Psychological Assessment

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University of Victoria

Ample research suggests that peer victimization predicts social and psychological maladjustment, including emotional (e.g., anxiety, low self-esteem, and depression) and behavioral (e.g., aggression) problems among children. Thus, a reliable measure of peer victimization for research with young children is needed. The Social Experience Questionnaire—Self-Report (SEQ-S) has been widely used in existing research to assess children's victimization (Crick & Grotpeter, 1996). However, empirical support for the psychometric properties of the SEQ-S is limited by the methods used to evaluate it (i.e., exploratory as opposed to confirmatory analyses), by the lack of longitudinal data, and by the limited age ranges studied. This study examined the underlying factor structure of SEQ-S ratings across 3 time points in a sample of 830 early elementary school children using confirmatory factor analysis. The hypothesized model included 3 latent factors: overt victimization, relational victimization, and receipt of prosocial acts from peers. This model provided a good fit to the data at each time point. Although it is not clear that there is invariance, results indicate that invariance across time, sex, and grade could be present. Recommendations for continued use of the SEQ-S in future research on peer victimization with young children are discussed.

Keywords: peer victimization, prosocial acts, Social Experience Questionnaire, elementary school children, bullying

Peer victimization is the experience of being a target of a peer's hurtful teasing and aggressive behavior (Hawker & Boulton, 2000). Approximately 10%–30% of children and adolescents are chronically victimized by their peers (Hawker & Boulton, 2000). Early research has focused on understanding *overt* forms of victimization, including name-calling, verbal threats, and physical damage by peers (e.g., victims are kicked, pushed, or hit; Crick & Grotpeter, 1996). Recent studies have highlighted the added importance of studying *relational* forms of victimization, which involve a peer's threat to damage a victim's relationships (e.g., victims are excluded or kept out from a group; Crick & Bigbee, 1998; Hawker & Boulton, 2000).

Research on peer victimization considers overt and relational forms of peer victimization as distinct constructs (see, e.g., Card, Stucky, Sawalani, & Little, 2008). First, overt victimization typically peaks in the early elementary school grades and decreases over time (Brame, Nagin, & Tremblay, 2001; Broidy et al., 2003; Cairns, Cairns, Neckerman, Ferguson, & Gariépy, 1989; Giesbrecht, Leadbeater, & MacDonald, 2011; NICHD Early Child Care Network, 2004), whereas relationally aggressive behaviors toward others become more prevalent from midchildhood to adolescence (Cairns et al., 1989; Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007; Leadbeater, Hoglund, & Woods, 2003). Furthermore, past work suggests that experiences of overt and relational victimization may vary by sex. In particular, boys experience higher levels of overt victimization (Archer, 2004; Crick & Bigbee, 1998; Yeung & Leadbeater, 2007). Both boys and girls report experiences of relational victimization, but girls experience more relational forms of victimization compared with overt victimization (Crick & Bigbee, 1998; Roecker Phelps, 2001). In order to capture the full range of victimization experienced by boys and girls, attention to both overt and relational forms of victimization is necessary.

Considerable research indicates that both overt and relational victimization predict social and psychological adjustment problems, including emotional (e.g., anxiety, low self-esteem, and depression) and behavioral problems (e.g., aggression) among victims (Hanish & Guerra, 2002; Hodges & Perry, 1999; Ladd & Kochenderfer-Ladd, 2002; Leadbeater & Hoglund, 2009; Leadbeater et al., 2003; Neary & Joseph, 1994; Rigby, 2003). However, much of this research has focused on older elementary or middle-school children. Investigations of the onset and origins of chronic victimization in younger children have been limited by the lack of a psychometrically sound measure of peer victimization (Card &

Tracy Desjardins, Rachel S. Yeung Thompson, Paweena Sukhawathanakul, Bonnie J. Leadbeater, and Stuart W. S. MacDonald, Department of Psychology, University of Victoria, Victoria, British Columbia, Canada.

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Correspondence concerning this article should be addressed to Tracy Desjardins, Department of Psychology, University of Victoria, P.O. Box 3050 STN CSC, Victoria, British Columbia V8W 3P5, Canada. E-mail: tdesjar@uvic.ca

Hodges, 2008; Konishi et al., 2009). Several measures have been used (e.g., Social Experience Questionnaire [SEQ], Crick & Grotpeter, 1996; Peer-Victimization Scale, Neary & Joseph, 1994; Olweus Bully-Victim Questionnaire, Olweus, 1993; Peer Relations Scale, Rigby & Slee, 1993); however, they differ on a number of dimensions.

First, available instruments vary with respect to the source of information regarding children's experiences of peer victimization (i.e., self-report, teacher report, peer nomination, or observation). In two studies, Ladd and Kochenderfer-Ladd (2002) compared the relative utility of peer victimization ratings from multiple informants, assessing both their psychometric properties and their ability to predict kindergarten and second- to fourth-grade children's adjustment. In early childhood (i.e., before Grade 2), self-reports were more reliable than peer reports (parent and teacher reports were not assessed in this age group). During middle childhood, however, multi- (self-, peers, parents, and teachers) rather than mono- (self-only) source ratings were desirable. Ladd and Kochenderfer-Ladd (2002) speculate that peers may lack the skills and cognitive resources necessary to provide accurate victimization ratings about their classmates in early childhood. Second, existing measures emphasize different subtypes and operational definitions of peer victimization, including overt and relational victimization (see reviews by Card & Hodges, 2008, and Hawker & Boulton, 2000). Finally, instruments differ with respect to the age ranges for which they have been developed and used, with most focusing on middle school-age children. Further research is needed to identify a psychometrically sound self-report measure of peer victimization for children in the early elementary school grades.

In this study, we build on research on the psychometric properties of a widely used measure of peer victimization—the Social Experience Questionnaire—Self-Report (SEQ-S; Crick & Bigbee, 1998; Crick & Grotpeter, 1996) by testing its underlying factor structure and equivalence over time, grade, and sex with a sample of early elementary school children. Among existing instruments, the SEQ-S is one of the first to assess relational forms of victimization (e.g., another kid saying they won't like you unless you do what they want you to do). The 15-item self-report inventory also measures children's experiences of overt victimization (e.g., getting hit by another kid at school) and receipt of prosocial acts from peers (e.g., another kid giving you help when you need it). Since its introduction into the literature (using a third- to sixth-grade sample), this comprehensive instrument has been used widely to assess peer victimization in research with middle- and high school samples (e.g., Casey-Cannon, Hayward, & Gowen, 2001; Crick & Bigbee, 1998; Leadbeater, Banister, Ellis, & Yeung, 2008; Storch, Brassard, & Masia-Warner, 2003; Storch, Krain, Kovacs, & Barlas, 2002; Yeung & Leadbeater, 2010). Some research has also adapted the SEQ-S for use with younger samples (Dhami, Hoglund, Leadbeater, & Boone, 2005; Giesbrecht et al., 2011; Hoglund & Leadbeater, 2004; Leadbeater & Hoglund, 2009; Leadbeater et al., 2003; Yeung & Leadbeater, 2007). However, the psychometric properties of the SEQ-S for children in early elementary school grades have not been tested.

Previous cross-sectional evaluations demonstrate favorable psychometric properties for the SEQ-S for older children. Crick and Grotpeter (1996) used principal components analysis (PCA) to evaluate the SEQ-S with a sample of 474 American third- to sixth graders. Results revealed a distinct three-factor structure for relational victimization, overt victimization, and receipt of prosocial acts. Two items on the Overt Victimization scale were dropped, however, due to factor loadings below .40 (i.e., "being yelled at and called mean names" and "being told you will be beaten up if you don't submit to a peer"). Remaining factor loadings ranged from .66 to .81. Reported internal consistency reliabilities were good: $\alpha = .80$ for relational victimization, $\alpha = .78$ for overt victimization, and $\alpha = .77$ for receipt of prosocial acts. The trifactor structure of the SEQ-S was also supported in a subsequent study of 383 fourth- and fifth graders (Crick & Bigbee, 1998), although one unidentified item was dropped in this study—again from the Overt Victimization scale. Factor loadings ranged from .69 to .88, and internal consistency reliabilities for children's reports of relational victimization, overt victimization, and receipt of prosocial acts were strong: $\alpha = .91$, .89, and .90, respectively.

Cross-sectional studies have also evaluated the SEQ-S in a number of culturally diverse samples. For instance, Schäfer, Werner, and Crick (2002) translated the two Victimization subscales and one item from the Prosocial Acts subscale into German and evaluated their psychometric properties with a sample of 217 sixth-grade children. Findings replicated the original trifactor structure identified by Crick and Grotpeter (1996). Factor loadings ranged from .49 to .90, and internal consistency reliabilities were .78 and .75 for the full Relational and Overt Victimization scales, respectively. Bauman (2008) provided evidence for the factor structure and internal consistency reliability of a Spanish translation of the SEQ-S with a sample of 118 third- to fifth-grade Mexican Americans. However, the overt victimization item related to peers threatening to "beat you up if you don't do what they want you to do" was dropped, as it unexpectedly loaded onto the relational victimization latent factor. Adequate internal consistency reliabilities were .72, .75, and .76 for relational victimization, overt victimization, and receipt of prosocial acts, respectively. In contrast, findings from Cheng, Cheung, and Cheung (2008) did not support two distinct factors for overt and relational victimization in a Chinese translation of the SEQ-S with a sample of 712 seventh- to 13-grade students from Hong Kong: All of the items loaded greater than .75 on a single latent factor. Notwithstanding the exception of the Chinese translation, available evidence thus supports the three-factor model of the SEQ-S and the reliability of its subscale scores in research with middle school-age children.

However, empirical support for the SEQ-S is limited in a number of ways. First, the majority of evaluative research has been conducted with American samples using PCA, which is exploratory in nature. Although data-driven techniques are important tools in early research, PCA is restricted by the assumption that latent factors are orthogonal, by the analysis of complete variance (thus failing to estimate and attenuate measurement and systematic error), and by an atheoretical approach (Tabachnick & Fidell, 2007). One exception is a study that examined the factor structure of the SEQ-S using confirmatory factor analysis (CFA) with a sample of 1,158 adolescents aged 13–17 years (Storch, Crisp, Roberti, Bagner, & Masia-Warner, 2005). Consistent with past research, findings confirmed three distinct, yet related factors corresponding to overt and relational victimization and receipt of prosocial acts by peers. Notably, CFA is a hypothesis-driven

technique that directly tests a priori hypotheses about the number and type of factors one expects to find.

A second limitation of past research on the psychometric properties of the SEQ-S is that little research has assessed its factor structure over time. Although Storch et al. (2005) examined the 1-year test–retest reliability of the SEQ-S subscale scores using intraclass correlations with a subset of 42 adolescents, no research to date has tested the equivalence of the factor structure of the SEQ-S over time. Third, the SEQ-S shows adequate internal reliability consistency with children in early elementary school grades, but there is no evidence supporting the three-factor structure in this age group. Research to date also has not examined whether the factor structure of the SEQ-S is equivalent for boys and girls. The current study tests the extent to which the factor structure of the SEQ-S is consistent across time, grade, and sex for early elementary school-age children. We also examined correlations between children's SEQ-S scores and parent reports of children's victimization experiences.

The Current Study

Further research is needed to test the factor structure of the SEQ-S in early elementary school children to assess whether it is comparable to what has been found for older children and to determine whether the SEQ-S is an appropriate measure of peer victimization to use longitudinally with boys and girls in the earliest elementary school grades. CFA is well suited to determining whether social-psychological constructs such as peer victimization, which are prone to measurement error, "change across samples of different ages or within the same samples over time" (Schaie, 2000, p. 258) by pooling shared variance across indicators (i.e., items) within each latent construct and attenuating measurement error by estimating unique error variances. CFA is also well suited to conducting tests of invariance across time.

Past research suggests that the 15 items on the SEQ-S are delineated by three subscales. CFA was conducted to examine whether five indicators for *overt victimization* (i.e., "hit," "yell/names," "push/shove," "kick/pull," and "beat up"), for *relational victimization* (i.e., "leave out," "get back," "tell lies," "won't like," and "say mean"), and for *receipt of prosocial acts* (i.e., "get help," "cheer up," "make happy," "say nice," and "care about") load onto three distinct latent factors (see Figure 1) at three time points. We expect to show (a) two distinct latent factors for overt and relational victimization, which will share a positive and moderate correlation, and (b) one distinct latent factor for receipt of prosocial acts from peers, which will share moderate negative correlations with both overt and relational peer victimization. We also tested whether the trifactor structure, as well as the 15-item factor loadings, intercepts, and error variances, were equivalent across sex, grade, and time, or the three measurement occasions.

Method

Participants

Participants were 830 first- to fourth-grade children from 67 classrooms in 11 schools in a middle-sized Western Canadian city. Baseline data were collected in the fall of 2006 (Time 1 [T1]) from 830 children (418 boys, 411 girls) who ranged in age from 5 to 10 years ($M = 6.9$, $SD = .86$). The sex of one participant was unknown. At T1, 280 students were in Grade 1, 302 were in Grade 2, and 248 were in Grade 3. Follow-up data were collected from 741 children (375 boys, 366 girls) in the fall of 2007 (Time 2 [T2]). At T2, 251 students were in Grade 2, 275 were in Grade 3, and 215 were in Grade 4. Time 3 (T3) data were collected in the spring of 2008 from 738 children (375 boys, 363 girls). At T3, 251 students were in Grade 2, 273 were in Grade 3, and 214 were in Grade 4.

Parent reports at T1 indicated that 76% of children lived in a two-parent household. Forty-eight percent of mothers and 44% of fathers completed some college or technical training beyond high school, and 21% of mothers and 15% of fathers earned a bachelor's degree. Thirteen percent of children lived in a household with a total annual income of less than $30,000, whereas 28% of children lived in a household with a total annual income of $91,000 or more (range was less than $10,000 per annum to $91,000 or more per annum). Ninety-four percent of the children had attended a maximum of two schools in their lifetime, and 6% had attended three or more schools. Ethnicity information was not collected. In past studies, most of our children and families say they are Canadian in response to these requests.

Procedure

Data were collected as part of a 3-year evaluation of the *WITS Rock Solid Primary Prevention Program*, a community-based program that aims to prevent peer victimization among elementary school children (Leadbeater & Sukhwathanakul, 2011). The WITS acronym stands for Walk away, Ignore, Talk it out, and Seek help. Of the 11 schools that participated in the current study, five schools implemented the WITS Program and six control schools did not. Program and control group schools were each recruited from separate but adjacent school districts in the greater metropolitan area of the study. No significant differences were found between program and control schools in household income, children's living situation, sex, and number of schools attended since kindergarten. Levels of mothers' and fathers' education were higher in program schools ($z = -3.01$, $p < .003$, and $z = -2.61$, $p < .009$, respectively).

In addition, invariance testing was used to assess whether data collected from children in the program and control schools could be analyzed simultaneously (Meredith, 1993; Widaman, Ferrer, & Conger, 2010). In carrying out the invariance tests, all students across all grades attending WITS program schools were compared with all students across all grades attending control schools. The tests of invariance were performed using the hypothesized three-factor model (see Figure 1). Results provided support for strong invariance across groups of program and control children (see Table 5), suggesting that both path loadings and intercepts for the measured variables did not statistically differ across groups. Thus, data were combined for children from the program and control schools in all analyses.

Teachers sent parent consent forms home with all children in Grades 1–3 in the participating schools. Parents who provided written permission for their child to participate in all three testing periods completed a demographic questionnaire and rated their perceptions of the frequency of their child's victimization using two items. Specifically, parents rated the frequency with which

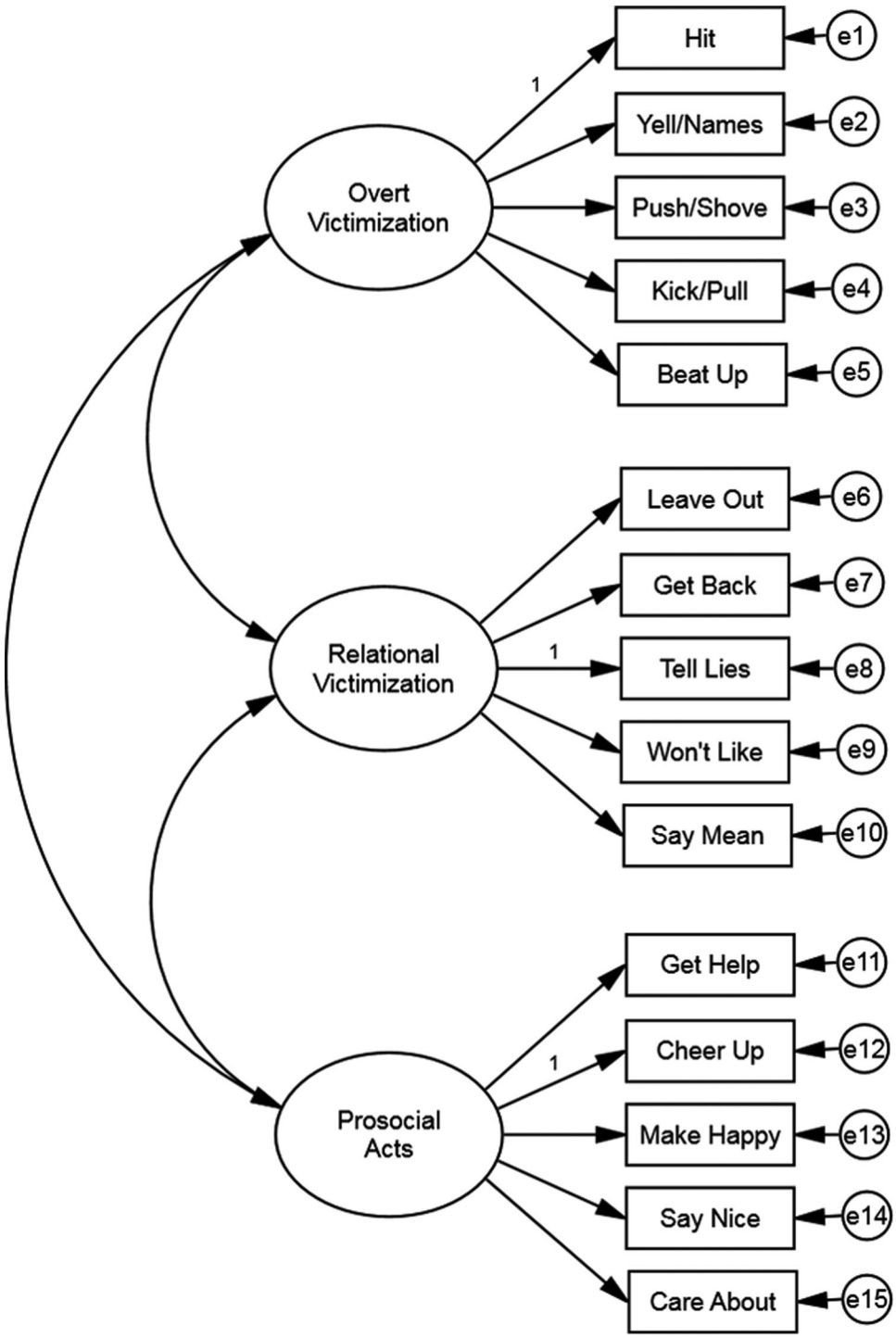

Figure 1. Hypothesized model for confirmatory factor analysis of the five items for overt victimization, relational victimization, and receipt of prosocial acts, respectively. e1–e15 indicate error terms.

their child was physically victimized ("hit, pushed") and relationally/verbally victimized ("teased") by other students (*hardly ever*, *sometimes*, *often*, or *almost always*) at each time point. Though limited psychometrically, these two items were combined to assess the correlation between children's and parent's reports of peer victimization. Completed demographic forms and parent reports of victimization were returned to the school in a sealed envelope for pick-up by a research assistant.

Self-report peer victimization (SEQ-S) data were collected from children in their classrooms, using the same procedures at each

time point. Teachers or research assistants read all items aloud to groups ranging in size from five to 20 children. Children were instructed to follow along using a solid colored paper to cover up all items appearing below the question to be answered. A research assistant rotated around the classroom to ensure that children were responding to the correct item and to monitor their responses. It took approximately 30 min per classroom to complete the questionnaire. The SEQ-S was the only instrument children completed in this study. With the exception of obtaining parental consent, the same data collection procedures were used at T2 and T3.

Measure

The SEQ-S. Children's reports of peer victimization and receipt of prosocial acts were measured using the three SEQ-S subscales (Crick & Grotpeter, 1996). Each subscale contained five items that asked children to rate how often they experienced *overt victimization* (e.g., "How often do you get pushed or shoved by another kid at school?"), *relational victimization* (e.g., "How often does another kid tell lies about you to make others not like you anymore?"), and *receipt of prosocial acts* (e.g., "How often do you get cheered up by another kid when you're sad or upset?") on a 3-point visually aided Likert scale (□ = *never*, □ = *sometimes*, and □ = *almost all the time*). This scale was adapted from Crick and Grotpeter's (1996) original 5-point scale (ranging from 1 [*never*] to 5 [*all the time*]) to facilitate ease of understanding for younger children (Leadbeater & Hoglund, 2009; Leadbeater et al., 2003; Leadbeater & Sukhawathanakul, 2011). Two practice items were used to familiarize children with the response scale. During administration, adults read the SEQ-S items aloud, instructed children to follow along using a brightly colored piece of paper, and circulated around the room to ensure that children were responding to appropriate items. Prior research has reported adequate internal consistency reliabilities for the SEQ-S with elementary school children using this revised scale (Cronbach's $\alpha = .76$ for overt victimization, $\alpha = .72$ for relational victimization, and $\alpha = .73$ for relational victimization; Leadbeater et al., 2003).

Statistical Analysis

Assumptions of multivariate normality were assessed using SPSS 17.0. A number of univariate outliers were identified (i.e., standardized values > 3.29; Tabachnick & Fidell, 2007) on two overt victimization items (i.e., "kick/pull" and "beat up") at both T2 and T3. Given that Cook's *D* values for these cases were in the acceptable range of < 1, the decision was made to retain them (Cook & Weisberg, 1982). Examination of box plots and Mahalanobis distance did not reveal any multivariate outliers. As expected, all peer victimization items were positively skewed (i.e., skewness values > 3.5; Lei & Lomax, 2005), suggesting that most children reported low levels of victimization, and multivariate kurtosis was significant (311.23). For ease of interpretation, reported results are based on untransformed data. With respect to attrition, analysis of variance (ANOVA) did not reveal any differences on the study's main variables for children who had missing versus complete data.

AMOS 17.0 statistical software was used to test the fit of the hypothesized CFA model at T1, T2, and T3 (see Figure 1; Arbuckle, 2008). The reference indicators specified were chosen due to their high face validity, as well as past findings that these items had the largest loadings on their respective latent factors (Crick & Grotpeter, 1996). Given the problems posed by skewed data when using CFA, the Bollen-Stine bootstrapping procedure was used in order to obtain estimates of robust standard errors (Stine, 1990; West, Finch, & Curran, 1995). Specifically, 2,000 samples were randomly drawn from the data to produce robust parameter estimates and fit indices (Byrne, 2010). Because bootstrapping requires complete data, regression substitution, in which variables with missing data are regressed on the study's other variables, was used to impute missing values (e.g., Howell, 2008; Widaman, 2006).

Following established guidelines (Bollen, 1989; Byrne, 2010; Hu & Bentler, 1995; Kline, 2005; Schreiber, Nora, Stage, Barlow, & King, 2006), the fit of the hypothesized model to the data was evaluated using the following indices: χ^2, comparative fit index (CFI), and root-mean-square error of approximation (RMSEA). The χ^2 statistic provides an overall estimate of model fit; nonsignificant ($p < .05$) χ^2 values indicate good model fit. However, because results are dependent on sample size, χ^2 tends to be statistically significant for large samples even if a model provides a reasonable approximation to the data. Remaining fit indices take this consideration into account. The CFI compares the obtained model fit with the fit of an independence model that assumes independence (i.e., covariances constrained = 0) among the variables in the model. CFI values $\geq .90$ indicate reasonably good fit (Kline, 2005), and values $\geq .95$ indicate good fit. Lastly, the RMSEA provides a fit index that is sensitive to model complexity; values $\leq .05$ suggest good model fit, and values between .05 and .08 indicate reasonable fit.

Next, tests of invariance were conducted using AMOS 17.0 software to assess whether or not components of the SEQ-S factor structure were equivalent across time, grade, and sex (Widaman et al., 2010; Widaman & Reise, 1997). To account for nonindependence in our longitudinal data (as the same children were assessed over time), residual terms for corresponding indicators were autocorrelated (Landis, Edwards, & Cortina, 2009; Widaman et al., 2010). Covariation between the same latent factors over time (e.g., overt victimization as measured at T1, T2, and T3) was also specified.

To test for time invariance, a series of four cumulative models with increasingly restrictive parameter constraints were evaluated (see Widaman et al., 2010). A *configural* model with no equality constraints (except for one fixed loading per subscale for purposes of model identification and latent variable scaling) was estimated first. In the second model, equality constraints were imposed on all corresponding factor loadings (e.g., the "beat up" factor loading at T1, T2, and T3) to test for *weak* invariance across time. In the third model, additional equality constraints were imposed on all corresponding indicator intercepts to test for *strong* invariance across time. In the final model, further equality constraints were imposed on corresponding residual variances to test for *strict* invariance across time. To test for grade and sex invariance over time, multigroup longitudinal models were simultaneously estimated for groups of children in different grades and for boys and girls. Configural, weak (factor loading), strong (intercept), and strict (residual) levels of invariance were tested by constraining corresponding parameters (e.g., the "beat up" item factor loading at T1) across groups.

A model comparison approach was used to determine whether each successive model differed from the previous model. Specifically, change in CFI fit (ΔCFI) was used to determine whether the introduction of invariance constraints resulted in worsening of fit relative to the previous model. Change in χ^2 fit ($\Delta\chi^2$) is another method used to test invariance; however, Cheung and Rensvold (2002) recommend ΔCFI as a practical decision rule to overcome the limitations created by the $\Delta\chi^2$ test's susceptibility to sample size and model complexity. Other researchers have endorsed ΔCFI as an acceptable decision rule (e.g., Wu, Li, & Zumbo, 2007), and recent publications have used it as a criterion (e.g., Chen & Zhu, 2012; Zimprich, Allemand, & Lachman, 2012). Accordingly, we use ΔCFI to evaluate invariance between models in our study. When ΔCFI is $< .01$ between models, invariance is supported and the next, more restrictive, level of invariance can be tested. Following the same procedure, change in RMSEA fit (ΔRMSEA) is used as another evaluation of change across models to either substantiate or limit ΔCFI findings (Zimprich et al., 2012).

Results

Descriptive Statistics

Means and standard deviations for all SEQ-S items are presented in Table 1. Pearson's correlations were also computed for all indicators at each time point. As expected, items within each subscale were significantly correlated at each time point ($ps < .01$, range = .24–.66). Internal consistency reliabilities (Cronbach's α) for overt victimization (α = .80 at T1, α = .77 at T2, α = .78 at T3), relational victimization (α = .80 at T1, α = .80 at T2, α = .82 at T3), and prosocial acts (α = .73 at T1, α = .77 at T2, α = .78 at T3) were all favorable. Together, these findings support the appropriateness of factor analysis for these data.

As shown in Table 2, parent reports of children's overt and relational/verbal victimization experiences were significantly correlated with children's reports of victimization on the SEQ-S, concurrently and across time.

Table 1
Means (and Standard Deviations) of Scale Items at T1, T2, and T3

SEQ-S item	T1	T2	T3
Overt Victimization			
1. Hit	.44 (.62)	.40 (.55)	.36 (.53)
2. Yell/Names	.54 (.64)	.51 (.62)	.50 (.60)
3. Push/Shove	.62 (.65)	.61 (.63)	.55 (.60)
4. Kick/Pull	.34 (.58)	.31 (.54)	.27 (.49)
5. Beat Up	.32 (.59)	.28 (.53)	.20 (.46)
Relational Victimization			
1. Leave Out	.55 (.63)	.47 (.57)	.44 (.56)
2. Get Back	.50 (.67)	.51 (.64)	.44 (.60)
3. Tell Lies	.45 (.65)	.44 (.63)	.41 (.60)
4. Won't Like	.52 (.68)	.48 (.60)	.39 (.56)
5. Say Mean	.38 (.62)	.34 (.55)	.31 (.55)
Prosocial Acts			
1. Get Help	1.14 (.63)	1.23 (.62)	1.32 (.60)
2. Cheer Up	1.38 (.68)	1.45 (.65)	1.43 (.64)
3. Make Happy	1.41 (.64)	1.48 (.61)	1.45 (.59)
4. Say Nice	1.54 (.59)	1.53 (.60)	1.51 (.58)
5. Care About	1.31 (.73)	1.25 (.72)	1.22 (.68)

Note. Scale for all items is 0 = *never*, 1 = *sometimes*, 2 = *almost all the time*. T1, T2, and T3 = Time 1, Time 2, and Time 3; SEQ-S = Social Experience Questionnaire—Self-Report.

Table 2
Correlations Between Child and Parent Reports of Victimization

	Child report			Parent report		
Variable	T1	T2	T3	T1	T2	T3
Relational/Verbal victimization						
Child report						
T1	—					
T2	.44	—				
T3	.39	.51	—			
Parent report						
T1	.24	.21	.24	—		
T2	.22	.22	.22	.42	—	
T3	.18	.20	.29	.32	.43	—
Overt victimization						
Child report						
T1	—					
T2	.45	—				
T3	.38	.49	—			
Parent report						
T1	.17	.13	.13	—		
T2	.17	.16	.16	.42	—	
T3	.12	.16	.24	.21	.37	—

Note. All correlations were statistically significant ($p < .01$). T1, T2, and T3 = Time 1, Time 2, and Time 3.

CFA Results

Fit statistics for the three-factor model at T1, T2, and T3 are provided in Table 3. These results are based on analyzing all three grades together ($N = 830$). As expected due to our large sample size, χ^2 values were statistically significant ($p < .05$) at each time point. However, all remaining fit indices indicated a good fit of the three-factor model structure to the sample data. Standardized parameter estimates and squared multiple correlations are also provided in Table 3. All standardized parameter estimates were statistically significant ($ps < .01$). Squared multiple correlations for all indicators related to the three latent factors were also adequate (R^2s = .27–.58), with the exception of one indicator on the Prosocial Acts subscale (i.e., get help) at T1, where only 16% of its variability was accounted for by the latent factor. Nevertheless, the zero-order correlation between this indicator and the other items on the subscale at T1 were all statistically significant ($ps < .01$). Also shown in Table 3, factor correlations between the latent constructs were in the expected directions.

Invariance Test Results

Table 4 provides fit indices for the hypothesized CFA model by grade and sex at T1, T2, and T3. CFI and RMSEA indices show adequate model fit across sex and grade at each time point, providing support for the hypothesized model across time and groups, as well as sufficient evidence to proceed to the tests of invariance. Invariance test results are shown in Table 5. As expected, CFI values obtained for the tests of invariance (see Table 5) are lower than those obtained when the models were tested separately by grade and sex at T1, T2, and T3 (see Table 4). The

Table 3
Standardized CFA Coefficients (Squared Multiple Correlations), Model Fit Statistics, and Latent Factor Correlations at T1, T2, and T3

SEQ-S item	Latent construct	T1	T2	T3
1. Hit	Overt	.68 (.46)	.61 (.37)	.64 (.41)
2. Yell/Names	Overt	.65 (.43)	.67 (.45)	.65 (.42)
3. Push/Shove	Overt	.67 (.44)	.58 (.34)	.58 (.34)
4. Kick/Pull	Overt	.66 (.43)	.57 (.32)	.63 (.39)
5. Beat Up	Overt	.68 (.46)	.64 (.41)	.57 (.33)
6. Leave Out	Relational	.54 (.30)	.57 (.32)	.57 (.32)
7. Get Back	Relational	.65 (.42)	.60 (.36)	.64 (.41)
8. Tell Lies	Relational	.76 (.58)	.71 (.51)	.77 (.59)
9. Won't Like	Relational	.70 (.49)	.66 (.44)	.60 (.36)
10. Say Mean	Relational	.71 (.50)	.65 (.42)	.74 (.55)
11. Get Help	Prosocial	.40 (.16)	.52 (.27)	.53 (.28)
12. Cheer Up	Prosocial	.61 (.37)	.63 (.40)	.65 (.42)
13. Make Happy	Prosocial	.68 (.46)	.62 (.38)	.67 (.45)
14. Say Nice	Prosocial	.67 (.46)	.65 (.42)	.65 (.42)
15. Care About	Prosocial	.60 (.36)	.61 (.37)	.58 (.34)
Model fit statistics				
χ^2		175.12**	218.20**	227.67**
df		87	87	87
CFI		0.98	0.96	0.96
RMSEA [CI_{90}]		0.04 [.03, .04]	0.04 [.04, .05]	0.04 [.04, .05]
Latent factor correlations				
Overt Victimization and Relational Victimization		.84**	.86**	.78**
Overt Victimization and Receipt of Prosocial Acts		−.18**	−.03**	−.03**
Relational Victimization and Receipt of Prosocial Acts		−.18**	−.05**	−.05**

Note. $N = 830$. Results are based on the full sample (i.e., all grades and both sexes analyzed simultaneously). CFA = confirmatory factor analysis; T1, T2, and T3 = Time 1, Time 2, and Time 3; SEQ-S = Social Experience Questionnaire—Self-Report; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = confidence interval.
** $p < .01$.

lower CFI scores reflect the increased complexity of these models: To properly test for invariance across time (i.e., to autocorrelate corresponding residuals), the invariance models incorporate T1, T2, and T3 models (and analyze T1, T2, and T3 data simultaneously). Such complexity must be taken into account when evaluating a model's suitability (Hu & Bentler, 1999; Marsh, Hau, & Wen, 2004). RMSEA "compensates for model complexity" and thus may be a better indicator (Hu & Bentler, 1999, p. 3). RMSEA suggests good fit overall for the invariance models (see Table 5). Nevertheless, the low CFI values for the invariance models limit the conclusions that can be drawn.

Time. Examination of CFI values for the configural and weak time invariance models revealed no ΔCFI, suggesting that the constraints imposed by weak invariance testing did not result in a degradation of model fit. Similarly, there was no ΔCFI between the weak and strong time invariance models. However, ΔCFI was .01 between the strong and strict time invariance models, suggesting that the constraints imposed by strict invariance testing resulted in a degradation of model fit. No ΔRMSEA was observed across any of the models. Taken together, CFI and RMSEA findings suggest that some level of time invariance could be present, but this result is not conclusive given the low CFI values obtained.

Table 4
Fit Indices for the Hypothesized CFA Model by Grade and Sex at T1, T2, and T3

	T1			T2			T3		
Group	χ^2	CFI	RMSEA	χ^2	CFI	RMSEA	χ^2	CFI	RMSEA
Grade[a]									
Grade 1	128.96**	0.97	0.04	145.24**	0.94	0.05	135.48**	0.95	0.05
Grade 2	144.37**	0.96	0.05	197.81**	0.93	0.07	195.44**	0.92	0.06
Grade 3	137.98**	0.95	0.05	134.25**	0.95	0.05	134.75**	0.95	0.05
Sex									
Boys	135.72**	0.97	0.04	180.42**	0.94	0.05	184.06**	0.95	0.05
Girls	143.28**	0.97	0.04	138.87**	0.96	0.04	166.93**	0.95	0.05

Note. CFA = confirmatory factor analysis; T1, T2, and T3 = Time 1, Time 2, and Time 3; CFI = comparative fit index; RMSEA = root-mean-square error of approximation.
[a] Grade groups are labeled by the grade children were in at T1.
** $p < .01$.

Table 5
Tests of Invariance

Model	Comparative model	*df*	CFI	ΔCFI	RMSEA [CI]	ΔRMSEA	χ^2
WITS schools/Control schools invariance models							
Configural	—	1809	.90	—	.03 [.027, .030]	—	3045.33
Weak	Configural	1845	.90	.00	.03 [.027, .030]	.00	3075.72
Strong	Weak	1881	.90	.00	.03 [.026, .030]	.00	3119.33
Strict	Strong	1926	.90	.00	.03 [.027, .030]	.00	3206.37
Time invariance models							
Configural	—	882	.91	—	.03 [.029, .033]	—	1883.06
Weak	Configural	906	.91	.00	.03 [.029, .033]	.00	1923.13
Strong	Weak	936	.91	.00	.03 [.030, .034]	.00	2044.88
Strict	Strong	966	.90	.01*	.03 [.032, .034]	.00	2225.74
Grade invariance models							
Configural	—	2736	.87	—	.03 [.025, .028]	—	4302.58
Weak	Configural	2808	.87	.00	.03 [.025, .028]	.00	4404.15
Strong	Weak	2880	.87	.00	.03 [.025, .028]	.00	4528.79
Strict	Strong	2970	.86	.01*	.03 [.026, .028]	.00	4769.98
Sex invariance models							
Configural	—	1809	.90	—	.03 [.026, .030]	—	2995.04
Weak	Configural	1845	.90	.00	.03 [.026, .030]	.00	3049.97
Strong	Weak	1881	.90	.00	.03 [.026, .030]	.00	3109.62
Strict	Strong	1926	.89	.01*	.03 [.027, .030]	.00	3191.64

Note. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = confidence interval. Dashes indicate no model comparisons (i.e., prior to comparing Configural and Weak models).
* ΔCFI = .01.

Grade. Examination of CFI values revealed no change in CFI between the configural and weak grade invariance models, or between the weak and strong grade invariance models. However, ΔCFI was .01 between the strong and strict models, with strict invariance constraints thus resulting in a degradation of model fit. No ΔRMSEA was observed across any of the models. Taken together, CFI and RMSEA findings suggest that some level of grade invariance could be present, but this result is not conclusive.

Sex. Examination of CFI values revealed no ΔCFI between the configural and weak sex invariance models, or between the weak and strong sex invariance models. However, ΔCFI was .01 between the strong and strict models, with strict invariance constraints resulting in a degradation of model fit. ΔRMSEA was < .01 across all models. CFI and RMSEA findings thus suggest that some level of sex invariance could be present, but this result is not conclusive.

Discussion

Findings from the CFA support the expectation that the structure of children's perceptions of peer victimization in the early elementary school grades is consistent with what has been reported in past research with middle- and high school samples (Crick & Bigbee, 1998; Crick & Grotpeter, 1996; Prinstein, Boergers, & Vernberg, 2001; Storch et al., 2005; Yeung & Leadbeater, 2010). Specifically, children's self-reports on the SEQ-S (Crick & Grotpeter, 1996) produced three distinct (but related) constructs for overt victimization, relational victimization, and prosocial behaviors that provided a good fit to the data. Results thus demonstrate that these three constructs are distinct for children in first grade. Although some authors have pointed out that self-report questionnaires may place developmentally challenging cognitive demands on younger children (Pepler & Craig, 1998), even in early grades the expected factor structure was supported, suggesting that children's self-ratings on the SEQ-S are meaningful. Nonetheless, qualitative research could further clarify young children's understanding of the items.

Although multiple sources of data may be important (Ladd & Kochenderfer-Ladd, 2002), assessment of children's own reports of peer victimization tap directly into their own perceptions and experiences of peer victimization. Other informants may not be aware of the victimization that children experience. For example, Rønning et al. (2009) found that 8-year-old boys reported over 3 times more victimization than their parents and over 2 times more victimization than their teachers, suggesting that adults may be less aware of children's victimization experiences and that children may not tell adults about such experiences. A self-report format is also more cost- and time-efficient compared with collecting peer reports or observational data (Crothers & Levinson, 2004), and ethical concerns have created resistance to the use of sociometric reports from peers in some areas (Underwood, Mayeux, Risser, & Harper, 2006). Nevertheless, there are limitations associated with the use of self-reports to assess peer victimization, including the potential for biases in reporting, particularly for depressed or aggressive children who may under- and overreport victimization, respectively, due to self-depreciation (Crothers & Levinson, 2004) or hostile attribution biases (Crick & Dodge, 1996).

This study also investigated the equivalence of the SEQ-S factor structure and other components across time in groups of boys and girls and in groups of children in the first, second, and third grades. The overall fit of the complex invariance models was mixed, with good RMSEA values but low CFI values. As such, the invariance results are not conclusive and must be interpreted with caution. At the *configural* level, which assesses whether the same indicators load on the same number of factors across groups (on the basis of

model fit; Bontempo & Hofer, 2007), the results were inconclusive due to mixed RMSEA and CFI values. Although RMSEA findings provide some indication that the same overt, relational, and prosocial factors—with the same pattern of SEQ-S indicators—existed across time, grade level, and sex, the CFI findings do not. Thus, it is not conclusive whether the SEQ-S items tapped similar constructs over a span of 1.5 years, across groups of first-, second-, and third-grade children, and across groups of boys and girls.

At the level of *weak* invariance, which assesses whether corresponding factor loadings are equivalent across groups, the results did not reveal any changes in model fit indices across time or groups. However, given the low CFI values obtained, results from the current study are not conclusive as to whether weak invariance is present. As such, cross-group comparisons using SEQ-S scores are not recommended because it is unclear whether latent factor variances will have the same metric across groups (Bontempo & Hofer, 2007).

At the level of *strong* invariance, which assesses whether corresponding item intercepts are equivalent across groups, the results did not reveal any changes in model fit indices across time or groups. However, it is not clear that strong invariance is present, so comparisons of observed SEQ-S scores or latent factor means and variances across time and across groups of early elementary school children by grade or sex cannot be recommended (Bontempo & Hofer, 2007; Byrne & Stewart, 2006; Widaman et al., 2010). Finally, at the level of *strict* invariance, which assesses whether corresponding item residual variances are equivalent across groups, the results revealed significant changes in model fit indices across time and groups. Thus, this study's findings clearly do not support strict invariance, further suggesting that group comparisons should not be made as they may be biased (Bontempo & Hofer, 2007; Meredith, 1993).

There are a number of study limitations that should be considered. First, we assessed invariance in children's self-reports of victimization only. Although these were correlated with parent reports and past research has not supported the use of peer ratings of victimization in early elementary school children (Ladd & Kochenderfer-Ladd, 2002), it is possible that ratings from various sources would better explain the seriousness of children's experiences of victimization. Victimization that is apparent across reporters and settings may have particularly serious consequences for children's well-being. Future research with early elementary school children should consider using a multi-informant (e.g., parents, teachers, and peers) approach to evaluate the relative utility of victimization ratings across sources.

Second, the SEQ-S was used as an ordinal measure of victimization in this study; its usefulness as a tool for identifying individual children who are chronically or severely victimized by peers was not evaluated. Other research studies have used various cutoffs to identify such victims (e.g., Bond, Carlin, Thomas, Rubin, & Patton, 2001; Crick & Grotpeter, 1996; Ladd & Kochenderfer-Ladd, 2002). Further research is needed to clarify how best to use scores obtained on measures such as the SEQ-S to identify children who are at high risk for chronic victimization given the robust association between peer victimization and social and psychological maladjustment. Presently, however, SEQ-S ratings are not typically used in clinical assessments of peer victimization. Third, recent work has begun to investigate whether victimization questionnaires measure the same underlying constructs across different cultural groups (Konishi et al., 2009). Although the current sample is both large and representative of children in a medium-sized Canadian city, future research should test SEQ-S invariance across different cultural groups and countries. Finally, although a similar amount of time passed between all measurement points in this study, it is possible that results obtained at T2 and T3 shared added similarity because children were in the same grade and classroom at T2 and T3. Future studies could extend data collection over a longer period of time and use invariance testing to directly examine the effects of different contexts, such as classrooms, on children's SEQ-S ratings.

This is the first study to evaluate the psychometric properties of the SEQ-S in an early elementary school sample. The main goal of this study was to test whether the SEQ-S factor structure identified in research with older children would be replicated in a sample of early elementary school-age children using CFA. Results showed that the three-factor structure reflecting overt victimization, relational victimization, and prosocial behavior was well supported by the data. Thus, findings suggest that the SEQ-S factor structure is reliable when based on assessments of children in the earliest elementary school grades, supporting the SEQ-S as a psychometrically sound tool that successfully captures two distinct dimensions of peer victimization in young children. As a result, our findings support the continued use of the SEQ-S to measure young children's reports of both overt and relational victimization and prosocial behavior. Alternatively, tests of measurement invariance were not conclusive, although results provided some indication that the SEQ-S factor structure, item loadings, and intercepts could be equivalent across measurement occasions, sex, and grade. Given this limitation, however, it is inconclusive whether researchers can use SEQ-S scores to make comparisons of children's peer victimization or prosocial behavior experiences at different time points, or across different groups of children.

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