (0.92) / -0.86 (0.33)			
Isolated	-0.27 (0.82) / -0.19 (0.84) / -0.36 (0.80)	-0.17 (0.89) / -0.08 (0.93) / -0.28 (0.85)	-0.24 (0.99) / 0.09 (1.11) / -0.60 (0.70)			
Recurrent Mixed	0.11 (1.07) / 0.85 (1.28) / -0.34 (0.60)	-0.19 (0.77) / 0.38 (0.75) / -0.55 (0.53)	0.02 (0.82) / 0.55 (0.73) / -0.27 (0.74)			
Recurrent Victim	0.44 (0.96) / 0.33 (0.61) / 0.56 (1.24)	0.24 (1.19) / 0.58 (1.43) / -0.07 (0.88)	0.50 (0.89) / 0.70 (0.96) / 0.31 (0.81)			
Recurrent Aggressor	0.15 (0.77) / 0.14 (0.72) / 0.15 (0.83)	0.06 (0.90) / 0.26 (1.01) / -0.15 (0.73)	0.16 (0.98) / 0.25 (0.98) / 0.05 (0.98)			
Recurrent Aggressive Victim	0.80 (1.06) / 1.14 (1.07) / 0.51 (0.99)	0.82 (1.15) / 0.86 (0.92) / 0.78 (1.34)	0.63 (1.22) / 0.96 (1.24) / 0.33 (1.13)			
Externalizing						
Never	-0.70 (0.35) / -0.73 (0.38) / -0.65 (0.29)	-0.56 (0.51) / -0.60 (0.42) / -0.48 (0.65)	-0.51 (0.43) / -0.52 (0.40) / -0.49 (0.49)			
Isolated	-0.31 (0.56) / -0.32 (0.67) / -0.30 (0.41)	-0.29 (0.56) / -0.40 (0.52) / -0.16 (0.58)	-0.19 (0.80) / -0.33 (0.53) / -0.04 (1.01)			
Recurrent Mixed	-0.04 (0.74) / 0.02 (0.71) / -0.07 (0.78)	-0.08 (0.76) / -0.19 (0.72) / -0.01 (0.80)	0.03 (0.75) / -0.20 (0.43) / 0.16 (0.85)			
Recurrent Victim	-0.23 (0.63) / -0.50 (0.36) / 0.04 (0.74)	-0.21 (0.61) / -0.30 (0.47) / -0.13 (0.73)	-0.14 (0.63) / -0.29 (0.46) / -0.01 (0.75)			
Recurrent Aggressor	0.30 (1.04) / -0.19 (0.46) / 0.82 (1.22)	0.20 (0.98) / -0.24 (0.52) / 0.68 (1.13)	0.26 (1.12) / -0.18 (0.67) / 0.75 (1.31)			
Recurrent Aggressive Victim	0.95 (0.99) / 0.86 (1.05) / 1.02 (0.95)	0.92 (1.19) / 0.50 (0.67) / 1.29 (1.42)	0.79 (1.19) / 0.59 (1.13) / 0.98 (1.24)			
Inattention/Impulsivity						
Never	-0.73 (0.50) / -0.81 (0.44) / -0.59 (0.79)	-0.62 (0.63) / -0.68 (0.53) / -0.51 (0.79)	-0.70 (0.58) / -0.72 (0.57) / -0.67 (60)			
Isolated	-0.31 (0.70) / -0.43 (0.70) / -0.18 (0.68)	-0.28 (0.72) / -0.38 (0.68) / -0.15 (0.74)	-0.17 (0.88) / -0.20 (0.82) / -0.14 (0.95)			
Recurrent Mixed	0.24 (0.81) / 0.39 (1.00) / 0.14 (0.67)	0.16 (1.06) / 0.03 (1.21) / 0.24 (0.99)	0.08 (0.75) / 0.08 (0.62) / 0.09 (0.82)			
Recurrent Victim	-0.16 (0.67) / -0.40 (0.48) / 0.08 (0.76)	-0.30 (0.79) / -0.35 (1.02) / -0.25 (0.56)	0.03 (0.74) / -0.20 (0.91) / 0.23 (0.51)			
Recurrent Aggressor	0.15 (0.93) / -0.23 (0.74) / 0.55 (0.95)	0.13 (0.99) / -0.27 (0.74) / 0.58 (1.04)	0.14 (0.97) / -0.08 (0.91) / 0.38 (0.98)			
Recurrent Aggressive Victim	1.06 (1.08) / 0.87 (1.09) / 1.22 (1.06)	0.99 (0.97) / 0.66 (0.85) / 1.29 (0.99)	0.88 (1.09) / 0.65 (1.21) / 1.10 (0.94)			
Academic Competence						
Never	0.35 (0.90) / 0.30 (0.88) / 0.43 (0.94)	0.42 (0.71) / 0.36 (0.70) / 0.54 (0.74)	0.43 (0.77) / 0.41 (0.82) / 0.49 (0.67)			
Isolated	0.04 (0.94) / 0.19 (0.83) / -0.14 (1.04)	0.19 (0.91) / 0.31 (0.79) / 0.05 (1.03)	0.13 (0.92) / 0.16 (0.88) / 0.10 (0.97)			
Recurrent Mixed	-0.22 (1.02) / -0.34 (1.31) / -0.15 (0.83)	-0.05 (1.07) / -0.04 (1.37) / -0.07 (0.88)	-0.23 (1.04) / -0.12 (1.26) / -0.29 (0.93)			
Recurrent Victim	0.03 (1.06) / 0.42 (0.93) / -0.36 (1.09)	-0.15 (0.87) / 0.06 (0.81) / -0.34 (0.92)	-0.08 (1.14) / 0.49 (1.08) / -0.60 (0.96)			
Recurrent Aggressor	0.05 (0.85) / 0.18 (0.79) / -0.09 (0.90)	-0.03 (0.96) / 0.09 (1.03) / -0.16 (0.87)	0.03 (1.01) / 0.16 (1.12) / -0.12 (0.86)			
Recurrent Aggressive Victim	-0.68 (1.02) / -0.66 (1.17) / -0.71 (0.89)	-0.86 (1.05) / -0.75 (1.12) / -0.97 (0.98)	-0.73 (1.04) / 0.53 (1.05) / -0.91 (1.02)			

	Grade 5M(SD)		Grade 7M(SD)		Grade 9M(SD)	
	Full Sample / Girl/ Boy		Full Sample / Girl/ Boy		Full Sample / Girl/ Boy	
School Engagement						
Never	0.48 (0.67) / 0.44 (0.66) / 0.55 (0.70)		0.36 (0.74) / 0.33 (0.78) / 0.42 (0.69)		0.32 (0.85) / 0.29 (0.94) / 0.36 (0.67)	
Isolated	0.25 (0.86) / 0.42 (0.68) / 0.06 (1.01)		0.22 (0.89) / 0.48 (0.66) / -0.08 (1.03)		0.10 (0.99) / 0.15 (0.94) / 0.04 (1.05)	
Recurrent Mixed	-0.17 (0.91) / -0.05 (0.82) / -0.25 (0.98)		-0.13 (0.89) / -0.07 (1.20) / -0.17 (0.68)		-0.26 (0.83) / -0.06 (0.88) / -0.36 (0.81)	
Recurrent Victim	0.06 (0.90) / 0.31 (0.82) / -0.18 (0.94)		0.39 (0.72) / 0.54 (0.87) / 0.26 (0.56)		-0.05 (0.75) / -0.16 (0.79) / 0.06 (0.73)	
Recurrent Aggressor	-0.18 (1.04) / 0.14 (0.70) / -0.51 (1.22)		-0.15 (1.08) / 0.17 (0.92) / -0.49 (1.14)		-0.20 (1.25) / 0.04 (1.26) / -0.48 (1.21)	
Recurrent Aggressive Victim	-0.70 (1.13) / -0.50 (1.02) / -0.87 (1.20)		-0.69 (1.14) / -0.32 (1.04) / -1.02 (1.14)		-0.44 (1.11) / -0.22 (1.06) / -0.65 (1.13)	
Global Physical HealthProblems						
Never	-0.27 (0.78) / -0.17 (0.83) / -0.47 (0.64)		-0.39 (0.61) / -0.31 (0.66) / -0.55 (0.47)		-0.21 (0.72) / -0.07 (0.73) / -0.47 (0.61)	
Isolated	-0.19 (0.78) / -0.38 (0.61) / 0.03 (0.90)		-0.19 (0.88) / -0.36 (0.79) / 0.00 (0.94)		-0.19 (0.99) / -0.16 (1.09) / -0.23 (0.89)	
Recurrent Mixed	0.10 (0.82) / 0.10 (1.35) / 0.10 (1.28)		0.02 (0.72) / 0.20 (1.37) / -0.09 (0.88)		-0.07 (1.04) / 0.49 (1.12) / -0.37 (0.65)	
Recurrent Victim	0.59 (1.21) / 0.73 (1.46) / 0.45 (0.94)		0.24 (1.37) / 0.48 (1.50) / 0.02 (1.27)		0.48 (1.07) / 1.00 (1.19) / 0.00 (0.71)	
Recurrent Aggressor	0.01 (1.32) / 0.04 (0.95) / -0.02 (0.66)		-0.09 (1.19) / -0.04 (0.61) / -0.13 (0.82)		-0.03 (1.35) / -0.08 (0.91) / 0.03 (1.18)	
Recurrent Aggressive Victim	0.55 (1.29) / 0.77 (1.38) / 0.37 (1.27)		0.44 (1.08) / 0.49 (1.16) / 0.40 (1.24)		0.12 (0.92) / 0.31 (1.22) / -0.06 (1.46)	
Body Mass Index						
Never	0.14 (0.99) / 0.02 (1.01) / 0.35 (0.94)		0.27 (1.01) / 0.18 (1.02) / 0.45 (0.99)		0.33 (0.92) / 0.23 (0.99) / 0.52 (0.74)	
Isolated	0.23 (0.91) / -0.06 (0.76) / 0.57 (0.97)		0.31 (0.90) / 0.12 (0.78) / 0.53 (0.99)		0.38 (0.90) / 0.16 (0.68) / 0.61 (1.05)	
Recurrent Mixed	0.73 (0.94) / 0.77 (0.86) / 0.71 (1.02)		0.59 (1.00) / 0.56 (0.69) / 0.61 (1.17)		0.59 (0.91) / 0.54 (0.89) / 0.62 (0.95)	
Recurrent Victim	0.39 (1.25) / 0.70 (1.34) / 0.08 (1.13)		0.42 (1.21) / 0.83 (1.27) / 0.05 (1.08)		0.42 (1.19) / 0.87 (1.19) / 0.05 (1.11)	
Recurrent Aggressor	0.39 (0.88) / 0.44 (0.82) / 0.33 (0.95)		0.49 (0.86) / 0.57 (0.82) / 0.41 (0.91)		0.38 (0.83) / 0.41 (0.75) / 0.34 (0.94)	
Recurrent Aggressive Victim	0.39 (1.22) / 0.63 (1.17) / 0.18 (1.23)		0.48 (1.24) / 0.71 (1.12) / 0.29 (1.32)		0.41 (1.12) / 0.70 (1.00) / 0.14 (1.17)	
Total Service Use						
Never	0.08 (1.11) / 0.07 (1.12) / 0.09 (1.10)		-0.18 (0.87) / -0.16 (0.93) / -0.22 (0.76)		-0.09 (0.99) / -0.12 (0.95) / -0.02 (1.08)	
Isolated	-0.07 (0.91) / -0.34 (0.57) / 0.23 (1.11)		-0.12 (0.83) / -0.18 (0.81) / -0.05 (0.85)		-0.05 (0.97) / 0.05 (1.07) / -0.15 (0.87)	
Recurrent Mixed	-0.07 (0.95) / 0.13 (1.19) / -0.21 (0.76)		-0.03 (1.03) / 0.38 (1.38) / -0.32 (0.58)		-0.38 (0.33) / -0.27 (0.44) / -0.43 (0.24)	
Recurrent Victim	-0.05 (1.04) / 0.13 (1.19) / -0.22 (0.89)		0.04 (1.14) / 0.12 (1.25) / -0.04 (1.07)		-0.07 (1.02) / 0.06 (1.13) / -0.19 (0.95)	
Recurrent Aggressor	-0.24 (0.77) / -0.24 (0.77) / -0.24 (0.78)		-0.04 (1.00) / 0.05 (1.16) / -0.14 (0.79)		-0.02 (0.96) / 0.02 (0.99) / -0.08 (0.95)	
Recurrent Aggressive Victim	0.31 (1.15) / 0.16 (1.08) / 0.43 (1.22)		0.39 (1.18) / 0.08 (1.00) / 0.66 (1.28)		0.43 (1.20) / 0.30 (1.06) / 0.54 (1.32)	

Table 4

Results of the Repeated Measures MANOVA: Mental Health and School Outcomes

	<i>Pillai's Value</i>	<i>F (df)</i>	<i>p</i>	<i>Partial η^2</i>
<i>Between Subjects Effects</i>				
Longitudinal Peer Group*Child Sex	0.12	1.48 (25, 1515)	.058	.02
Child Sex	0.25	19.95 (5, 299)	.000	.25
Longitudinal Peer Group	0.53	7.25 (25, 1515)	.000	.11
<i>Within Subjects Effects</i>				
Longitudinal Peer Group*Child Sex*Time	0.20	1.23 (50, 1490)	.132	.04
Child Sex*Time	0.05	1.44 (10, 294)	.162	.04
Longitudinal Peer Group*Time	0.23	1.45 (50, 1490)	.022	.05
Time	0.02	0.64 (10, 294)	.781	.02

Table 5

Results of the Repeated Measures MANOVA: Physical Health Outcomes and Service Use

	Pillai's Value	F (df)	p	Partial η^2
<i>Between Subjects Effects</i>				
Longitudinal Peer Group * Child Sex	0.13	2.41 (15, 801)	.002	0.04
Child Sex	0.04	4.07 (3, 265)	.008	0.04
Longitudinal Peer Group	0.21	3.98 (15, 801)	.000	0.07
<i>Within Subjects Effects</i>				
Longitudinal Peer Group*Child Sex*Time	0.10	0.91 (30, 1330)	.610	0.02
Child Sex*Time	0.02	0.79 (6, 262)	.576	0.02
Longitudinal Peer Group*Time	0.13	1.16 (30, 1330)	.255	0.03
Time	0.03	1.16 (6, 262)	.328	0.03