



Structural Validity of the Bullying Participant Behavior Questionnaire with an Elementary School Sample

Lyndsay N. Jenkins¹ · Gary L. Canivez² · Morgan Braun³

Accepted: 9 March 2021 / Published online: 29 March 2021
© The Author(s), under exclusive licence to Springer Nature Switzerland AG 2021

Abstract

The goal of the present study was to investigate the factor structure of the Bullying Participant Behaviors Questionnaire in an independent elementary school sample. The BPBQ is a self-report inventory that purports to measure participation or experiences in five bullying roles: perpetrator, target, assistant, defender, and outsider. The current sample included 683 primarily White 8–11-year old youth from three elementary schools in the Midwest (46% male students). Analyses generally supported the item assignments to the BPBQ five-factor model (Perpetrator, Assistant, Outsider, Target, Defender). Confirmatory factor analysis revealed that the best fitting model consisted of the two general dimensions (Pro-perpetrator, Pro-target) and five group factors: Perpetrator, Assistant, Outsider, Target, and Defender, as was observed with an independent sample of middle school students. There is general support for the factor structure of the BPBQ, but it is particularly useful if interested in the broader Pro-perpetrator and Pro-target dimensions.

Keywords Bullying Participant Behavior Questionnaire · Bullying role · Bullying participant · Bullying · Factor analysis

Bullying is a significant problem for many schools in the USA (Yanez & Seldin, 2019). Theorists using the social-ecological model of bullying argue that bullying is maintained by the social environment of a school and that all individuals play a direct or indirect bullying participant role (Swearer & Espelage, 2011); however, researchers have primarily focused on two student roles: perpetrator and target, sometimes referred to as bully and victim. The Bullying Participant Behavior Questionnaire (BPBQ) was developed by Summers and Demaray (2008) as a self-report measure of five bullying roles, as described by the seminal work of Salmivalli et al. (1996): (1) perpetrator (i.e., individuals who repeatedly and intentionally use aggression toward their peers whom they have physical, intellectual, or social power over, also known as “bully”), (2) target (i.e., the recipient of peer aggression,

also known as “victim”), (3) assistant to the perpetrator (i.e., individuals who reinforce or support the perpetrator, such as holding a student down or encouraging the perpetrator to continue), (4) defender (sometimes called active bystanders because they directly or indirectly stand up for the victim by reporting bullying to a teacher or other adult, confronting the perpetrator, or helping the target after they have been bullied by offering emotional support), and (5) outsider (i.e., also called passive bystanders, individuals who ignore or pretend not to notice when someone is being bullied). Due to the growing concern about the stigma associated with the terms bully and victim, heretofore, all references to these roles will be “perpetrator” and “target,” respectively, when referring to the specific role. Demaray et al. (2014) reported preliminary psychometric evidence for BPBQ with middle school children; however, less than optimal factor analytic techniques were used. The BPBQ has been used in published studies (e.g., Jenkins & Canivez, 2019; Jenkins & Nickerson, 2017; Jenkins et al., 2014; Jenkins et al., 2018; Jenkins et al., 2017; Jenkins et al., 2020), but there is no published information about using the BPBQ with elementary students.

The goal of the present study was to examine the factor structure of the BPBQ through hierarchical exploratory factor analytic procedures and confirmatory factor analyses

✉ Lyndsay N. Jenkins
lnjenkins@fsu.edu; lyndsayjenkins@gmail.com

¹ Florida State University, 1114 West Call St, STB 3210, Tallahassee, FL 32306, USA

² Eastern Illinois University, 600 Lincoln Ave, Charleston, IL 61920, USA

³ Peoria School District, 3202 N Wisconsin Ave, Peoria, IL 61603, USA

with a sample of American students in elementary school (i.e., third through fifth grade). A self-report questionnaire assessing multiple bullying roles among elementary school students is needed by both practitioners and researchers. Though there are other self-report surveys for elementary students, few of them assess roles other than perpetrator and target. School practitioners (e.g., school psychologists, school counselors) could conduct school-wide bullying evaluations in elementary schools to assess the degree to which students report engagement as a perpetrator, assistant, target, defender, or outsider. Large-scale collection of information can be done more efficiently using self-report without taxing classroom teachers and also provide the students' perspective of social interactions within a school, which can also benefit researchers.

Assessment of Bullying Participant Roles

Many existing bullying measures assess perpetration and victimization, but few instruments assess other participant roles such as defender, outsider, or assistant. A department of the *Center for Disease Control and Prevention* (CDC) named the *Violence Prevention Department* within the *National Center for Injury Prevention and Control* published a compendium of bullying and victimization assessment tools for individuals age 8 and up (Hamburger et al., 2011). In this review, four scales for perpetration, eight scales for victimization, and 13 for both perpetration and victimization were discussed; however, only eight scales mentioned roles besides the perpetrator or target, and only one scale, the Participant Role Questionnaire (PRQ; Salmivalli et al., 1996), classified students into different bullying roles (Hamburger et al., 2011).

The Bullying Participant Behavior Questionnaire (BPBQ) is a self-report measure of engagement in multiple bullying roles via 50 items with 10 items for each subscale: Perpetrator, Assistant, Target, Defender, and Outsider. The central goal for developing the BPBQ was to create a self-report measure that accurately assessed behaviors associated with five participant roles (perpetrator, target, assistant, defender, and outsider) because the peer nomination method used in the PRQ has some limitations. When using peer nomination, participants are asked to identify which of their peers most frequently engages in each of the bullying roles. Students with the greatest number of nominations are labeled as “bully,” “victim,” etc. As noted by Summers (2008), the PRQ only allows assignment to one role, many US schools and some Institutional Review Boards are hesitant to use peer nomination because it may be stigmatizing, and the PRQ can be cumbersome for school personnel to score and interpret (in comparison to electronically administered self-report surveys; Summers, 2008). Self-report can have

limitations as well, such as social desirability bias and varying reading abilities of the participants, but researchers and practitioners can consider the strengths and weaknesses of the different approaches for their specific needs.

Preliminary evidence of the BPBQ validity is reported by Demaray et al. (2014). Their study consisted of 801 sixth through eighth grade students (270 sixth grade students, 264 seventh grade students, and 266 eighth grade students) from a suburban area of the Midwest. The sample was randomly bifurcated to perform separate exploratory and confirmatory factor analyses. A principal component analysis (PCA) using an oblique (promax) rotation and forcing five factors accounted for 60% of the variance. Demaray et al. (2014) reestimated coefficients following removal of lowest loading items to reduce the BPBQ to 10 items per factor. A confirmatory factor analysis was conducted using the alternate half of the Demaray et al. (2014) sample to verify the five-factor structure. Alpha coefficients ranged from .88 to .94, although these might be biased due to violations of assumptions regarding coefficient alpha (Gignac & Watkins, 2013; Raykov, 1997).

Although Demaray et al. (2014) provided some preliminary psychometric support for the BPBQ, there are several limitations with the analyses used or reported. First, PCA was used for final exploratory “factor” analyses but is at best considered only a data reduction technique and ought not be used to assess the latent factor structure or considered “factor analysis” (c.f., Fabrigar et al., 1999; Gorsuch, 1983; Widaman, 1993). Because PCA analyzes all item variance, principal factors/axes analysis should be used to analyze only the common variance when assessing the latent factor structure. Further, given that some factor correlation coefficients exceeded .32, oblique rotation was justified (Tabachnick & Fidell, 2007) and second-order EFA could be examined to determine hierarchical structure (Thompson, 2004).

Second, it was not clear if the CFA model was oblique or orthogonal. If the model was an oblique model, there was no specification of the factor covariances for comparison to the EFA promax-based factor correlations. Also, without knowing if the CFA sample data were multivariately normal, the use of ML in AMOS may be problematic and robust ML estimation and Satorra-Bentler corrected χ^2 ought to be used. Further, if the model indicated oblique structure among the five BPBQ factors, examination of alternate higher-order and bifactor structures might be a suitable or perhaps better representation of data (Canivez, 2016; Reise, 2012). Third, the Demaray et al. sample only included middle school students (i.e., sixth through eighth grade students), so it is unclear if a similar factor structure would be present among elementary (i.e., third through fifth grade) school students.

Jenkins and Canivez (2019) examined the latent factor structure of the BPBQ with a large sample of middle school (grades 6 through 8) students ($N = 784$) bifurcating

the sample for use in EFA and CFA using best practices. EFA results showed that Target, Defender, and Outsider items loaded on their theoretically consistent factors but the Perpetrator and Assistant items all loaded on a single factor (Perpetrator/Assistant). Some factor correlations were moderate and suggested the presence of higher-order factor(s), so second-order EFA was conducted. Second-order EFA showed two higher-order factors. Factor 1 was a combination of the Perpetrator/Assistant and Outsider dimensions, while factor 2 was a combination of Defender and Target dimensions. Confirmatory factor analysis indicated that the best fitting model consisted of the two general factors. The Pro-Perpetrator factor consisted of the Perpetrator, Assistant, and Outsider group factors and the Pro-Target factor consisted of the Target and Defender factors.

Though the BPBQ was intended for use with third-twelfth grade, the validation work has occurred with middle school only. Bullying in elementary school differs from bullying in middle school; thus, it is important to validate the BPBQ in both age groups. Typically, there is a gradual increase in bullying in elementary school with a peak in late middle school and, on the whole, bullying is more prevalent in middle school than elementary school (Duffy et al., 2017; Reijntjes et al., 2018). There are both contextual and developmental differences between elementary and middle school structure that may contribute to differences in bullying prevalence. In elementary school, children typically spend most of their day with a single teacher and there is greater adult supervision even in unstructured settings like the lunchroom or on the playground. The transition itself from elementary to middle school changes the social structure of peer groups and may lead to an increase in bullying (Duffy et al., 2017).

Developmentally, there are major pubertal changes occurring among middle school students, whereas these changes are just starting in late elementary school. Taken together, the contextual and developmental changes from elementary to secondary schools suggest that a measure of different bullying participant roles should be validated in both groups. In general, bullying and victimization increased during the elementary years with a peak in middle school (Unnever & Cornell, 2003), but prosocial behavior (e.g., defending) is highest in elementary and decreases into secondary school (Evans & Smokowski, 2015). Recently, Pouwels et al. (2018) explored prevalence of bullying participant role across different grade levels using a peer nomination procedure. Though they did not find prevalence differences across grades, they did not use a self-report measure like the BPBQ.

The Current Study

The main goal of the present study was to further investigate the factor structure of the BPBQ with a large sample of elementary school students using best practices in both EFA and CFA to examine if the BPBQ measures the same bullying dimensions among elementary school students. It was hypothesized that BPBQ items would be associated with their theoretically specified factors. More specifically, we expected five factors: Perpetrator, Assistant, Target, Defender, and Outsider. Based on results from Jenkins and Canivez (2019), we also expected the factors to be correlated, suggesting the presence of general and group factors in either a bifactor or higher-order structure.

Method

Participants

The current study used a convenience sample including 683 students from three elementary schools in the Midwest, ranging from 8 to 11 years of age. There were 312 boys (46%), 348 girls (51%), and 23 students (3%) whom did not specify their sex or gender. There were 102 third graders (15%), 275 fourth graders (40%), and 285 fifth graders (42%) in the study. School A included 101 students (15%), school B included 251 students (37%), and school C included 326 students (48%), with school not reported by 5 students. The schools were in two neighboring rural communities with approximately 20% of citizens considered to live in poverty. Schools were similar in terms of size and demographic characteristics.

Instrument

The Bullying Participant Behavior Questionnaire (BPBQ; Summers & Demaray, 2008) is a 50-item self-report questionnaire that assesses participation across several roles in bullying situations. When completing the scale, students are provided a definition of bullying and asked to rate how often in the last month they experienced or engaged in each behavior reflected by the item. The BPBQ uses a 5-point ordinal rating scale with response options of never, 1 to 2 times, 3 to 4 times, 5 to 6 times, or 7 or more times, scaled 0–4. The measure has five subscales: Perpetrator, Assistant, Target, Defender, and Outsider. Example items include “I have pushed, punched, or slapped another student.” (Perpetrator); “I have made fun of someone who was being called mean names.”

(Assistant); “People have tried to make others dislike me.” (Target); “I defended someone by telling people that a rumor is not true.” (Defender); and “I ignored it when someone else threw something at another student.” (Outsider). For each item, participants are asked how often they have performed or experienced the behavior over the past 30 days and respond using an ordinal rating scale ranging from 0 (*Never*) to 4 (*7 or more times*); therefore, scores in the individual subscales can range from 0 to 40. Higher scores indicate more frequent engagement in or experience with that role.

Procedure

A school-wide evaluation of bullying and social-emotional issues was completed by the first author at the request of school administrators at three different schools. Following Institutional Review Board approval to use extant data for research purposes, data from all three schools were combined into one larger data set. There was no missing data on the BPBQ items that were combined into the larger data set.

Data collection procedures were generally consistent at each participating school. At school A and school B, parents signed consent for social, behavioral, emotional, and academic screening at the beginning of the school year. Parents were again notified of this evaluation via a letter 1 week prior to the evaluation. School B also included information about the evaluation in the weekly newsletter and reminded parents via a text message to notify the office if any parent did not want their child to participate. One parent at school A and two parents at school B asked that their child not participate. At school C, a passive consent method was used in which parents returned letters if they denied their child's participation; 94% of parents consented.

At each school, student assent was obtained and students were told that they could stop participating at any time. Students used identification numbers on surveys and designated their grade and sex. Only the school administrators and school social workers/counselors at the respective schools had the ability to connect identification numbers to student names. Students at schools A and B completed the BPBQ in their regular education classrooms during their physical education class period. At school C, students completed the BPBQ during their regularly scheduled computer lab time while their classroom teacher and a research assistant were available to answer questions. At all schools, instructions were read aloud to all students and items were read aloud to students who were receiving specialized reading services (either title 1/remedial or special education services). For each data collection, participants were informed that school mental health professionals were available to talk if the questionnaires caused them distress. Each school

received a comprehensive report summarizing the results of each individual school's evaluation. Additionally, the first author offered consultative services to help individual school's design social and emotional programming based on the results.

Data Analysis

Analyses were conducted in two stages with the total sample: exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA). Bifurcating the total sample into separate EFA and CFA samples resulted in numerous model estimation problems due to substantially smaller sample sizes so the total sample was used in both EFA and CFA. Only the CFA findings are presented in the main text. Detailed EFA procedures and results including tables and a figure can be found in the Online Appendix ([Appendix A](#)).

Confirmatory Factor Analyses

EQS 6.3 (Bentler & Wu, 2016) was used to conduct confirmatory factor analyses (CFA). Due to Mardia's (1970) standardized multivariate kurtosis estimate of 517.72, robust maximum likelihood estimation was used including the Satorra and Bentler (2001) corrected chi-square. Byrne (2006, p. 138) noted “the S-B χ^2 has been shown to be the most reliable test statistic for evaluating mean and covariance structure models under various distributions and sample sizes ([sic], Curran et al., 1996; Hu et al., 1992).”

While universally accepted cutoff values for approximate fit indices do not exist (McDonald, 2010), overall model fit was evaluated using the Tucker-Lewis index (TLI), comparative fit index (CFI), and the root mean square error of approximation (RMSEA). Higher TLI and CFI values indicate better fit, whereas lower values for the RMSEA indicate better fit. While Akaike's Information Criterion (AIC; Akaike, 1987) was considered, such estimates are not available in robust estimation. Hu and Bentler (1999) combinatorial heuristics were applied with criteria for adequate model fit including TLI and $CFI \geq .90$ and $RMSEA \leq .08$. Good model fit required TLI and $CFI \geq 0.95$ with $RMSEA \leq 0.06$ (Hu & Bentler, 1999). Meaningful differences between well-fitting models were assessed using $\Delta CFI > .01$ and $\Delta RMSEA > .015$ (Chen, 2007; Cheung & Rensvold, 2002; Gignac, 2007). In addition to global fit, local fit was assessed as models should never be retained “solely on global fit testing” (Kline, 2016, p. 461).

Omega-hierarchical (ω_H) and omega-hierarchical subscale (ω_{HS}) coefficients (Reise, 2012) were estimated as model-based reliability/validity estimates of the latent factors (Gignac & Watkins, 2013). Chen et al. (2012) noted that “for multidimensional constructs, the alpha coefficient is complexly determined, and McDonald's

omega-hierarchical (ω_H ; 1999) provides a better estimate for the composite score and thus should be used” (p. 228). ω_H is the model-based reliability estimate for the hierarchical general factor independent of the variance of group factors. Omega-hierarchical subscale (ω_{HS}) is the model-based reliability estimate of a group factor with all other group and general factors removed (Reise, 2012; Rodriguez et al., 2016). Omega estimates (ω_H and ω_{HS}) were produced using the *Omega* program (Watkins, 2013), which is based on the tutorial by Brunner et al. (2012) and the work of Zinbarg et al. (2005) and Zinbarg et al. (2006). Omega coefficients should exceed .50, but .75 would be preferred (Reise, 2012; Reise et al., 2013), although these criteria have not been thoroughly examined.

Results

Descriptive statistics and exploratory factor analysis findings, tables, and a figure are reported in the [Online Appendix A](#). Tables and figures from EFA in the [Online Appendix](#) are notated with an “A” before the respective number (e.g., Table A1). Supplementary tables and figures from confirmatory factor analyses are presented in [Online Appendix B](#) and noted with a “B” preceding the number.

Confirmatory Factor Analyses

Numerous items had non-normal univariate distributions and multivariate non-normality was indicated by Mardia’s (1970) normalized multivariate kurtosis estimate of 517.72 (values > 15.001 indicative of non-normality, Bentler, 2005; see Tables A1 and A2 in [Online Appendix](#)). This, in addition to the use of polychoric correlations in CFA, necessitated the use of the robust maximum likelihood estimation method with the Satorra and Bentler (2001) corrected chi-square as the most reliable test statistic in CFA (Byrne, 2006).

A total of seven models were hypothesized as possible explanations of BPBQ item data in the elementary school sample, and all were tested with both 5 (Perpetrator [P], Assistant [A], Outsider [O], Target [T], Defender [D]; models with “a” designation) and 4 (Perpetrator/Assistant [P/A], Outsider [O], Target [T], Defender [D]; models with “b” designation) group factors illustrated in EFA (see Tables A3 and A4). Model 1 posited (5 or 4) independent (orthogonal) factors (see Figures B1 and B2 in [Online Appendix B](#)), and model 2 posited (5 or 4) correlated (oblique) factors (see Figures B3 and B4 in [Online Appendix B](#)). Model 3 was a variant of model 2 as suggested by first-order EFA results with two sets of correlated factors (P, A, O, and T, D versus P/A, O and T, D) and illustrated in Figures B5 and B6 (see [Online Appendix B](#)). Model 4 was a higher-order representation of model 2 with one

general dimension and the five or four group factors, while model 5 was a variant of model 3 that included two higher-order dimensions, one (Pro-Perpetrator) hierarchically ordered factor above Perpetrator, Assistant, and Outsider or Perpetrator/Assistant and Outsider and one (Pro-Target) hierarchically ordered factor above Target and Defender. Model 6 was a bifactor representation of model 4 with a single general factor (see Figures B7 and B8 in [Online Appendix B](#)) while model 7 was a bifactor representation of model 5 with two general factors (Pro-Perpetrator and Pro-Target) illustrated in Figures B9 and B10, respectively (see [Online Appendix B](#)).

Results from CFA are presented in Table 1, and global fit statistics indicated that all models (except models 4a, 4b, 5a, and 5b, which could not be estimated due to matrices that were not positive definite) were well fitting models to these data. Further, there were no meaningful differences in global fit statistics between any of the models based on TLI, CFI, or RMSEA. As previously noted, global fit statistics must be supplemented by assessment of local fit to fully evaluate model viability. Table 2 presents local fit problems for each of the models.

As illustrated in Table 2 and respective Figures B1–B10 (see [Online Appendix B](#)), local fit problems were observed rendering many models less than satisfactory. While orthogonal (uncorrelated) factors represented by Models 1a (Figure B1) and 1b (Figure B2) fit well, they ignore the reality that several group factors are in fact significantly and moderately correlated and therefore do not adequately represent the underlying multi-dimensional constructs. Models 2a (Figure B3), 2b (Figure B4), 3a (Figure B5), and 3b (Figure B6) all fit these data well, but statistically significant and moderate factor covariances and correlations imply more general or higher-order factors that should be explicated. Higher-order models were inadequate as they produced matrices that were not positive definite, so could not be estimated. Models 6a (Figure B7) and 6b (Figure B8) fit these data well but there were numerous negative and not statistically significant standardized path coefficients from the general factor and group factors to items. Given EFA results suggesting two general factors, not one general factor, the negative and low standardized path coefficients observed from the general factor, seems the result of including only a single general factor. Models 7a (Figure B9) and 7b (Figure B10) fit these data well, but there were several items that had negative or not statistically significant standardized path coefficients from group factors to items. However, all 50 items had statistically significant standardized path coefficients from their specific Pro-Perpetrator or Pro-Target general factor. Models 7a and 7b appear to be the most appropriate overall, so items with negative group factor path coefficients and items with statistically non-significant group factor path coefficients were removed and the models reestimated to produce final measurement model parameter estimates. Global fit statistics are presented

Table 1 Robust CFA fit statistics for the Bullying Participant Behavior Questionnaire Elementary School Sample ($n = 683$)

Measurement models	S-B χ^2	df	p	TLI	CFI	RMSEA	RMSEA 90% CI
1a Five orthogonal factors (P, A, O, T, D)	1,927.01	1,175	.0001	.985	.986	.031	[.028, .033]
1b Four orthogonal factors (P/A, O, T, D)	1,972.85	1,175	.0001	.984	.985	.032	[.029, .034]
2a Five oblique factors (P, A, O, T, D)	1,630.89	1,165	.0001	.991	.991	.024	[.021, .027]
2b Four oblique factors (P/A, O, T, D)	1,811.95	1,169	.0001	.987	.988	.028	[.026, .031]
3a Three oblique (P, A, O)/two oblique (T, D)	1,679.21	1,171	.0001	.990	.990	.025	[.022, .028]
3b Two oblique (P/A, O)/two oblique (T, D)	1,852.47	1,173	.0001	.987	.987	.029	[.027, .032]
4a Five group factors, one higher-order factor	Model could not be estimated, matrix not positive definite						
4b Four group factors, one higher-order factor	Model could not be estimated, matrix not positive definite						
5a Three (P, A, O)/two (T, D) group factors, two higher-order factors (PP and PT)	Model could not be estimated, matrix not positive definite						
5b Two (P/A, O)/two (T, D) group factors, two higher-order factors (PP and PT)	Model could not be estimated, matrix not positive definite						
6a One general, five group bifactor	1,393.82	1,125	.0001	.994	.995	.019	[.015, .022]
6b One general, four group bifactor	1,418.73	1,125	.0001	.994	.994	.020	[.016, .023]
7a Two general, three/two group bifactor	1,369.36	1,125	.0001	.995	.995	.018	[.014, .021]
7a with no negative or paths $p > .05^1$	1,387.09	1,135	.0001	.995	.995	.018	[.014, .021]
7b Two general, two (P/A, O)/two (T, D) group factors bifactor	1,388.97	1,125	.0001	.995	.995	.019	[.015, .022]
7b with no negative or paths $p > .05^2$	1,430.50	1,138	.0001	.994	.994	.019	[.016, .022]

S-B Satorra-Bentler, TLI Tucker–Lewis Index, CFI Comparative Fit Index, RMSEA root mean square error of approximation, P Perpetrator, A Assistant, O Outsider, T Target, D Defender, PP Pro-Perpetrator, PT Pro-Target

¹Model 7a respecified after removing negative paths and then removing resulting nonsignificant ($p > .05$) paths

²Model 7b respecified after removing negative paths and then removing resulting nonsignificant ($p > .05$) paths

in Table 1 and standardized measurement models illustrated in Figs. 1 and 2. Reestimated models 7a and 7b fit these data well and did not contain local fit problems.

To further examine model 7a and model 7b, variance apportionments to the general and group factors are provided in Tables B1 and B2 (Online Appendix B) but included all items. Item and factor variance estimates associated with the general dimensions and the group factors for respecified Models 7a and 7b are presented in Table 3 and Table 4. Also presented in Tables 3 and 4 are portions of total variance, explained common variance by the general and group factors, and omega-hierarchical (ω_H) and omega-hierarchical subscale coefficients (ω_{HS}). In the final respecified model 7a (Table 3), the General Pro-Perpetrator dimension explained 75.7% of the Perpetrator, Assistant, and Outsider item variance and yielded an ω_H coefficient of .897 indicating that a unit-weighted composite score containing Perpetrator, Assistant, and Outsider items would account for 89.7% true score variance and support for score interpretation. Variance attributed to the three group factors (Perpetrator, Assistant, Outsider) were .05, .06, and .13, respectively. The ω_{HS} coefficients for the Perpetrator, Assistant, and Outsider group factors ranged from .10 to .35 and indicated that unit-weighted scores for these group factors would not contain sufficient portions of unique true score variance to warrant separate group factor interpretation (Reise, 2012; Reise et al., 2013). The General Pro-Target dimension explained

60.6% of the Target and Defender item variance, and the ω_H coefficient of .72 indicated that a unit-weighted composite score containing Target and Defender items would account for 72.2% true score variance supporting interpretation. Variances apportioned to the Target and Defender group factors were .35 and .04, respectively. While the ω_{HS} coefficient for the Defender group factor (.038) would be too low for separate group factor interpretation, the ω_{HS} coefficient for the Target group factor (.694) met the minimum standard for interpretation (Reise, 2012; Reise et al., 2013).

In the final reestimated model 7b (see Table 4), the General Pro-Perpetrator factor explained 76.1% of the Perpetrator/Assistant and Outsider item variance and yielded an ω_H coefficient of .882 indicating that a unit-weighted composite score containing Perpetrator/Assistant and Outsider items would account for 88.2% true score variance. Variances contributed by the Perpetrator/Assistant and Outsider group factors were .10 and .13, respectively. The ω_{HS} coefficients for the Perpetrator/Assistant (.083) and the Outsider (.35) group factors were too low for separate group factor interpretation. The Pro-Target general factor accounted for 60.6% of Target and Defender item variance and yielded an ω_H coefficient of .72, indicating that a unit-weighted composite score from Target and Defender items would account for 72.2% true score variance supporting score interpretation. Variance estimates for the Target and Defender group factors were .35 and .04, respectively. The

Table 2 CFA model local fit problems

Model 1a	None, but orthogonal representation is inconsistent with EFA showing correlated factors (Figure B1)
Model 1b	None, but orthogonal representation is inconsistent with EFA showing correlated factors (Figure B2)
Model 2a	While all factor correlations (except Outsider–Defender) were statistically significant ($p < .05$), correlations between Perpetrator–Defender (.119), Assistant–Defender (.149), and Outsider–Defender (.061) were very low. Perpetrator, Assistant, and Outsider factors had less covariance with Target and Defender factors. Statistically significant and moderate to large factor correlations imply one or more general factors (Figure B3)
Model 2b	While all factor correlations (except Outsider–Defender) were statistically significant ($p < .05$), correlations for Perpetrator/Assistant–Defender (.139), Outsider–Defender (.061), and Outsider–Target (.382) were low or relatively low. Perpetrator/Assistant and Outsider factors had less covariance with Target and Defender factors. Statistically significant and moderate to large factor correlations imply one or more general factors (Figure B4)
Model 3a	Correlations between Perpetrator–Assistant (.866), Perpetrator–Outsider (.690), and Assistant–Outsider (.780) were statistically significant ($p < .05$) and imply a general factor. The correlation between Target–Defender (.502) was statistically significant ($p < .05$) and implies a general factor (Figure B5)
Model 3b	The correlation between Perpetrator/Assistant–Outsider (.766) was statistically significant ($p < .05$) and implies a general factor; the correlation between Target–Defender (.502) was statistically significant ($p < .05$) and implies a general factor (Figure B6)
Model 6a	Items 7, 15, and 17 had negative group factor loadings. Items 6, 7 and 8 (Perpetrator) and items 14, 15, 17, and 18 (Assistant) did not have statistically significant ($p < .05$) loadings on their respective group factors. Items 31, 36, 37, and 38 (Defender) did not have statistically significant ($p < .05$) loadings on the general factor (Figure B7)
Model 6b	Items 11, 12, 13, 16, 18, 19, and 20 had negative group factor loadings. Items 7 and 8 (Perpetrator) and items 11, 13, 14, 16, and 18 (Assistant) did not have statistically significant ($p < .05$) loadings on the Perpetrator/Assistant group factor. Items 31, 36, and 38 (Defender) did not have statistically significant ($p < .05$) loadings on the general factor (Figure B8)
Model 7a	Items 7 (Perpetrator), 15 and 17 (Assistant), and 33 (Defender) had negative loadings on their respective group factor. Items 6, 7, and 8 (Perpetrator), 14, 15, and 17 (Assistant), and 32, 33, 34, 35, and 40 (Defender) did not have statistically significant ($p < .05$) loadings on their respective group factor. All 50 BPBQ items had statistically significant ($p < .05$) loadings on their respective general factor (Figure B9)
Model 7b	Items 11, 12, 13, 16, 19 and 20 (Assistant) and item 33 (Defender) had negative loadings on their respective group factor. Items 7 and 8 (Perpetrator), 11, 13, 14, 16, and 18 (Assistant), and 32, 33, 34, 35, and 40 (Defender) did not have statistically significant ($p < .05$) loadings on their respective group factor. All 50 items had statistically significant ($p < .05$) loadings on their respective general factor (Figure B10)

Figures representing noted models presented in [Appendix](#) available as an online supplement

ω_{HS} coefficient for the Target group factor (.69) met the minimum standard for group factor interpretation, while the ω_{HS} coefficient for the Defender group factor (.04) did not.

Discussion

The goal of the current study was to investigate the factor structure for the Bullying Participant Behavior Questionnaire (BPBQ) in an elementary school (grades 3, 4, and 5) student sample. The BPBQ has been used in published empirical studies, and there are two published studies regarding the basic psychometric properties of the measure (e.g., Demaray et al., 2014; Jenkins & Canivez, 2019), but none have used an elementary school sample. Since the BPBQ was designed to be used as a self-report measure for children in third-twelfth grade, it is important to examine its validity with elementary school students.

Analyses generally supported the item assignments to the BPBQ five-factor model (Perpetrator, Assistant, Outsider, Target, Defender) and the basic theoretical aspects of the bullying participant model (Salmivalli et al., 1996); although

for this sample, an alternative four factor model is plausible with merging of Perpetrator and Assistant roles.

Confirmatory factor analysis revealed good global fit for all models (with the exception of all higher-order models that produced matrices that were not positive definite resulting in model estimation failure) that did not meaningfully differ; however, all models contained local fit problems that rendered most unsatisfactory. Of the models, model 7 with two general dimensions (Pro-Perpetrator, Pro-Target) and five group factors (Perpetrator, Assistant, Outsider, Target and Defender) or four group factors (Perpetrator/Assistant, Outsider, Target, and Defender) appeared most reasonable and similar to EFA results (see [Online Appendix A](#) for EFA results). Though alpha coefficients from EFA were high, they likely were inflated due to conflation variance from the general and group factors, but omega-hierarchical subscale coefficients for the group factors were generally quite low (.10, .10, .35, and .04 for Perpetrator, Assistant, Outsider, and Defender, respectively) except for the Target subscale, which was .69. Thus, only a unit-weighted composite score for the Target subscale can be reliability interpreted and caution should be used when interpreting the other subscales beyond the general dimensions until additional research

Table 3 Decomposed sources of variance for the Bullying Participant Behavior Questionnaire for the elementary school sample ($N=683$) according to a bifactor model (model 7a) with 2 general and 5 group factors (respecified with negative and nonsignificant path coefficients removed)

		Pro-Perpetra- tor General		Perpetrator		Assistant		Outsider		Target		Defender		h^2	u^2	ECV
Item/role		b	S^2	b	S^2	b	S^2	b	S^2	b	S^2	b	S^2			
i1	Perpetrator	.592	.350	.536	.287									.638	.362	.550
i2	Perpetrator	.740	.548	.470	.221									.768	.232	.713
i3	Perpetrator	.604	.365	.176	.031									.396	.604	.922
i4	Perpetrator	.673	.453	.382	.146									.599	.401	.756
i5	Perpetrator	.749	.561	.157	.025									.586	.414	.958
i6	Perpetrator	.779	.607											.607	.393	.999
i7	Perpetrator	.741	.549											.549	.451	.999
i8	Perpetrator	.715	.511											.511	.489	.999
i9	Perpetrator	.724	.524	.470	.221									.745	.255	.704
i10	Perpetrator	.631	.398	.273	.075									.473	.527	.842
i11	Assistant	.681	.464			.406	.165							.629	.371	.738
i12	Assistant	.575	.331			.636	.404							.735	.265	.450
i13	Assistant	.680	.462			.259	.067							.529	.471	.873
i14	Assistant	.798	.637											.637	.363	.999
i15	Assistant	.766	.587											.587	.413	.999
i16	Assistant	.594	.353			.209	.044							.397	.603	.890
i17	Assistant	.808	.653											.653	.347	.999
i18	Assistant	.787	.619			.119	.014							.634	.366	.978
i19	Assistant	.714	.510			.419	.176							.685	.315	.744
i20	Assistant	.687	.472			.433	.187							.659	.341	.716
i41	Outsider	.652	.425					.368	.135					.561	.439	.758
i42	Outsider	.572	.327					.428	.183					.510	.490	.641
i43	Outsider	.611	.373					.474	.225					.598	.402	.624
i44	Outsider	.616	.379					.454	.206					.586	.414	.648
i45	Outsider	.654	.428					.400	.160					.588	.412	.728
i46	Outsider	.573	.328					.524	.275					.603	.397	.545
i47	Outsider	.624	.389					.635	.403					.793	.207	.491
i48	Outsider	.664	.441					.580	.336					.777	.223	.567
i49	Outsider	.609	.371					.545	.297					.668	.332	.555
i50	Outsider	.644	.415					.383	.147					.561	.439	.739
Total variance			.461		.034		.035		.079					.609	.391	
ECV			.757		.055		.058		.130							
ω_H/ω_{HS}			.897		.104		.102		.351							
i21	Target	.406	.165							.694	.482			.646	.354	.255
i22	Target	.410	.168							.754	.569			.737	.263	.228
i23	Target	.362	.131							.716	.513			.644	.356	.204
i24	Target	.334	.112							.672	.452			.563	.437	.198
i25	Target	.385	.148							.638	.407			.555	.445	.267
i26	Target	.419	.176							.674	.454			.630	.370	.279
i27	Target	.453	.205							.681	.464			.669	.331	.307
i28	Target	.449	.202							.733	.537			.739	.261	.273
i29	Target	.472	.223							.680	.462			.685	.315	.325
i30	Target	.449	.202							.615	.378			.580	.420	.348
i31	Defender	.702	.493									.167	.028	.521	.479	.946
i32	Defender	.762	.581											.581	.419	.999
i33	Defender	.797	.635											.635	.365	.999

Table 3 (continued)

		Pro-Perpetra- tor General	Perpetrator	Assistant	Outsider	Target	Defender		
i34	Defender	.877	.769					.769	.231 .999
i35	Defender	.860	.740					.740	.260 .999
i36	Defender	.785	.616				.207 .043	.659	.341 .935
i37	Defender	.775	.601				.481 .231	.832	.168 .722
i38	Defender	.783	.613				.379 .144	.757	.243 .810
i39	Defender	.779	.607				.293 .086	.693	.307 .876
i40	Defender	.840	.706				.103 .011	.716	.284 .985
Total variance			.405			.236	.027	.667	.333
ECV			.606			.353	.041		
ω_H/ω_{HS}			.722			.694	.038		

b loading of subtest on factor, S^2 variance explained, h^2 communality, u^2 uniqueness, *ECV* explained common variance, ω_H omega-hierarchical (general factor), ω_{HS} omega-hierarchical subscale (group factors)

is completed. For the Perpetrator, Assistant, Outsider, and Defender scales, too little unique variance was associated with them apart from the general Pro-Perpetrator or Pro-Target general factors. Unit-weighted composite scores for the Pro-Perpetrator and Pro-Target dimensions would capture sufficient true score variance for interpretation. These findings align with the results of a parallel study by Jenkins and Canivez (2019) that found a similar factor structure of the BPBQ with a middle school sample.

Implications for Bullying Research

Given that two studies have found these two general factors with the BPBQ with two different age groups of youth, an important next step is to explore why these factors are emerging. From a theoretical perspective, Bullies, Assistants, and Outsiders are all engaging in varying degrees and forms of anti-social behavior that promotes bullying; thus, the presence of a general factor with these three roles seems logical. Additionally, Targets and Defenders are either the target or engaged in thwarting bullying, which is in contrast to the aggression or social disregard of Bullies, Assistants, or Outsiders.

Though the current bullying literature recognizes and studies these different roles, the way in which these roles overlap is not well-understood. In reality, it is unlikely that youth engage in a single bullying role, but their role behavior varies depending on the context. Jenkins et al. (2020) recently reported the results of a latent class analysis with a sample of fourth-eighth grade students, in which 46% were categorized as Victimized Defenders; 46% were moderately involved in all bullying roles; 6% has high scores on bullying, victimization, and defending; and 2% were highly involved in all bullying roles. These results combined with past work on bully targets suggest that bullying roles are not likely discreet.

Evidence is suggesting that youth can engage in more than one bullying participant role, and there may be situational factors that influence role engagement (Gumpel et al., 2014). Evidence thus far suggests that there is very little stability in bullying participant roles (Huitsing & Veenstra, 2012; Ryoo et al., 2015; Veenstra et al., 2005). The general factors that emerged in the present investigation may be not only due to similarities in the roles but also because youth are actually switching in and out of the roles. Overall, based on the findings from this study combined with emerging research on multiple bullying roles, we suggest that bullying researchers should avoid categorizing youth into a single role or studying a single bullying role in isolation.

Limitations and Future Directions

The current sample of students was nearly all white and from a rural area of the Midwest. Future studies should continue to examine the structure and utility of the BPBQ among elementary students from more ethnically and geographically diverse backgrounds via a large, nationally representative sample. Examination of measurement invariance across variables of gender, race/ethnicity, and stages of development should also be examined when sufficiently large samples are available. Future studies should also seek to obtain samples large enough to be able to explore possible nested data patterns. These studies could also collect additional data to be able to explore the concurrent and construct validity of the measure. The ability to generalize findings in the current study is limited due to these restrictions. In addition, measurement invariance across subgroups (e.g., race/ethnicity, grade, gender) is a critical step in the survey development process (Pendergast et al., 2017). Testing for measurement invariance allows researchers to ensure that the same underlying construct is being measured and allows

Table 4 Decomposed Sources of Variance for the Bullying Participant Behavior Questionnaire for the Elementary School Sample ($N=683$) According to a Bifactor Model (Model 7b) with 2 General and 4 Group Factors (Respecified with Negative and Nonsignificant Path Coefficients Removed)

		Pro-Perpetrator		Perpetrator/Assistant		Outsider		Target		Defender		h^2	u^2	ECV
Item/role		b	S^2	b	S^2	b	S^2	b	S^2	b	S^2			
i1	Perpetrator	.502	.252	.602	.362							.614	.386	.410
i2	Perpetrator	.653	.426	.591	.349							.776	.224	.550
i3	Perpetrator	.547	.299	.321	.103							.402	.598	.744
i4	Perpetrator	.641	.411	.411	.169							.580	.420	.709
i5	Perpetrator	.685	.469	.325	.106							.575	.425	.816
i6	Perpetrator	.711	.506	.265	.070							.576	.424	.878
i7	Perpetrator	.719	.517									.517	.483	.999
i8	Perpetrator	.699	.489	.159	.025							.514	.486	.951
i9	Perpetrator	.646	.417	.551	.304							.721	.279	.579
i10	Perpetrator	.532	.283	.470	.221							.504	.496	.562
i11	Assistant	.743	.552									.552	.448	.999
i12	Assistant	.711	.506									.506	.494	.999
i13	Assistant	.728	.530									.530	.470	.999
i14	Assistant	.794	.630									.630	.370	.999
i15	Assistant	.704	.496	.307	.094							.590	.410	.840
i16	Assistant	.638	.407									.407	.593	.999
i17	Assistant	.754	.569	.237	.056							.625	.375	.910
i18	Assistant	.800	.640									.640	.360	.999
i19	Assistant	.802	.643									.643	.357	.999
i20	Assistant	.783	.613									.613	.387	.999
i41	Outsider	.643	.413			.383	.147					.560	.440	.738
i42	Outsider	.540	.292			.469	.220					.512	.488	.570
i43	Outsider	.601	.361			.488	.238					.599	.401	.603
i44	Outsider	.590	.348			.486	.236					.584	.416	.596
i45	Outsider	.670	.449			.381	.145					.594	.406	.756
i46	Outsider	.594	.353			.497	.247					.600	.400	.588
i47	Outsider	.618	.382			.642	.412					.794	.206	.481
i48	Outsider	.665	.442			.577	.333					.775	.225	.570
i49	Outsider	.637	.406			.510	.260					.666	.334	.609
i50	Outsider	.642	.412			.385	.148					.560	.440	.735
Total variance			.450		.062		.080					.592	.408	
ECV			.761		.105		.134							
ω_H/ω_{HS}			.882		.083		.355							
		Pro-Target		Bully/Assistant		Outsider		Target		Defender		h^2	u^2	ECV
Item/role		b	S^2	b	S^2	b	S^2	b	S^2	b	S^2			
i21	Target	.406	.165					.694	.482			.646	.354	.255
i22	Target	.410	.168					.754	.569			.737	.263	.228
i23	Target	.362	.131					.716	.513			.644	.356	.204
i24	Target	.334	.112					.672	.452			.563	.437	.198
i25	Target	.385	.148					.638	.407			.555	.445	.267
i26	Target	.419	.176					.674	.454			.630	.370	.279
i27	Target	.453	.205					.681	.464			.669	.331	.307
i28	Target	.449	.202					.733	.537			.739	.261	.273
i29	Target	.472	.223					.680	.462			.685	.315	.325
i30	Target	.449	.202					.615	.378			.580	.420	.348
i31	Defender	.702	.493							.167	.028	.521	.479	.946
i32	Defender	.762	.581									.581	.419	.999

Table 4 (continued)

		Pro-Perpetrator	Perpetrator/Assistant	Outsider	Target	Defender			
i33	Defender	.797	.635				.635	.365	.999
i34	Defender	.877	.769				.769	.231	.999
i35	Defender	.860	.740				.740	.260	.999
i36	Defender	.785	.616			.207	.043	.659	.341
i37	Defender	.775	.601			.481	.231	.832	.168
i38	Defender	.783	.613			.379	.144	.757	.243
i39	Defender	.779	.607			.293	.086	.693	.307
i40	Defender	.840	.706			.103	.011	.716	.284
Total variance			.405		.236		.027	.667	.333
ECV			.606		.353		.041		
ω_H / ω_{HS}			.722		.694		.038		

b loading of subtest on factor, S^2 variance explained, h^2 communality, u^2 uniqueness, *ECV* explained common variance, ω_H omega-hierarchical (general factor), ω_{HS} omega-hierarchical subscale (group factors)

for more meaningful comparisons across groups. As noted earlier, some research has cited prevalence differences in bullying experiences across gender and grade; thus, having a large sample where measurement invariance tested can be conducted is essential for the next step in the development of the BPBQ.

Another limitation is that the BPBQ is relatively long (50 items), which is a notable limitation given the reading abilities of the children in late elementary school, particularly third graders. Though fifty items may seem like a very long survey, starting in grade 3, some students (especially in the USA) are expected to take exams which would take much longer to complete than these types of surveys. Youth from schools where this is not the norm may have more difficulty with the task, however. This could cause fatigue and make respondents less likely to pay attention to the wording of the items presented last (i.e., in this case the Defender and Outsider items). To make the BPBQ more accessible to young students, additional changes to the measure itself or the administration of the measure could be considered. First, an abbreviated form could be developed to be used for whole-school screeners. Second, if using the full-length version, items could be read aloud to all students. Alternately, the wording of the BPBQ items could be edited to be more suitable to younger students. Due to the fact that not all students read at grade level, some items may be difficult for the youngest students or those that have reading difficulties. Anecdotal, research assistants who were involved in data collection at both elementary and middle schools noted that elementary school students asked more questions regarding the meaning of the items, particularly items of the Assistant and Outsider roles. Finally, the response scale (i.e., 5-point response scale ranging from Never to 7 or more times) may be confusing for some young children, so it could be simplified (e.g., Never, Sometimes, Often).

The omega-hierarchical coefficients indicated that both Pro-Perpetrator and Pro-Target scales captured sufficient true score variance but omega-hierarchical subscale coefficients for all scales, except the Target scale, may not have adequate unique true score variance to interpret. Refinement of the items may be necessary. Creating subscales within each role to assess verbal, physical, and relational bullying may improve measurement within these areas. Currently, there are 3–4 items per role that assess different types of bullying, but there may be utility in assessing engagement in each role in relation to different types of bullying. For example, someone may consistently stand up for peers who are being physically bullied but may ignore gossiping or other relational bullying. Alternately, items could be divided to measure direct vs. indirect bullying or proactive vs. reactive bullying. Another area for future development would be the inclusion of a cyberbullying dimension. Currently, the BPBQ focuses on traditional, face-to-face bullying, but a growing concern is the use of bullying occurring via social media and/or facilitated through the use of technology. However, adding subscales to address verbal, physical, relational, and cyberbullying for each of the five bullying roles would result in a very lengthy survey that may be too cumbersome for practical use.

The authors of the BPBQ chose to define bullying at the beginning and then present behaviors associated with each of the five bullying roles (perpetrator, assistant, target, defender, and outsider). This choice may make it difficult to determine if participants were involved in actual bullying (i.e., whether it meets the definition of bullying) or more general teasing or peer conflict, which is a caution to future users. On the other hand, when many items use the same word, in this case “bully” or “bullying,” the items sometimes correlate with each other because they share a word rather than being related to a specific construct.

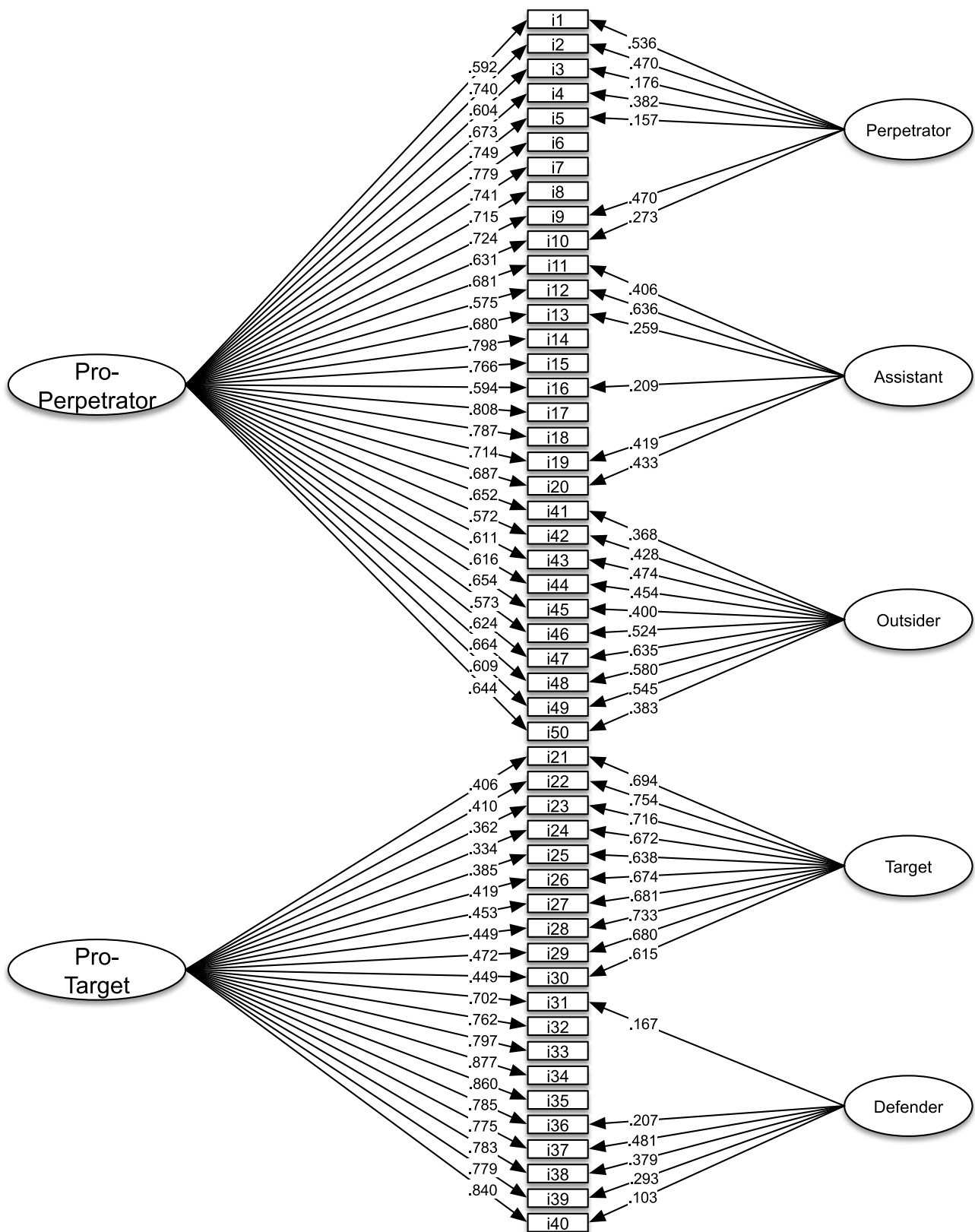


Fig. 1 Final CFA bifactor measurement model (model 7a) with standardized coefficients for the BPBQ elementary school sample with negative and resulting non-significant path coefficients removed

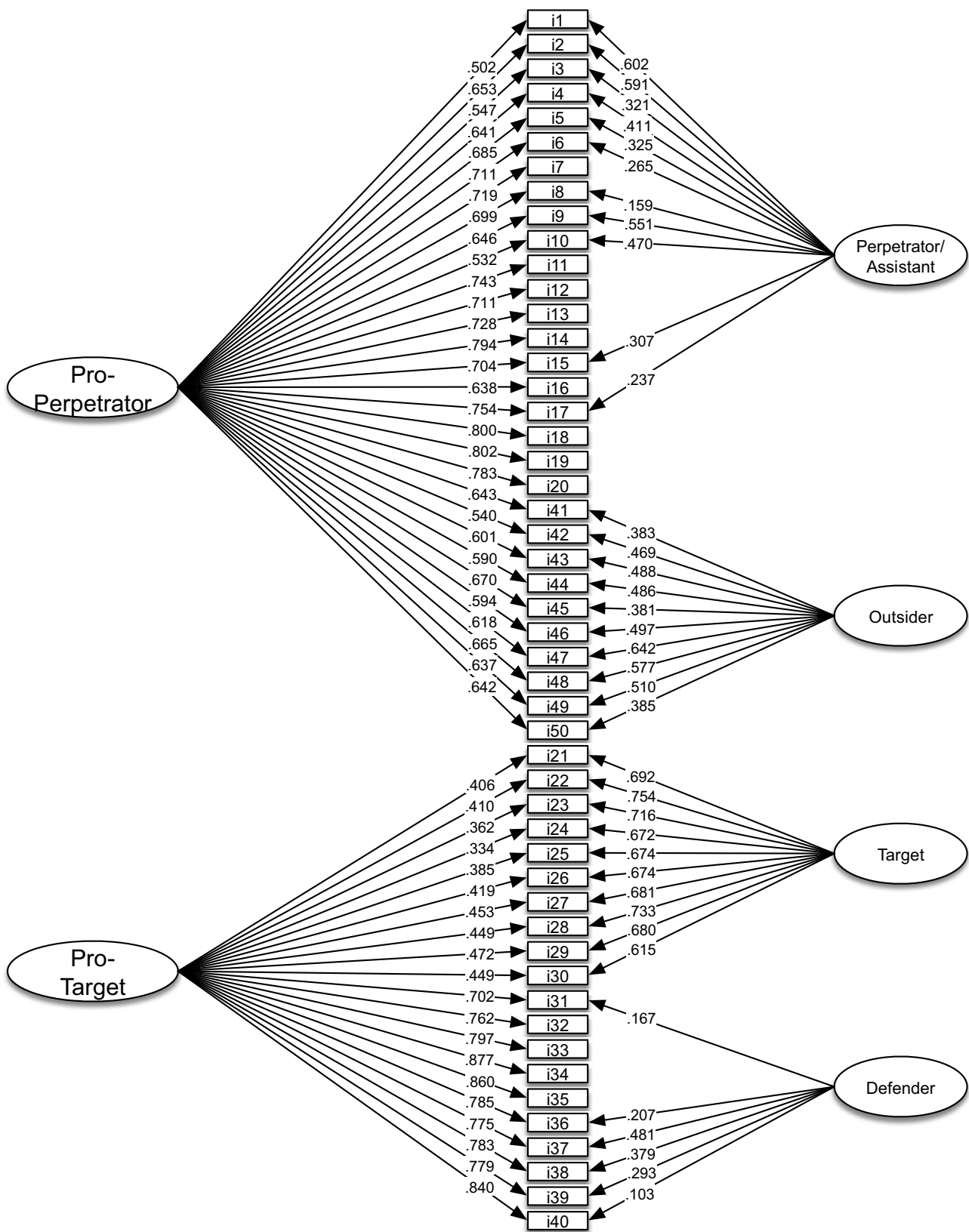


Fig. 2 Final CFA bifactor measurement model (model 7b) with standardized coefficients for the BPBQ elementary school sample with negative and resulting non-significant path coefficients removed

A final limitation lies in the item presentation of the BPBQ. As all 10 items from each bullying role are presented consecutively, results from factor analyses may be spurious based on responses to similar items at roughly the same time. Future versions of the BPBQ should have items randomly dispersed throughout the scale so that items measuring the same purported factor are not adjacent. Under those circumstances, results may be a fair appraisal of the BPBQ factor structure.

Implications for Practice

The goal of this study was to investigate the factor structure of the Bullying Participant Behavior Questionnaire (BPBQ) in an elementary sample. Analyses suggest general support for the five factor BPBQ model, with strong evidence for measuring two general dimensions of Pro-Perpetrator (Perpetrator, Assistant, and Outsider) and Pro-Target (Target and Defender). These results generally parallel those obtained in a middle school sample (Jenkins & Canivez, 2019). Taken together, the BPBQ could be used by both practitioners and researchers who seek to gain a comprehensive understanding of the bullying roles in which youth engage. The benefit of the BPBQ is that it provides a way for youth to self-report engagement in perpetrator, target, assistant, defender, or outsider roles. Most bullying measures only assess perpetration and victimization, particularly at the elementary level. This measure could be used with individuals, small groups, or a whole school, with some caution for the youngest students due to the length of the measure. If individual students or small groups of students are receiving support for their experiences related to bullying (e.g., counseling, support groups), the BPBQ could be used to gauge the types and frequency of their bullying experiences, not just as a target or perpetrator, but in all roles. On a broader scale, a school could use the measure to assess the degree to which all youth in their school are involved in bullying. By examining responses from students, this may help schools decide if a prevention or intervention program is warranted to reduce bullying or increase defending.

Declarations

Conflict of Interest The authors declare that there is no conflict of interest.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s42380-021-00091-w>.

References

- Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, 52, 317–332. <https://doi.org/10.1007/BF02294359>
- Bentler, P. M. (2005). *EQS 6 structural equations program manual*. Multivariate Software (www.mvsoft.com).
- Bentler, P. M., & Wu, E. J. C. (2016). *EQS for Windows*. Multivariate Software Inc.
- Brunner, M., Nagy, G., & Wilhelm, O. (2012). A tutorial on hierarchically structured constructs. *Journal of Personality*, 80, 796–846. <https://doi.org/10.1111/j.1467-6494.2011.00749.x>
- Byrne, B. M. (2006). *Structural equation modeling with EQS* (2nd ed.). Erlbaum.
- Canivez, G. L. (2016). Bifactor modeling in construct validation of multifaceted tests: Implications for understanding multidimensional constructs and test interpretation. In K. Schweizer & C. DiStefano (Eds.), *Principles and methods of test construction: Standards and recent advancements* (pp. 247–271). Hogrefe.
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, 14, 464–504. <https://doi.org/10.1007/BF02294359>
- Chen, F. F., Hayes, A., Carver, C. S., Laurenceau, J.-P., & Zhang, Z. (2012). Modeling general and specific variance in multifaceted constructs: A comparison of the bifactor model to other approaches. *Journal of Personality*, 80, 219–251. <https://doi.org/10.1111/j.1467-6494.2011.00739.x>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, 9, 233–255. https://doi.org/10.1207/S15328007SEM0902_5
- Curran, P. J., West, S. G., & Finch, J. (1996). The robustness of test statistics to non-normality and specification error in confirmatory factor analysis. *Psychological Methods*, 1, 16–29. <https://doi.org/10.1037/1082-989X.1.1.16>
- Demaray, M. K., Summers, K. H., Jenkins, L. N., & Becker, L. D. (2014). Bully Participant Behavior Questionnaire (BPBQ): Establishing a reliable and valid measure. *Journal of School Violence*, 15, 158–188. <https://doi.org/10.1080/15388220.2014.964801>
- Duffy, A. L., Penn, S., Nesdale, D., & Zimmer-Gembeck, M. J. (2017). Popularity: Does it magnify associations between popularity priorization and the bullying and defending behavior of early adolescent boys and girls? *Social Development*, 26(2), 263–277. <https://doi.org/10.1111/sode.12206>
- Evans, C. B. R., & Smokowski, P. R. (2015). Prosocial bystander behavior in bullying dynamics: Assessing the impact of social capital. *Journal of Youth Adolescence*, 44, 2289–2307. <https://doi.org/10.1007/s10964-015-0338-5>
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4, 272–299. <https://doi.org/10.1037/1082-989X.4.3.272>
- Gignac, G. E. (2007). Multi-factor modeling in individual differences research: Some recommendations and suggestions. *Personality and Individual Differences*, 42, 37–48. <https://doi.org/10.1016/j.paid.2006.06.019>
- Gignac, G. E., & Watkins, M. W. (2013). Bifactor modeling and the estimation of model-based reliability in the WAIS-IV. *Multivariate Behavioral Research*, 48, 639–662. <https://doi.org/10.1080/00273171.2013.804398>
- Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Erlbaum.
- Gumpel, T. P., Zioni-Koren, V., & Bekerman, Z. (2014). An ethnographic study of participant roles in school bullying. *Aggressive Behavior*, 40, 214–228. <https://doi.org/10.1002/ab.21515>
- Hamburger, M. E., Basile, K. C., Vivolo, A. M. (2011). *Measuring bullying victimization, perpetration, and bystander experiences: A compendium of assessment tools*. Atlanta, GA: Centers for Disease

- Control and Prevention, National Center for Injury Prevention and Control. Retrieved from: <http://www.cdc.gov/violenceprevention/pdf/bullyCompendiumbk-a.pdf>
- Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 5, 1–55. <https://doi.org/10.1080/10705519909540118>
- Hu, L.-T., Bentler, P. M., & Kano, Y. (1992). Can test statistics in covariance structure analysis be trusted? *Psychological Bulletin*, 112, 351–362. <https://doi.org/10.1037/0033-2909.112.2.351>
- Huitsing, G., & Veenstra, R. (2012). Bullying in classrooms: Participant roles from a social network perspective. *Aggressive Behavior*, 38, 494–509. <https://doi.org/10.1002/ab.21438>
- Jenkins, L. M., & Canivez, G. L. (2019). Hierarchical factor structure of the Bullying Participant Behavior Questionnaire with a middle school sample. *International Journal of School and Educational Psychology*. <https://doi.org/10.1080/21683603.2019.1636734>
- Jenkins, L. N., Demaray, M. K., Fredrick, S. S., & Summers, K. H. (2014). Associations among middle school students' bullying roles and social skills. *Journal of School Violence*, 15(3), 259–278. <https://doi.org/10.1080/15388220.2014.986675>
- Jenkins, L. N., Demaray, M. K., & Tennant, J. (2017). Social, emotional, and cognitive factors associated with bullying. *School Psychology Review*, 46, 42–64.
- Jenkins, L. N., Kaminski, S. S., & Miller, M. (2020). Bystander intervention in bullying: Differences across latent profiles. *International Journal of Bullying Prevention*. <https://doi.org/10.1007/s42380-020-00067-2>
- Jenkins, L. N., & Nickerson, A. B. (2017). Bullying participant roles and gender as predictors of bystander intervention. *Aggressive Behavior*, 43, 281–290. <https://doi.org/10.1002/ab.21688>
- Jenkins, L. N., Tennant, J., & Demaray, M. K. (2018). Executive functioning and bullying participant roles: Differences for boys and girls. *Journal of School Violence*, 17, 521–537. <https://doi.org/10.1080/15388220.2018.1453822>
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford.
- Mardia, K. V. (1970). Measures of multivariate skewness and kurtosis with applications. *Biometrika*, 57, 519–530. <https://doi.org/10.1093/biomet/57.3.519>
- McDonald, R. P. (1999). *Test theory: A unified approach*. Mahwah, NJ: Erlbaum.
- McDonald, R. P. (2010). Structural models and the art of approximation. *Perspectives on Psychological Science*, 5, 675–686. <https://doi.org/10.1177/1745691610388766>
- Pendergast, L. L., von der Embse, N., Kilgus, S. P., & Eklund, K. R. (2017). Measurement equivalence: A non-technical primer on categorical multi-group confirmatory factor analysis in school psychology. *Journal of School Psychology*, 60, 65–82. <https://doi.org/10.1016/j.jsp.2016.11.002>
- Pouwels, J. L., van Noorden, T. H., Lansu, T. A., & Cillessen, A. H. (2018). The participant roles of bullying in different grades: Prevalence and social status profiles. *Social Development*, 27(4), 732–747. <https://doi.org/10.1111/sode.12294>
- Raykov, T. (1997). Scale reliability, Cronbach's coefficient alpha, and violations of essential tau equivalence with fixed congeneric components. *Multivariate Behavioral Research*, 32, 329–353. https://doi.org/10.1207/s15327906mbr3204_2
- Reijntjes, A., Vermande, M., Olthof, T., Goossens, F. A., Vink, G., Aleva, L., & van der Meulen, M. (2018). Differences between resource control types revisited: A short term longitudinal study. *Social Development*, 27(1), 187–200. <https://doi.org/10.1111/sode.12257>
- Reise, S. P. (2012). The rediscovery of bifactor measurement models. *Multivariate Behavioral Research*, 47, 667–696. <https://doi.org/10.1080/00273171.2012.715555>
- Reise, S. P., Bonifay, W. E., & Haviland, M. G. (2013). Scoring and modeling psychological measures in the presence of multidimensionality. *Journal of Personality Assessment*, 95, 129–140. <https://doi.org/10.1080/00223891.2012.725437>
- Rodriguez, A., Reise, S. P., & Haviland, M. G. (2016). Evaluating bifactor models: Calculating and interpreting statistical indices. *Psychological Methods*, 21, 137–150. <https://doi.org/10.1037/met0000045>
- Ryoo, J. H., Wang, C., & Swearer, S. M. (2015). Examination of the change in latent statuses in bullying behaviors across time. *School Psychology Quarterly*, 30, 105–122. <https://doi.org/10.1037/spq0000082>
- Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, 66, 507–514. <https://doi.org/10.1007/BF02296192>
- Salmivalli, C., Lagerspetz, K., Björkqvist, K., Österman, K., & Kaukiainen, A. (1996). Bullying as a group process: Participant roles and their relations to social status within the group. *Aggressive Behavior*, 22, 1–15. [https://doi.org/10.1002/\(SICI\)1098-2337\(1996\)22:1%3C1::AID-AB1%3E3.0.CO;2-T](https://doi.org/10.1002/(SICI)1098-2337(1996)22:1%3C1::AID-AB1%3E3.0.CO;2-T)
- Summers, K. (2008). *The relationship among bullying participant roles, social support, and school climate* (Unpublished doctoral dissertation). Northern Illinois University.
- Summers, K., & Demaray, M. K. (2008). *Bullying Participant Behaviors Questionnaire*. Northern Illinois University.
- Swearer, S. M., & Espelage, D. L. (2011). Expanding the social-ecological framework of bullying among youth: Lessons learned from the past and directions for the future. In D. L. Espelage & S. M. Swearer, (Eds.). *Bullying in North American schools* (2nd edition) (pp. 3–10). Routledge.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Allyn & Bacon.
- Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. American Psychological Association.
- Unnever, J. D., & Cornell, D. G. (2003). Bullying, self-control, and ADHD. *Journal of Interpersonal Violence*, 18, 129–147. <https://doi.org/10.1177/0886260502238731>
- Veenstra, R., Lindenberg, S., Oldehinkel, A. J., Winter, A. F., Verhulst, F. C., & Ormel, J. (2005). Bullying and victimization in elementary schools: A comparison of bullies, bully/victims, and uninvolved pre-adolescents. *Developmental Psychology*, 41, 672–682. <https://doi.org/10.1037/0012-1649.41.4.672>
- Watkins, M. W. (2013). *Omega* [Computer software]. Ed & Psych Associates.
- Widaman, K. F. (1993). Common factor analysis versus principal component analysis: Differential bias in representing model parameters? *Multivariate Behavioral Research*, 28, 263–311. https://doi.org/10.1207/s15327906mbr2803_1
- Yanez, C., & Seldin, M. (2019). Student victimization in U.S. schools: Results from the 2017 School Crime Supplement to the National Crime Victimization Survey. <https://nces.ed.gov/pubs2019/2019064.pdf>
- Zinbarg, R. E., Revelle, W., Yovel, I., & Li, W. (2005). Cronbach's alpha, Revelle's beta, and McDonald's omega h: Their relations with each other and two alternative conceptualizations of reliability. *Psychometrika*, 70, 123–133. <https://doi.org/10.1007/s11336-003-0974-7>
- Zinbarg, R. E., Yovel, I., Revelle, W., & McDonald, R. P. (2006). Estimating generalizability to a latent variable common to all of a scale's indicators: A comparison of estimators for ω_h . *Applied Psychological Measurement*, 30, 121–144. <https://doi.org/10.1177/0146621605278814>

**Structural Validity of the Bullying Participant Behavior Questionnaire with an Elementary
School Sample**

Supplemental Material for Online Appendix

Appendix A. Exploratory factor analyses and related supplemental tables and figure.

Appendix B. Confirmatory factor analyses related supplemental tables and figures.

Appendix A

Exploratory Factor Analyses

Best practices in exploratory factor analyses (EFA) were followed as described by Watkins (2018). Given the ordinal nature of BPBQ item ratings, polychoric correlations were estimated for the 50 BPBQ items using EQS 6.3 (Bentler & Wu, 2017) and the smoothed polychoric correlation matrix was then used in EFA (Flora et al., 2012). Item descriptive statistics were produced and principal axis EFA (Fabrigar et al., 1999) was used to analyze reliable common variance from the smoothed 50 BPBQ item polychoric correlation matrix using SPSS 25.0 for Macintosh.

Multiple criteria were examined and considered for suggesting the number of factors to retain as per Gorsuch (1983), and included eigenvalues > 1 (Guttman, 1954), the visual scree test (Cattell, 1966), standard error of scree (SE_{Scree} ; Zoski & Jurs, 1996), minimum average partials (MAP; Velicer, 1976), Horn's parallel analysis (HPA; Horn, 1965), and Gorfeld's (1995) modified parallel analysis. The scree test is a subjective criterion to visually determine the optimum number of factors to retain and the SE_{Scree} was used as programmed by Watkins (2007) as it is reportedly the most accurate objective scree method (Nasser et al., 2002). MAP was conducted using the O'Connor (2000) SPSS syntax. HPA has been shown to be one of the most accurate *a priori* empirical criteria with scree sometimes a useful adjunct based on simulation studies (Velicer et al., 2000; Zwick & Velicer, 1986). HPA was included as it typically is more accurate and reduces overfactoring (Frazier & Youngstrom, 2007; Thompson & Daniel, 1996). Assessment of HPA, however, indicates it tends to suggest fewer factors in the presence of a strong general factor (Crawford et al., 2010). HPA indicated potentially meaningful factors when eigenvalues from the BPBQ sample were larger than eigenvalues produced by random data containing the same number of participants and factors (Lautenschlager, 1989). Random data and resulting eigenvalues for HPA using both mean and 95% CI were produced using the SPSS syntax from O'Connor (2000) and 100 replications were used to provide stable eigenvalue estimates.

Promax rotation ($k = 4$ [to maximize hyperplane count]; Gorsuch, 1983) was used following extraction to examine correlated factors. Additionally, viable factors were required to contain a minimum of 5 items with salient item factor pattern coefficients ($\geq .40$), produce reasonable alpha coefficients ($\geq .70$), and include psychologically meaningful content. It was also preferable to achieve simple structure (i.e., no item cross-loadings; Thurstone, 1947). Higher-order EFA was conducted using promax rotated factor correlations.

Results

Descriptive Statistics (EFA)

Table A1 presents the smoothed polychoric and Pearson product-moment correlations and descriptive statistics for the BPBQ items from the total sample. Not unexpectedly, polychoric correlations differed from the Pearson correlations for these ordinal item ratings. Tables A1 and A2 present BPBQ items and descriptive statistics for the total sample and many BPBQ items demonstrated non-normal distribution (Onwuegbuzie & Daniel, 2002; West et al., 1995). Univariate skewness estimates ranged from 0.32 to 8.80 ($Mdn = 3.06$), with 30 of the 50 items having skewness estimates greater than $|2.0|$. Univariate kurtosis estimates ranged from -1.23 to 86.70 ($Mdn = 10.97$), with 30 items having kurtosis estimates greater than $|5.0|$, but 18 less than $|2.0|$. Mardia's (1970) normalized multivariate kurtosis estimate of 517.72 indicated

BPBQ item data were multivariately non-normal as well (values $> |5.00|$ indicative of non-normality [Bentler, 2005]). Thus, use of principal factors (axis) extraction in EFA was used having no distributional assumptions.

Exploratory Factor Analysis

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy of .862 far exceeded the .60 minimum standard (Kaiser, 1974; Kline, 1994; Tabachnick & Fidell, 2007) and Bartlett's Test of Sphericity (Bartlett, 1954), $\chi^2 = 33,906.64$, $p < .0001$, indicated that the smoothed BPBQ item polychoric correlation matrix was not random. Initial communality estimates ranged from .63 to .91 ($Mdn = .795$), thus these communality estimates and sample size suggested that EFA was appropriate (Fabrigar et al., 1999; Floyd & Widaman, 1995; MacCallum et al., 1999). The eigenvalue > 1 criterion suggested retaining six factors, while the Scree test, HPA, and Glorfeld's modified HPA suggested retaining 5 factors, which was consistent with the BPBQ purported structure. The SE_{Scree} criterion suggested as many as 16 non-redundant factors. Figure A1 presents the HPA scree plot. Extraction of more than five factors produced factors above the fifth factor that contained items with no salient factor pattern coefficients and judged inadequate. Thus, five factors (see Table A3) were retained and satisfied most *a priori* criteria and each BPBQ item achieved salient loading (except items 7, 8, and 16) on a single BPBQ factor (simple structure). Items 7 and 8 had factor pattern coefficients that while not salient ($< .40$) were aligned ($> .30$; i.e., associated with the intended factor but the coefficient fell below the saliency criterion of .40). Items 14, 15, and 17 (Assistant items) had salient factor pattern coefficients on the Perpetrator factor (not the intended Assistant factor) and item 14 was also aligned with the Assistant factor. Item 16 had factor pattern coefficients that were aligned with the theoretically appropriate Assistant factor but also with the Outsider factor. As a result, item 16 was deleted and five factors were again extracted.

Table A5 presents first-order EFA results with removal of item 16 and shows all BPBQ items had salient factor pattern coefficients on singular factors (no cross-loading), but items 7 and 8 did not have salient loadings ($\geq .40$) on any factor. Items 7 and 8 had factor pattern coefficients of .38 and .36, respectively, on the Perpetrator factor that might be considered aligned ($\geq .30$) with the theoretically consistent factor. Items 14, 15, and 17 had salient pattern coefficients on the Perpetrator factor rather than on the intended Assistant factor. All items from the Outsider, Target, and Defender factors were properly associated with theoretical dimensions (Demaray et al., 2014) as were most Perpetrator and Assistant items. Alpha coefficients for all five factors far exceeded the minimum standards (.70). Item migration to theoretically different factors (items 14, 15, & 17) could be a result of overextraction (as well as sampling error) so EFA with extraction of four factors was examined and presented in Table A5 for comparison. Results in Table A5 show that item 16 had no salient factor pattern coefficients with any factor but had aligned factor pattern coefficients on both the combined Perpetrator/Assistant factor and the Outsider factor. All other items had salient factor pattern coefficients on appropriate factors so item 16 was deleted and four factors were again extracted.

Table A6 presents results of four factor extraction with item 16 deleted and produced desired simple structure with all items having salient factor pattern coefficients on single factors. All Perpetrator and Assistant items had salient factor pattern coefficients on the Perpetrator/Assistant factor and all Outsider, Defender, and Target items had salient factor pattern coefficients on their theoretically appropriate factor. Alpha coefficients for all four factors far exceeded the minimum standard (.70). Some factor correlations presented in Tables

A3-A6 were moderate and suggested the presence of higher-order factors (Gorsuch, 1983; Thompson, 2004) requiring explication.

Using the factor correlations produced by promax rotation (see Tables A4), second-order EFA was performed with the five-factor extraction with item 16 removed. Table A7 presents results from second-order EFAs suggesting two higher-order factors. Factor 1 is a combination of Outsider, Perpetrator, and Assistant dimensions; while Factor 2 is a combination of Defender and Target dimensions. Factor 1, labeled Pro-Perpetrator, accounted for 46.78% of the variance. Factor 2, labeled Pro-Target, accounted for an additional 14.34% of the variance. The Pro-Perpetrator and Pro-Target factors correlated .45, sharing 20% variance. Similar results were obtained from second-order EFA promax rotated factor correlations from five factors with all BPBQ items (see Table A8).

Second-order EFA was also performed with the promax rotated factor correlations from the four-factor extraction with item 16 removed (see Table A6) and produced two higher-order factors (see Table A7). Factor 1 is a combination of the Perpetrator/Assistant and Outsider factors and Factor 2 is a combination of the Defender and Target factors. Factor 1 was labeled Pro-Perpetrator and accounted for 46.99% of the variance and Factor 2 was labeled Pro-Target and accounted for an additional 16.34% of the variance. The Pro-Perpetrator and Pro-Target factors correlated .473 and shared 22% variance. Similar findings were obtained from second-order EFA promax rotated factor correlations from four factors with all BPBQ items (see Table A8).

EFA Discussion

Exploratory factor analysis revealed generally theoretically consistent item alignment to their respective factors when five factors were extracted but several items (14, 15, 17) migrated from the Assistant factor to the Perpetrator factor. Item content of these items, particularly items 14 and 15 might be perceived by students in this sample similarly to Perpetrator items. Alpha coefficients based on salient items assigned to the five BPBQ factors were high for each of the five subscales (.88, .81, .89, .93, and .94 for Perpetrator, Assistant, Outsider, Target, and Defender, respectively). When only four factors were extracted the Perpetrator and Assistant items merged into one factor (Perpetrator/Assistant) and desired simple structure was achieved. Item 16 was problematic in both five and four factor extractions resulting in no salient pattern coefficients. These results may be sample specific and firm conclusions ought not be rendered absent replication with other samples of elementary school students. Alpha coefficients for the four factors were universally high (.88, .89, .94, and .93 for Perpetrator/Assistant, Outsider, Defender, and Target, respectively).

References

- Bentler, P. M., & Wu, E. J. C. (2016). *EQS for Windows*. Encino CA: Multivariate Software, Inc.
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1, 245-276. http://doi.org/10.1207/s15327906mbr0102_10
- Crawford, A. V., Green, S. B., Levy, R., Lo, W.-J., Scott, L., Svetina, D., & Thompson, M. S. (2010). Evaluation of parallel analysis methods for determining the number of factors. *Educational and Psychological Measurement*, 70, 885-901. <http://doi.org/10.1177/0013164410379332>
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4, 272-299. <http://doi.org/10.1037/1082-989X.4.3.272>

- Flora, D. B., LaBrish, C., & Chalmers, R. P. (2012). Old and new ideas for data screening and assumption testing for exploratory and confirmatory factor analysis. *Frontiers in Psychology*, 3(55), 1-21. <http://doi.org/10.3389/fpsyg.2012.00055>
- Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, 7, 286-299. <http://doi.org/10.1037/1040-3590.7.3.286>
- Frazier, T. W., & Youngstrom, E. A. (2007). Historical increase in the number of factors measured by commercial tests of cognitive ability: Are we overfactoring? *Intelligence*, 35, 169-182. <http://doi.org/10.1016/j.intell.2006.07.002>
- Glorfeld, L. W. (1995). An improvement on Horn's parallel analysis methodology for selecting the correct number of factors to retain. *Educational and Psychological Measurement*, 55, 377-393. doi:10.1177/0013164495055003002
- Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Guttman, L. (1954). Some necessary conditions for common-factor analysis. *Psychometrika*, 19, 149-161. <http://doi.org/10.1007/BF02289162>
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, 30, 179-185. <http://doi.org/10.1007/BF02289447>
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31-36. <http://doi.org/10.1007/BF02291575>
- Kline, P. (1994). *An easy guide to factor analysis*. Routledge.
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford.
- Lautenschlager, G. J. (1989). A comparison of alternatives to conducting Monte Carlo analyses for determining parallel analysis criteria. *Multivariate Behavioral Research*, 24, 365-395. http://doi.org/10.1207/s15327906mbr2403_6
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, 4, 84-99. <http://doi.org/10.1037/1082-989X.4.1.84>
- Mardia, K. V. (1970). Measures of multivariate skewness and kurtosis with applications. *Biometrika*, 57, 519-530. <http://doi.org/10.1093/biomet/57.3.519>
- Nasser, F., Benson, J., & Wisenbaker, J. (2002). The performance of regression-based variations of the visual scree for determining the number of common factors. *Educational and Psychological Measurement*, 62, 397-419.
- O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments, & Computers*, 32, 396-402. <http://doi.org/10.3758/BF03200807>
- Onwuegbuzie, A. J., & Daniel, L. G. (2002). Uses and misuses of the correlation coefficient. *Research in the Schools*, 9, 73-90.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Allyn & Bacon.
- Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. American Psychological Association.
- Thompson, B., & Daniel, L. G. (1996). Factor analytic evidence for the construct validity of scores: A historical overview and some guidelines. *Educational and Psychological Measurement*, 56, 197-208. <http://doi.org/10.1177/0013164496056002001>
- Thurstone, L. L. (1947). *Multiple-factor analysis*. University of Chicago Press
- Velicer, W. F. (1976). Determining the number of components form the matrix of partial correlations. *Psychometrika*, 31, 321-327.

- Velicer, W. F., Eaton, C. A., & Fava, J. L. (2000). Construct explication through factor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In R. D. Goffin, & E. Helms (Eds.), *Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy* (pp. 41–71). Springer.
- Watkins, M. W. (2004). *MacOrtho*. [Computer Software]. Ed & Psych Associates.
- Watkins, M. W. (2007). *SEscree* (Computer software). Ed & Psych Associates.
- Watkins, M. W. (2017). The reliability of multidimensional neuropsychological measures: From alpha to omega. *The Clinical Neuropsychologist*.
<http://doi.org/10.1080/13854046.2017.1317364>
- Watkins, M. W. (2018). Exploratory factor analysis: A guide to best practice. *Journal of Black Psychology*, 44, 219-246. <http://doi.org/10.1177/0095798418771807>
- Zoski, K. W., & Jurs, S. (1996). An objective counterpart to the visual scree test for factor analysis: The standard error scree. *Educational and Psychological Measurement*, 56, 443-451. <http://doi.org/10.1177/0013164496056003006>

Table A1

Smoothed Polychoric Correlations (below diagonal), Pearson Correlations (above diagonal), and Descriptive Statistics for the Bullying Participant Behavior Questionnaire Elementary School Total Sample (n = 683)

	Bullying Participant Behavior Questionnaire: Perpetrator Items									
	i1	i2	i3	i4	i5	i6	i7	i8	i9	i10
i1 Perpetrator	–	.647	.338	.511	.289	.290	.174	.302	.609	.430
i2 Perpetrator	.700	–	.444	.505	.390	.415	.301	.403	.645	.473
i3 Perpetrator	.393	.522	–	.316	.341	.356	.173	.255	.464	.512
i4 Perpetrator	.641	.665	.450	–	.440	.354	.377	.391	.540	.331
i5 Perpetrator	.503	.605	.550	.605	–	.478	.456	.287	.461	.390
i6 Perpetrator	.457	.604	.516	.474	.648	–	.411	.398	.464	.500
i7 Perpetrator	.385	.496	.439	.528	.591	.593	–	.292	.326	.255
i8 Perpetrator	.441	.577	.425	.553	.531	.566	.562	–	.357	.216
i9 Perpetrator	.671	.755	.532	.670	.623	.570	.468	.510	–	.507
i10 Perpetrator	.498	.613	.578	.445	.533	.667	.437	.410	.597	–
i11 Assistant	.472	.553	.405	.455	.450	.526	.471	.522	.509	.446
i12 Assistant	.203	.385	.373	.491	.438	.441	.441	.440	.346	.265
i13 Assistant	.403	.445	.358	.456	.479	.517	.561	.446	.454	.392
i14 Assistant	.475	.573	.416	.525	.616	.614	.569	.572	.557	.469
i15 Assistant	.573	.643	.462	.526	.602	.628	.533	.551	.584	.548
i16 Assistant	.332	.377	.426	.346	.381	.378	.453	.424	.398	.325
i17 Assistant	.509	.651	.517	.552	.585	.617	.578	.517	.608	.515
i18 Assistant	.440	.513	.453	.604	.589	.593	.614	.554	.609	.447
i19 Assistant	.377	.505	.374	.514	.493	.493	.486	.582	.477	.386
i20 Assistant	.304	.465	.403	.471	.490	.536	.499	.564	.479	.323
i21 Target	.406	.368	.273	.355	.245	.212	.212	.251	.395	.278
i22 Target	.371	.379	.287	.318	.279	.251	.235	.304	.387	.229
i23 Target	.309	.279	.383	.321	.337	.303	.305	.280	.336	.269
i24 Target	.360	.362	.366	.352	.334	.302	.277	.333	.380	.344
i25 Target	.240	.311	.179	.409	.266	.221	.256	.265	.308	.129
i26 Target	.312	.324	.215	.407	.307	.273	.300	.270	.324	.192
i27 Target	.333	.289	.331	.340	.417	.328	.312	.240	.380	.290
i28 Target	.317	.327	.356	.322	.398	.391	.343	.242	.361	.323
i29 Target	.364	.344	.333	.439	.359	.361	.308	.226	.402	.276
i30 Target	.210	.251	.220	.295	.300	.278	.261	.294	.290	.157
i31 Defender	-.036	.026	-.005	-.022	.108	-.003	.001	.040	-.031	.002
i32 Defender	.076	.110	.094	.055	.098	.092	.116	.043	.091	.089
i33 Defender	.133	.114	.086	.252	.147	.075	.137	.125	.128	.114
i34 Defender	.053	.106	.010	.182	.151	.102	.179	.099	.127	.001
i35 Defender	.149	.109	.092	.209	.164	.165	.121	.049	.102	.143
i36 Defender	.049	.070	.011	.050	.072	-.030	-.003	-.009	.051	.029
i37 Defender	-.009	-.004	.017	.091	.103	-.039	.057	.062	.001	-.046
i38 Defender	-.040	-.023	.040	.060	.078	.031	.074	-.025	-.057	-.016
i39 Defender	.118	.105	.062	.122	.083	.005	.064	.029	.103	.053
i40 Defender	.099	.098	.091	.163	.166	.162	.132	-.033	.134	.124
i41 Outsider	.347	.462	.462	.366	.451	.469	.530	.476	.476	.345
i42 Outsider	.363	.446	.296	.353	.336	.430	.408	.360	.417	.404
i43 Outsider	.337	.415	.345	.347	.380	.460	.515	.403	.456	.385
i44 Outsider	.359	.512	.399	.406	.462	.425	.441	.403	.480	.289
i45 Outsider	.321	.427	.347	.415	.457	.451	.479	.410	.509	.326
i46 Outsider	.311	.425	.307	.358	.390	.400	.410	.462	.318	.276
i47 Outsider	.429	.503	.339	.422	.314	.378	.468	.538	.480	.370
i48 Outsider	.426	.510	.349	.393	.367	.464	.478	.610	.522	.389
i49 Outsider	.292	.460	.284	.382	.331	.374	.479	.483	.419	.297
i50 Outsider	.322	.491	.328	.386	.383	.433	.559	.493	.407	.291
<i>M</i>	0.414	0.321	0.332	0.202	0.151	0.126	0.083	0.122	0.287	0.441
<i>SD</i>	0.783	0.675	0.676	0.652	0.507	0.442	0.402	0.438	0.667	0.843
<i>Sk</i>	2.476	2.924	2.654	4.254	4.432	4.369	6.901	5.107	3.218	2.458
<i>K</i>	7.091	10.733	8.692	19.885	23.299	22.672	57.252	33.571	12.637	6.570

Table A1 continued										
	Bullying Participant Behavior Questionnaire: Assistant Items									
	i11	i12	i13	i14	i15	i16	i17	i18	i19	i20
i1 Perpetrator	.244	.065	.215	.206	.395	.187	.364	.199	.164	.050
i2 Perpetrator	.287	.173	.297	.283	.492	.220	.482	.297	.291	.176
i3 Perpetrator	.211	.148	.148	.120	.327	.221	.317	.150	.150	.104
i4 Perpetrator	.239	.257	.340	.370	.350	.209	.360	.435	.271	.220
i5 Perpetrator	.174	.155	.295	.396	.318	.193	.366	.374	.307	.224
i6 Perpetrator	.283	.216	.320	.370	.445	.213	.374	.368	.302	.253
i7 Perpetrator	.194	.225	.481	.428	.290	.247	.305	.562	.181	.199
i8 Perpetrator	.267	.207	.246	.270	.327	.280	.275	.332	.307	.249
i9 Perpetrator	.304	.181	.360	.313	.467	.253	.443	.407	.248	.231
i10 Perpetrator	.216	.108	.180	.272	.389	.175	.340	.217	.195	.056
i11 Assistant	–	.620	.371	.312	.318	.298	.266	.207	.425	.505
i12 Assistant	.676	–	.431	.287	.165	.329	.116	.380	.385	.581
i13 Assistant	.543	.573	–	.393	.269	.355	.369	.554	.301	.388
i14 Assistant	.563	.520	.529	–	.350	.287	.353	.515	.394	.257
i15 Assistant	.591	.418	.524	.600	–	.212	.343	.334	.225	.181
i16 Assistant	.463	.478	.492	.490	.394	–	.330	.288	.327	.257
i17 Assistant	.573	.383	.588	.642	.615	.549	–	.363	.343	.187
i18 Assistant	.502	.550	.617	.669	.568	.496	.615	–	.317	.359
i19 Assistant	.668	.653	.565	.629	.515	.542	.604	.597	–	.514
i20 Assistant	.620	.659	.577	.587	.509	.467	.510	.612	.716	–
i21 Target	.247	.168	.347	.224	.305	.229	.248	.174	.319	.214
i22 Target	.271	.191	.312	.230	.381	.217	.290	.231	.295	.220
i23 Target	.268	.197	.266	.271	.351	.207	.276	.262	.221	.202
i24 Target	.278	.207	.332	.282	.314	.283	.285	.291	.282	.203
i25 Target	.291	.285	.299	.314	.364	.207	.273	.379	.281	.281
i26 Target	.307	.278	.351	.289	.370	.312	.311	.284	.315	.351
i27 Target	.281	.308	.264	.346	.374	.291	.308	.296	.312	.332
i28 Target	.279	.283	.305	.300	.409	.233	.310	.333	.299	.300
i29 Target	.303	.371	.422	.371	.466	.248	.393	.439	.382	.371
i30 Target	.305	.233	.331	.294	.386	.231	.364	.306	.279	.313
i31 Defender	.040	.105	.067	.058	-.003	.040	-.010	-.016	.100	.110
i32 Defender	.148	.097	.105	.161	.155	.109	.082	.030	.040	.035
i33 Defender	.140	.092	.093	.165	.149	.108	.146	.107	.188	.181
i34 Defender	.108	.154	.121	.143	.098	.104	.100	.225	.101	.150
i35 Defender	.110	.132	.067	.191	.182	.062	.079	.085	.107	.088
i36 Defender	.036	.009	.021	.055	.037	.064	-.001	.011	.072	.065
i37 Defender	.073	.114	.150	.130	.047	.045	.031	.113	.131	.149
i38 Defender	-.003	.111	.048	.062	.044	.033	.021	.072	.061	.117
i39 Defender	.085	.051	.053	.205	.128	.073	.075	.072	.098	.107
i40 Defender	.079	.087	.070	.177	.087	.031	.054	.125	.075	.076
i41 Outsider	.453	.372	.481	.483	.476	.453	.512	.556	.490	.456
i42 Outsider	.342	.299	.438	.441	.473	.421	.522	.462	.414	.328
i43 Outsider	.480	.362	.461	.460	.470	.474	.508	.489	.410	.395
i44 Outsider	.424	.332	.413	.501	.434	.415	.550	.506	.433	.389
i45 Outsider	.460	.414	.473	.584	.464	.474	.532	.579	.533	.511
i46 Outsider	.413	.376	.384	.463	.398	.430	.476	.504	.464	.529
i47 Outsider	.449	.334	.530	.494	.428	.505	.553	.541	.435	.437
i48 Outsider	.492	.372	.523	.476	.515	.471	.531	.583	.483	.559
i49 Outsider	.469	.440	.457	.534	.523	.401	.475	.502	.481	.571
i50 Outsider	.446	.362	.395	.568	.486	.487	.543	.486	.525	.444
<i>M</i>	0.209	0.110	0.098	0.075	0.101	0.299	0.142	0.048	0.136	0.082
<i>SD</i>	0.621	0.515	0.420	0.381	0.405	0.707	0.477	0.333	0.508	0.446
<i>Sk</i>	3.987	5.653	6.202	6.959	5.795	3.269	4.617	8.800	5.182	6.854
<i>K</i>	18.249	34.497	47.521	58.052	43.368	12.641	26.578	86.702	31.789	51.445

Table A1 continued										
	Bullying Participant Behavior Questionnaire: Target Items									
	i21	i22	i23	i24	i25	i26	i27	i28	i29	i30
i1 Perpetrator	.318	.263	.226	.305	.166	.215	.263	.225	.280	.166
i2 Perpetrator	.276	.270	.195	.285	.182	.205	.227	.232	.250	.171
i3 Perpetrator	.221	.210	.245	.270	.097	.160	.267	.250	.228	.169
i4 Perpetrator	.198	.168	.180	.254	.229	.235	.215	.183	.268	.189
i5 Perpetrator	.117	.133	.189	.216	.123	.185	.243	.209	.165	.174
i6 Perpetrator	.123	.149	.174	.186	.121	.163	.210	.208	.219	.163
i7 Perpetrator	.090	.101	.151	.172	.125	.151	.209	.180	.157	.151
i8 Perpetrator	.133	.154	.147	.193	.139	.135	.142	.133	.147	.143
i9 Perpetrator	.295	.278	.243	.293	.236	.256	.291	.269	.294	.240
i10 Perpetrator	.233	.181	.199	.282	.107	.146	.251	.236	.229	.125
i11 Assistant	.159	.145	.144	.162	.161	.159	.175	.154	.157	.166
i12 Assistant	.076	.058	.061	.109	.098	.101	.176	.117	.175	.103
i13 Assistant	.183	.162	.155	.205	.155	.188	.198	.163	.222	.187
i14 Assistant	.081	.095	.103	.129	.136	.126	.169	.115	.150	.134
i15 Assistant	.217	.257	.214	.206	.214	.208	.220	.236	.267	.250
i16 Assistant	.147	.134	.112	.196	.167	.178	.199	.164	.191	.153
i17 Assistant	.123	.135	.161	.188	.152	.196	.170	.180	.236	.208
i18 Assistant	.078	.097	.124	.140	.178	.145	.154	.152	.220	.142
i19 Assistant	.145	.117	.098	.150	.111	.130	.125	.139	.151	.087
i20 Assistant	.113	.102	.065	.094	.169	.162	.165	.125	.138	.141
i21 Target	–	.749	.539	.567	.534	.576	.628	.633	.576	.520
i22 Target	.798	–	.597	.585	.556	.581	.654	.652	.553	.541
i23 Target	.577	.672	–	.646	.497	.549	.649	.652	.564	.555
i24 Target	.578	.638	.685	–	.453	.498	.590	.620	.506	.553
i25 Target	.606	.656	.554	.515	–	.751	.480	.511	.577	.533
i26 Target	.629	.679	.600	.563	.781	–	.567	.586	.588	.586
i27 Target	.646	.692	.688	.605	.518	.603	–	.743	.598	.601
i28 Target	.678	.725	.705	.663	.565	.637	.780	–	.656	.561
i29 Target	.654	.657	.676	.571	.661	.668	.653	.754	–	.591
i30 Target	.572	.620	.608	.608	.594	.646	.638	.607	.655	–
i31 Defender	.290	.280	.261	.249	.208	.263	.326	.323	.279	.305
i32 Defender	.319	.317	.305	.269	.261	.331	.358	.369	.350	.361
i33 Defender	.340	.327	.315	.273	.322	.343	.377	.386	.420	.378
i34 Defender	.307	.347	.293	.291	.354	.370	.387	.380	.427	.412
i35 Defender	.371	.377	.337	.306	.322	.350	.390	.393	.409	.341
i36 Defender	.345	.323	.261	.252	.244	.293	.318	.324	.300	.316
i37 Defender	.322	.307	.269	.218	.310	.330	.347	.298	.358	.354
i38 Defender	.300	.304	.266	.215	.340	.345	.341	.320	.380	.356
i39 Defender	.361	.325	.268	.235	.350	.331	.351	.326	.391	.373
i40 Defender	.340	.341	.283	.283	.328	.362	.401	.387	.378	.387
i41 Outsider	.298	.272	.325	.311	.295	.299	.360	.404	.341	.281
i42 Outsider	.241	.208	.155	.239	.207	.171	.266	.257	.234	.182
i43 Outsider	.230	.250	.168	.218	.210	.229	.239	.260	.228	.178
i44 Outsider	.262	.264	.279	.250	.316	.259	.324	.337	.291	.224
i45 Outsider	.197	.226	.225	.252	.289	.244	.242	.201	.294	.266
i46 Outsider	.247	.254	.174	.165	.288	.290	.227	.265	.288	.217
i47 Outsider	.236	.275	.219	.196	.269	.253	.221	.210	.242	.210
i48 Outsider	.293	.304	.208	.229	.336	.293	.234	.271	.319	.210
i49 Outsider	.239	.218	.212	.177	.246	.215	.304	.254	.278	.222
i50 Outsider	.122	.195	.153	.212	.147	.147	.234	.231	.227	.100
<i>M</i>	1.347	1.145	1.101	1.359	0.673	0.896	1.092	0.959	0.687	0.924
<i>SD</i>	1.384	1.324	1.337	1.393	1.210	1.258	1.374	1.346	1.228	1.291
<i>Sk</i>	0.825	1.102	1.124	0.879	1.813	1.464	1.089	1.303	1.824	1.365
<i>K</i>	-0.556	0.031	0.046	-0.507	2.082	1.035	-0.142	0.379	2.074	0.674

Table A1 continued										
	Bullying Participant Behavior Questionnaire: Defender Items									
	i31	i32	i33	i34	i35	i36	i37	i38	i39	i40
i1 Perpetrator	-.044	.026	.092	.047	.103	.023	.003	-.037	.068	.061
i2 Perpetrator	.008	.057	.096	.079	.084	.038	-.015	-.022	.051	.066
i3 Perpetrator	-.005	.082	.090	.027	.068	.002	.008	.024	.073	.069
i4 Perpetrator	-.027	.026	.139	.139	.126	.020	.062	.039	.054	.117
i5 Perpetrator	.043	.061	.054	.122	.080	.054	.064	.052	.066	.112
i6 Perpetrator	-.002	.073	.042	.053	.101	-.023	-.017	.023	.007	.088
i7 Perpetrator	.021	.070	.074	.151	.073	-.009	-.006	.011	.033	.072
i8 Perpetrator	.021	.005	.066	.050	.026	-.014	.026	-.017	.038	-.010
i9 Perpetrator	-.024	.061	.113	.119	.087	.037	-.004	-.035	.067	.098
i10 Perpetrator	-.018	.062	.083	.009	.109	.006	-.040	-.023	.034	.088
i11 Assistant	.073	.094	.091	.062	.075	.053	.085	.002	.069	.046
i12 Assistant	.077	.085	.065	.077	.096	.033	.077	.057	.038	.053
i13 Assistant	.035	.076	.067	.111	.083	.026	.083	.026	.015	.063
i14 Assistant	.033	.101	.079	.089	.072	.000	.060	.005	.090	.044
i15 Assistant	-.008	.101	.081	.042	.109	.012	.002	-.022	.052	.066
i16 Assistant	.055	.088	.082	.057	.041	.040	.045	.026	.038	.013
i17 Assistant	.005	.045	.088	.065	.063	.019	-.009	-.017	.024	.034
i18 Assistant	.003	.038	.051	.132	.058	-.006	.038	.000	.046	.048
i19 Assistant	.063	.037	.118	.075	.072	.054	.088	.010	.064	.051
i20 Assistant	.078	.037	.119	.073	.082	.096	.091	.067	.095	.084
i21 Target	.257	.292	.317	.286	.335	.304	.280	.274	.314	.309
i22 Target	.237	.281	.299	.294	.343	.286	.265	.275	.276	.286
i23 Target	.239	.287	.306	.269	.312	.233	.249	.245	.245	.267
i24 Target	.231	.244	.272	.268	.290	.224	.223	.214	.217	.261
i25 Target	.190	.249	.264	.296	.291	.196	.246	.283	.262	.286
i26 Target	.233	.301	.302	.320	.320	.251	.279	.306	.298	.345
i27 Target	.285	.341	.353	.336	.358	.280	.286	.305	.309	.346
i28 Target	.279	.326	.355	.323	.345	.279	.256	.287	.280	.323
i29 Target	.214	.286	.330	.335	.323	.226	.270	.304	.310	.314
i30 Target	.242	.315	.343	.348	.299	.257	.289	.292	.312	.337
i31 Defender	–	.592	.534	.548	.525	.607	.577	.533	.516	.484
i32 Defender	.647	–	.588	.590	.605	.599	.540	.548	.572	.563
i33 Defender	.554	.600	–	.693	.691	.580	.542	.571	.611	.633
i34 Defender	.610	.648	.719	–	.715	.583	.639	.661	.580	.678
i35 Defender	.580	.643	.694	.757	–	.640	.619	.658	.573	.705
i36 Defender	.678	.655	.592	.651	.690	–	.638	.608	.633	.628
i37 Defender	.633	.603	.571	.709	.663	.705	–	.747	.667	.637
i38 Defender	.582	.579	.595	.714	.682	.659	.797	–	.676	.657
i39 Defender	.587	.620	.644	.662	.632	.694	.734	.727	–	.637
i40 Defender	.541	.613	.647	.746	.741	.693	.690	.707	.711	–
i41 Outsider	.071	.115	.136	.170	.092	.013	.075	-.027	.129	.060
i42 Outsider	.036	.199	.118	.175	.180	.107	.085	.025	.135	.164
i43 Outsider	-.052	.053	-.007	.018	-.003	-.010	-.001	-.092	.057	.020
i44 Outsider	-.101	.101	.105	.142	.131	.024	.072	.008	.088	.122
i45 Outsider	-.028	-.032	.029	.041	.022	-.049	.023	-.039	.000	-.015
i46 Outsider	-.026	.077	.107	.100	.088	-.021	-.034	-.030	.040	.031
i47 Outsider	-.080	.023	.037	.067	.001	-.008	.039	-.087	.072	-.004
i48 Outsider	-.063	.041	.136	.118	.050	.067	.033	-.013	.038	-.009
i49 Outsider	.029	.061	.166	.075	.077	.068	.025	-.021	.098	.038
i50 Outsider	.009	.060	.104	.051	.017	.006	.011	.727	.061	-.003
<i>M</i>	1.697	1.663	1.572	1.190	1.508	1.902	1.321	1.398	1.590	1.353
<i>SD</i>	1.430	1.410	1.491	1.359	1.393	1.392	1.446	1.401	1.490	1.414
<i>Sk</i>	0.513	0.511	0.557	1.013	0.666	0.320	0.781	0.761	0.530	0.782
<i>K</i>	-1.094	-1.052	-1.136	-0.236	-0.813	-1.231	-0.787	-0.727	-1.151	-0.731

Table A1 continued										
	Bullying Participant Behavior Questionnaire: Outsider Items									
	i41	i42	i43	i44	i45	i46	i47	i48	i49	i50
i1 Perpetrator	.227	.234	.205	.257	.201	.192	.261	.257	.157	.221
i2 Perpetrator	.336	.313	.270	.382	.266	.328	.299	.331	.282	.373
i3 Perpetrator	.260	.174	.263	.280	.232	.205	.204	.187	.140	.171
i4 Perpetrator	.209	.229	.159	.275	.226	.201	.250	.191	.169	.260
i5 Perpetrator	.265	.180	.164	.284	.314	.189	.185	.174	.137	.199
i6 Perpetrator	.284	.225	.259	.279	.236	.237	.200	.223	.180	.239
i7 Perpetrator	.317	.190	.247	.267	.281	.237	.305	.248	.255	.398
i8 Perpetrator	.260	.145	.163	.252	.195	.253	.255	.291	.195	.306
i9 Perpetrator	.358	.281	.309	.404	.369	.227	.312	.332	.257	.271
i10 Perpetrator	.208	.242	.271	.199	.218	.188	.237	.213	.162	.194
i11 Assistant	.236	.154	.227	.238	.204	.237	.209	.227	.306	.245
i12 Assistant	.156	.080	.119	.119	.148	.158	.111	.132	.183	.184
i13 Assistant	.270	.189	.192	.285	.278	.204	.325	.287	.245	.311
i14 Assistant	.238	.206	.141	.231	.245	.233	.210	.180	.315	.340
i15 Assistant	.244	.221	.259	.257	.235	.209	.182	.237	.271	.290
i16 Assistant	.266	.227	.273	.243	.275	.263	.335	.296	.210	.351
i17 Assistant	.298	.295	.307	.410	.316	.298	.332	.293	.247	.380
i18 Assistant	.354	.160	.231	.272	.371	.273	.351	.297	.235	.382
i19 Assistant	.301	.212	.209	.214	.274	.222	.183	.204	.200	.246
i20 Assistant	.153	.044	.128	.205	.204	.274	.153	.282	.309	.191
i21 Target	.242	.172	.181	.180	.126	.186	.149	.183	.161	.084
i22 Target	.180	.157	.178	.198	.108	.170	.142	.184	.146	.136
i23 Target	.236	.124	.128	.228	.153	.119	.132	.127	.140	.133
i24 Target	.231	.182	.146	.202	.181	.100	.113	.153	.117	.139
i25 Target	.199	.171	.155	.267	.161	.258	.185	.227	.197	.098
i26 Target	.212	.146	.160	.264	.151	.232	.170	.186	.151	.095
i27 Target	.273	.186	.189	.244	.169	.189	.155	.180	.235	.184
i28 Target	.282	.184	.207	.260	.158	.210	.142	.171	.198	.169
i29 Target	.250	.157	.171	.201	.175	.198	.165	.193	.186	.147
i30 Target	.187	.128	.111	.186	.185	.121	.090	.107	.157	.083
i31 Defender	.076	.026	-.028	-.051	-.003	-.017	-.058	-.046	.032	.003
i32 Defender	.088	.163	.052	.092	-.018	.057	.025	.045	.059	.031
i33 Defender	.125	.130	-.005	.088	.014	.088	.009	.090	.119	.080
i34 Defender	.139	.158	.034	.110	.041	.061	.038	.040	.047	.051
i35 Defender	.059	.155	.008	.082	-.022	.059	-.020	.020	.046	.006
i36 Defender	.022	.087	-.012	.027	-.017	-.005	-.029	.043	.047	.025
i37 Defender	.056	.074	.015	.048	.027	-.031	-.003	.005	.001	-.001
i38 Defender	-.014	.029	-.046	.018	-.041	-.020	-.075	-.030	-.025	-.051
i39 Defender	.074	.109	.066	.064	.016	.034	.027	.018	.068	.043
i40 Defender	.046	.137	.043	.106	.006	.027	-.004	.002	.032	-.009
i41 Outsider	–	.484	.394	.473	.472	.440	.458	.418	.308	.412
i42 Outsider	.648	–	.368	.531	.240	.351	.449	.391	.389	.303
i43 Outsider	.596	.565	–	.456	.482	.434	.548	.429	.430	.409
i44 Outsider	.623	.659	.627	–	.362	.523	.519	.524	.450	.412
i45 Outsider	.612	.443	.664	.522	–	.431	.496	.463	.371	.421
i46 Outsider	.558	.513	.564	.635	.563	–	.596	.582	.583	.481
i47 Outsider	.638	.628	.696	.633	.670	.677	–	.672	.527	.471
i48 Outsider	.608	.593	.638	.649	.690	.684	.814	–	.576	.482
i49 Outsider	.531	.598	.611	.615	.594	.680	.716	.737	–	.493
i50 Outsider	.567	.505	.581	.581	.599	.594	.616	.646	.627	1.000
<i>M</i>	0.236	0.410	0.272	0.286	0.233	0.212	0.265	0.227	0.288	0.163
<i>SD</i>	0.662	0.897	0.686	0.707	0.645	0.613	0.669	0.691	0.723	0.584
<i>Sk</i>	3.893	2.726	3.299	3.293	3.777	3.981	3.322	3.915	3.197	4.688
<i>K</i>	17.409	7.430	12.410	12.319	16.473	18.609	12.757	16.588	11.196	24.419
<i>Note.</i> <i>Note.</i> Smoothed polychoric correlations produced by EQS 6.3 (Bentler & Wu, 2012), Pearson correlations produced by SPSS 25 (IBM, 2017)										

Table A2*Descriptive Statistics for Bullying Participant Behavior Questionnaire Items with an Elementary School EFA and CFA Samples*

Bullying Participant Behavior Questionnaire Item	Elementary School Sample (N = 683)			
	<i>M</i>	<i>SD</i>	<i>Sk</i>	<i>K</i>
Perpetrator Items				
1. I have called another student bad names.	0.41	0.78	2.48	7.09
2. I have made fun of another student.	0.32	0.68	2.92	10.73
3. I have purposely left out another student.	0.33	0.68	2.65	8.69
4. I have pushed, punched, or slapped another student.	0.20	0.65	4.25	19.89
5. I have told lies about another student.	0.15	0.51	4.43	23.30
6. I have tried to make people dislike another student.	0.13	0.44	4.37	22.67
7. I have stolen things from another student.	0.08	0.40	6.90	57.25
8. I have thrown things at another student.	0.12	0.44	5.11	33.57
9. I have said bad things about another student.	0.29	0.67	3.22	12.64
10. I have talked about someone behind their back.	0.44	0.84	2.46	6.57
Assistant Items				
11. When someone was making fun of another student, I joined in.	0.21	0.62	3.99	18.25
12. When someone was verbally threatening another student, I joined in.	0.11	0.52	5.65	34.50
13. When someone bumped into another person, I joined in.	0.10	0.42	6.20	47.52
14. I have made fun of someone when they were pushed, punched, or slapped.	0.08	0.38	6.96	58.05
15. I have made fun of someone who was being called mean names.	0.10	0.41	5.80	43.37
16. When someone else broke something that belonged to another student, I stopped to watch.	0.30	0.71	3.27	12.64
17. When someone else tripped another student on purpose, I laughed.	0.14	0.48	4.62	26.58
18. When someone else knocked books out of another student's hands on purpose, I laughed.	0.05	0.33	8.80	86.70
19. When someone else pinched or poked another student, I joined in.	0.14	0.51	5.18	31.79
20. When someone else threw something at another student, I joined in.	0.08	0.45	6.85	51.45
Target Items				
21. I have been called mean names.	1.35	1.38	0.83	-0.56
22. I have been made fun of.	1.15	1.32	1.10	0.03
23. I have been purposely left out of something.	1.10	1.34	1.12	0.05
24. I have been ignored.	1.36	1.39	0.88	-0.51
25. I have been pushed around, punched or slapped.	0.67	1.21	1.81	2.08
26. I have been pushed or shoved.	0.90	1.26	1.46	1.04
27. People have told lies about me.	1.09	1.37	1.09	-0.14
28. People have tried to make others dislike me.	0.96	1.35	1.30	0.38
29. I have been threatened by others.	0.69	1.23	1.82	2.07
30. I have had things taken from me.	0.92	1.29	1.37	0.67

Table A2 continues

Table A2 continued

Bullying Participant Behavior Questionnaire Item	Elementary School Sample ($N = 683$)			
	<i>M</i>	<i>SD</i>	<i>Sk</i>	<i>K</i>
Defender Items				
31. I tried to become friends with someone after they were picked on.	1.70	1.43	0.51	-1.09
32. I encouraged someone to tell an adult after they were picked on.	1.66	1.41	0.51	-1.05
33. I defended someone who was being pushed, punched, or slapped.	1.57	1.49	0.56	-1.14
34. I defended someone who had things purposely taken from them.	1.19	1.36	1.01	-0.24
35. I defended someone who was being called mean names.	1.51	1.39	0.67	-0.81
36. I tried to include someone if they were being purposely left out.	1.90	1.39	0.32	-1.23
37. I helped someone who had their books knocked out of their hands on purpose.	1.32	1.45	0.78	-0.79
38. I helped someone who was purposely tripped.	1.40	1.40	0.76	-0.73
39. When I saw someone being physically harmed, I told an adult.	1.59	1.49	0.53	-1.15
40. I defended someone who I thought was being tricked on purpose.	1.35	1.41	0.78	-0.73
Outsider Items				
41. I pretended not to notice when things were taken or stolen from another student.	0.24	0.66	3.89	17.41
42. I pretended not to notice when rumors were being spread about other students.	0.41	0.90	2.73	7.43
43. I ignored it when I saw someone making fun of another student.	0.27	0.69	3.30	12.41
44. I pretended not to notice a situation that purposely left someone out.	0.29	0.71	3.29	12.32
45. I ignored it when I saw someone breaking or damaging another student's things.	0.23	0.65	3.78	16.47
46. I pretended not to notice when someone else tripped another student on purpose.	0.21	0.61	3.98	18.61
47. I ignored it when someone else punched or poked another student.	0.27	0.67	3.32	12.76
48. I ignored it when someone else threw something at another student.	0.23	0.69	3.92	16.59
49. I ignored it when someone else tricked another student.	0.29	0.72	3.20	11.20
50. I pretended not to notice when someone was destroying another student's property.	0.16	0.58	4.69	24.42

Note. *Sk* = Skewness, *K* = Kurtosis. Mardia's (1970) normalized multivariate kurtosis estimate for the BPBS elementary sample was 517.72.

Table A3

Exploratory Factor Analysis Results (Principal Axis with Promax Rotation [$k = 4$]) of the Bullying Participant Behavior Questionnaire Five-Factor Extraction with an Elementary School Sample ($N = 683$)

BPBQ		G	F1: Outsider		F2: Perpetrator		F3: Defender		F4: Target		F5: Assistant		h^2
Item	Subscale	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	
i1	Perpetrator	.568	.018	.456	.821	.731	-.038	.073	.103	.399	-.230	.342	.568
i2	Perpetrator	.714	.095	.593	.849	.841	.004	.087	-.013	.396	-.103	.496	.714
i3	Perpetrator	.435	-.033	.432	.623	.656	-.053	.061	.078	.358	.036	.437	.435
i4	Perpetrator	.558	-.070	.491	.621	.730	.008	.143	.082	.435	.179	.566	.558
i5	Perpetrator	.618	-.131	.485	.725	.768	.046	.146	-.019	.392	.211	.591	.618
i6	Perpetrator	.620	-.032	.538	.702	.774	-.009	.074	-.056	.346	.191	.596	.620
i7	Perpetrator	.517	.194	.601	.368	.656	.031	.110	-.038	.336	.272	.620	.517
i8	Perpetrator	.513	.177	.595	.351	.650	-.053	.045	.000	.328	.292	.621	.513
i9	Perpetrator	.692	.063	.571	.817	.827	-.040	.080	.075	.437	-.100	.487	.692
i10	Perpetrator	.578	-.064	.428	.915	.744	.016	.061	-.071	.298	-.149	.369	.578
i11	Assistant	.565	.069	.566	.272	.633	-.012	.097	-.009	.344	.501	.714	.565
i12	Assistant	.652	-.067	.463	-.037	.476	-.007	.119	.000	.303	.872	.805	.652
i13	Assistant	.528	.167	.586	.140	.588	-.048	.099	.102	.392	.456	.686	.528
i14	Assistant	.635	.160	.635	.412	.712	.109	.169	-.116	.345	.370	.706	.635
i15	Assistant	.599	.098	.592	.556	.754	-.022	.118	.098	.449	.137	.591	.599
i16	Assistant	.409	.318	.578	.081	.502	-.005	.081	.015	.296	.314	.574	.409
i17	Assistant	.631	.229	.666	.508	.755	-.013	.075	-.026	.368	.168	.627	.631
i18	Assistant	.643	.198	.660	.303	.692	.008	.106	-.036	.361	.428	.735	.643
i19	Assistant	.664	.089	.596	.120	.608	-.002	.121	-.001	.359	.670	.803	.664
i20	Assistant	.707	.093	.587	.000	.557	.014	.132	-.020	.337	.785	.838	.707
i21	Target	.664	.076	.302	.056	.390	.026	.400	.808	.805	-.178	.235	.664
i22	Target	.758	.071	.316	.012	.399	-.027	.393	.905	.863	-.153	.259	.758
i23	Target	.647	-.064	.260	.102	.408	-.048	.347	.825	.798	-.073	.275	.647
i24	Target	.577	-.065	.280	.199	.450	-.043	.315	.729	.746	-.087	.285	.577
i25	Target	.594	.088	.330	-.192	.326	-.002	.371	.763	.756	.137	.376	.594
i26	Target	.669	-.007	.310	-.125	.365	.004	.403	.807	.809	.158	.398	.669
i27	Target	.651	.002	.324	.064	.433	.083	.443	.728	.802	.006	.353	.651
i28	Target	.722	.001	.328	.089	.452	.039	.430	.805	.847	-.052	.335	.722
i29	Target	.709	-.055	.343	.021	.458	.071	.452	.738	.828	.166	.451	.709
i30	Target	.604	-.046	.268	-.100	.339	.074	.436	.727	.764	.168	.377	.604

Table A3 continues

Table A3 continued

BPBQ		G	F1: Outsider		F2: Perpetrator		F3: Defender		F4: Target		F5: Assistant		h^2
Item	Subscale	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	
i31	Defender	.550	-.087	-.030	-.107	.004	.719	.731	.028	.336	.111	.110	.550
i32	Defender	.590	.062	.087	.062	.128	.761	.763	.017	.392	-.113	.090	.590
i33	Defender	.592	.017	.117	.052	.170	.741	.764	.031	.423	.007	.179	.592
i34	Defender	.739	.064	.119	-.057	.123	.848	.856	.005	.433	.057	.194	.739
i35	Defender	.716	-.032	.075	.164	.182	.834	.838	.003	.436	-.092	.123	.716
i36	Defender	.688	.060	.025	-.010	.043	.847	.823	-.016	.361	-.122	.035	.688
i37	Defender	.729	.008	.041	-.188	.019	.838	.841	-.004	.379	.166	.178	.729
i38	Defender	.721	-.133	-.047	-.128	.001	.814	.833	.037	.384	.164	.138	.721
i39	Defender	.686	.086	.091	.000	.104	.832	.825	-.001	.402	-.077	.106	.686
i40	Defender	.725	-.053	.045	.161	.157	.848	.844	-.009	.419	-.097	.099	.725
i41	Outsider	.582	.664	.753	.067	.567	.002	.104	.103	.386	.008	.516	.582
i42	Outsider	.574	.777	.727	.175	.524	.169	.155	-.108	.260	-.217	.374	.574
i43	Outsider	.610	.790	.778	.037	.527	-.051	-.002	.003	.268	-.053	.467	.610
i44	Outsider	.617	.789	.777	.089	.551	.029	.092	.047	.339	-.143	.440	.617
i45	Outsider	.592	.631	.751	-.028	.533	-.094	-.006	.036	.294	.207	.591	.592
i46	Outsider	.602	.799	.768	-.158	.456	-.030	.042	.052	.293	.091	.514	.602
i47	Outsider	.788	.985	.880	-.053	.535	-.041	.006	.012	.287	-.112	.480	.788
i48	Outsider	.760	.891	.871	-.048	.563	-.024	.045	.035	.331	.000	.548	.760
i49	Outsider	.669	.837	.810	-.144	.485	.030	.078	-.017	.284	.115	.554	.669
i50	Outsider	.582	.702	.753	.066	.530	.023	.028	-.128	.209	.083	.525	.582
Eigenvalue			18.12		8.17		3.09		2.25		1.70		
% S^2			35.49		15.67		5.51		3.77		2.68		
α			.89		.88 ¹ .88 ²		.94		.93		.81 ¹		
Factor Correlations			F1		F2		F3		F4				
F1: Outsider			—										
F2: Perpetrator			.669		—								
F3: Defender			.065		.117		—						
F4: Target			.371		.487		.483		—				
F5: Assistant			.637		.640		.155		.401				

Note. G = general (factor identified by first unrotated dimension), *P* = factor pattern coefficient, *S* = factor structure coefficient (item correlation with factor), h^2 = communality estimate, α (coefficient alpha based on salient items on factor). Salient factor pattern coefficients ($\geq .40$) presented in bold. Items 7 (Perpetrator), 8 (Perpetrator), and 16 (Assistant) did not have salient factor pattern coefficients on any factor but items 7 and 8 were aligned with the theoretically correct factor. ¹Alpha coefficient included only salient items. ²Alpha coefficient included all salient items plus aligned items 7 and 8.

Table A4

Exploratory Factor Analysis Results (Principal Axis with Promax Rotation [$k = 4$]) of the Bullying Participant Behavior Questionnaire Five-Factor Extraction with an Elementary School Sample ($N = 683$) Without Item 16

BPBQ		G	F1: Outsider		F2: Perpetrator		F3: Defender		F4: Target		F5: Assistant		h^2
Item	Subscale	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	
i1	Perpetrator	.606	.015	.453	.817	.730	-.038	.073	.104	.398	-.227	.332	.566
i2	Perpetrator	.725	.093	.592	.844	.840	.004	.087	-.013	.396	-.096	.490	.713
i3	Perpetrator	.574	-.036	.426	.636	.656	-.052	.061	.079	.358	.019	.420	.435
i4	Perpetrator	.684	-.071	.490	.619	.730	.007	.143	.082	.435	.186	.565	.559
i5	Perpetrator	.688	-.132	.482	.728	.769	.046	.146	-.019	.392	.211	.586	.619
i6	Perpetrator	.687	-.033	.537	.704	.775	-.009	.074	-.056	.346	.193	.592	.622
i7	Perpetrator	.672	.191	.598	.377	.657	.030	.110	-.038	.336	.267	.614	.516
i8	Perpetrator	.657	.174	.593	.356	.651	-.053	.045	.000	.328	.293	.618	.514
i9	Perpetrator	.720	.060	.568	.815	.826	-.040	.080	.076	.437	-.096	.478	.691
i10	Perpetrator	.576	-.066	.424	.918	.744	.017	.061	-.071	.298	-.154	.357	.580
i11	Assistant	.671	.067	.563	.286	.635	-.013	.097	-.009	.344	.492	.708	.563
i12	Assistant	.587	-.068	.459	-.013	.477	-.008	.119	.001	.303	.851	.799	.642
i13	Assistant	.668	.164	.581	.156	.589	-.048	.099	.103	.391	.444	.678	.523
i14	Assistant	.732	.156	.632	.422	.713	.109	.169	-.116	.345	.365	.701	.634
i15	Assistant	.732	.096	.591	.556	.754	-.022	.118	.098	.449	.143	.588	.601
i17	Assistant	.732	.224	.660	.521	.755	-.013	.075	-.024	.367	.156	.613	.627
i18	Assistant	.734	.194	.657	.311	.693	.008	.105	-.035	.360	.427	.732	.644
i19	Assistant	.695	.087	.591	.142	.610	-.003	.121	.000	.358	.652	.795	.655
i20	Assistant	.679	.090	.585	.012	.558	.013	.132	-.020	.336	.785	.843	.716
i21	Target	.569	.076	.300	.055	.389	.026	.400	.808	.805	-.178	.229	.664
i22	Target	.598	.071	.314	.009	.399	-.027	.392	.905	.863	-.150	.255	.758
i23	Target	.560	-.063	.258	.101	.408	-.047	.347	.824	.798	-.073	.270	.647
i24	Target	.563	-.066	.276	.205	.450	-.042	.315	.730	.746	-.097	.273	.579
i25	Target	.568	.088	.330	-.198	.325	-.003	.371	.763	.757	.148	.381	.597
i26	Target	.595	-.009	.305	-.120	.364	.004	.403	.807	.808	.154	.393	.668
i27	Target	.620	.001	.321	.069	.433	.083	.443	.728	.802	.000	.346	.650
i28	Target	.638	.002	.327	.087	.453	.040	.430	.805	.847	-.050	.331	.722
i29	Target	.667	-.054	.343	.019	.458	.070	.451	.737	.829	.172	.453	.711
i30	Target	.562	-.046	.267	-.098	.339	.074	.436	.726	.764	.168	.377	.605

Table A4 continues

Table A4 continued

BPBQ		G	F1: Outsider		F2: Perpetrator		F3: Defender		F4: Target		F5: Assistant		h^2
Item	Subscale	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	
i31	Defender	.212	-.086	-.031	-.101	.004	.719	.731	.028	.336	.104	.110	.549
i32	Defender	.312	.061	.085	.066	.128	.762	.763	.017	.392	-.120	.085	.592
i33	Defender	.364	.017	.116	.050	.169	.741	.764	.031	.423	.010	.179	.591
i34	Defender	.368	.063	.119	-.058	.123	.847	.856	.005	.433	.060	.197	.740
i35	Defender	.358	-.032	.074	.159	.181	.834	.838	.003	.436	-.088	.123	.715
i36	Defender	.250	.059	.023	-.008	.042	.847	.823	-.016	.361	-.126	.031	.689
i37	Defender	.284	.008	.041	-.187	.019	.838	.841	-.004	.379	.167	.183	.730
i38	Defender	.239	-.132	-.048	-.127	.000	.813	.833	.037	.384	.163	.141	.721
i39	Defender	.321	.085	.090	-.002	.104	.832	.825	-.001	.402	-.075	.106	.686
i40	Defender	.331	-.052	.045	.156	.157	.848	.843	-.010	.420	-.092	.101	.724
i41	Outsider	.685	.660	.752	.073	.569	.002	.104	.103	.386	.008	.510	.582
i42	Outsider	.605	.772	.727	.179	.525	.170	.155	-.108	.260	-.216	.365	.574
i43	Outsider	.621	.784	.777	.045	.529	-.050	-.001	.004	.268	-.056	.459	.608
i44	Outsider	.659	.784	.778	.089	.553	.029	.092	.047	.339	-.135	.437	.618
i45	Outsider	.646	.626	.750	-.020	.535	-.094	-.006	.037	.294	.207	.588	.592
i46	Outsider	.616	.794	.769	-.156	.457	-.031	.042	.052	.292	.098	.515	.604
i47	Outsider	.668	.977	.879	-.048	.537	-.041	.006	.013	.287	-.109	.474	.785
i48	Outsider	.708	.886	.873	-.048	.565	-.025	.045	.035	.331	.011	.548	.763
i49	Outsider	.654	.835	.814	-.146	.487	.029	.078	-.018	.284	.129	.559	.678
i50	Outsider	.613	.695	.751	.076	.531	.022	.028	-.126	.209	.080	.518	.578
Eigenvalue			17.77		8.13		3.08		2.25		1.68		
% S^2			35.51		15.91		5.60		3.85		2.70		
α			.89		.88 ¹ .88 ²		.94		.93		.81 ¹		
Factor Correlations			F1		F2		F3		F4				
F1: Outsider			—										
F2: Perpetrator			.667		—								
F3: Defender			.065		.116		—						
F4: Target			.368		.486		.483		—				
F5: Assistant			.629		.629		.155		.397				

Note. G = general (factor identified by first unrotated dimension), *P* = factor pattern coefficient, *S* = factor structure coefficient (item correlation with factor), h^2 = communality estimate, α (coefficient alpha based on salient items on factor). Salient factor pattern coefficients ($\geq .40$) presented in bold. Items 7 (Perpetrator) and 8 (Perpetrator) did not have salient factor pattern coefficients on the Perpetrator factor but had pattern coefficients that were aligned. ¹Alpha coefficient included all salient items. ²Alpha coefficient included all salient items plus aligned items 7 and 8.

Table A5

Exploratory Factor Analysis Results (Principal Axis with Promax Rotation [$k = 4$]) of the Bullying Participant Behavior Questionnaire Four-Factor Extraction with an Elementary School Sample ($N = 683$)

		F1: Perpetrator/ Assistant			F2: Outsider		F3: Defender		F4: Target		h^2
BPBQ Item	Subscale	G <i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	
i1	Perpetrator	.462	.674	.663	-.107	.413	-.103	.066	.162	.408	.462
i2	Perpetrator	.638	.792	.797	-.010	.554	-.053	.084	.040	.404	.638
i3	Perpetrator	.423	.664	.643	-.084	.409	-.078	.062	.100	.361	.423
i4	Perpetrator	.559	.757	.741	-.085	.476	.001	.149	.087	.433	.559
i5	Perpetrator	.622	.889	.780	-.153	.468	.039	.151	-.016	.390	.622
i6	Perpetrator	.622	.853	.786	-.058	.521	-.020	.079	-.048	.345	.622
i7	Perpetrator	.518	.569	.702	.216	.600	.041	.121	-.050	.328	.518
i8	Perpetrator	.510	.561	.696	.211	.596	-.039	.057	-.014	.320	.510
i9	Perpetrator	.627	.764	.785	-.037	.533	-.092	.078	.122	.444	.627
i10	Perpetrator	.483	.819	.682	-.179	.387	-.047	.055	-.010	.310	.483
i11	Assistant	.518	.606	.709	.172	.583	.031	.115	-.046	.330	.518
i12	Assistant	.387	.509	.605	.173	.509	.091	.145	-.077	.280	.387
i13	Assistant	.483	.450	.666	.266	.603	-.003	.117	.061	.377	.483
i14	Assistant	.630	.677	.771	.203	.640	.129	.183	-.135	.334	.630
i15	Assistant	.598	.668	.767	.074	.576	-.034	.124	.107	.447	.598
i16	Assistant	.394	.301	.566	.380	.590	.021	.095	-.009	.285	.394
i17	Assistant	.632	.646	.780	.210	.653	-.023	.083	-.020	.363	.632
i18	Assistant	.622	.603	.764	.268	.670	.040	.122	-.066	.347	.622
i19	Assistant	.544	.557	.714	.250	.626	.066	.144	-.058	.339	.544
i20	Assistant	.515	.506	.682	.292	.624	.099	.158	-.087	.314	.515
i21	Target	.657	-.063	.373	.037	.285	.007	.397	.824	.810	.657
i22	Target	.757	-.092	.388	.045	.301	-.039	.391	.916	.867	.757
i23	Target	.648	.054	.401	-.079	.247	-.052	.347	.828	.802	.648
i24	Target	.575	.144	.436	-.094	.263	-.055	.313	.739	.751	.575
i25	Target	.569	-.103	.369	.151	.339	.032	.380	.729	.746	.569
i26	Target	.641	-.023	.406	.059	.319	.040	.412	.770	.799	.641
i27	Target	.652	.068	.445	.007	.318	.086	.445	.724	.802	.652
i28	Target	.724	.055	.454	-.010	.317	.035	.431	.809	.849	.724
i29	Target	.691	.129	.495	-.002	.348	.099	.459	.710	.821	.691
i30	Target	.578	.009	.380	.018	.278	.109	.444	.691	.754	.578

Table A5 continues

Table A5 continued

BPBQ Item	Subscale	G	F1: Perpetrator/ Assistant		F2: Outsider		F3: Defender		F4: Target		h^2
		<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	
i31	Defender	.545	-.042	.038	-.054	-.013	.738	.734	.014	.330	.545
i32	Defender	.575	-.011	.127	.013	.084	.740	.758	.038	.393	.575
i33	Defender	.591	.056	.187	.003	.120	.738	.765	.036	.420	.591
i34	Defender	.741	-.020	.157	.069	.130	.856	.859	.001	.427	.741
i35	Defender	.699	.104	.179	-.084	.069	.811	.832	.025	.438	.699
i36	Defender	.674	-.093	.044	.016	.025	.828	.817	.004	.362	.674
i37	Defender	.719	-.085	.071	.056	.063	.865	.845	-.024	.369	.719
i38	Defender	.710	-.028	.045	-.086	-.026	.841	.836	.015	.375	.710
i39	Defender	.678	-.052	.114	.052	.092	.819	.822	.014	.400	.678
i40	Defender	.707	.098	.153	-.106	.039	.826	.837	.013	.421	.707
i41	Outsider	.576	.096	.598	.638	.745	-.015	.111	.116	.382	.576
i42	Outsider	.499	.069	.520	.661	.699	.113	.153	-.058	.264	.499
i43	Outsider	.594	.028	.551	.746	.768	-.077	.005	.024	.265	.594
i44	Outsider	.578	.027	.562	.710	.756	-.009	.095	.079	.339	.578
i45	Outsider	.590	.127	.595	.670	.760	-.081	.008	.022	.283	.590
i46	Outsider	.604	-.082	.511	.817	.775	-.029	.054	.049	.284	.604
i47	Outsider	.759	-.096	.561	.926	.867	-.074	.012	.039	.284	.759
i48	Outsider	.755	-.024	.604	.871	.868	-.042	.055	.049	.325	.755
i49	Outsider	.672	-.051	.545	.858	.819	.032	.090	-.019	.274	.672
i50	Outsider	.580	.145	.572	.692	.753	.012	.037	-.120	.202	.580
Eigenvalue			18.12		8.17		3.09		2.25		
%S ²			35.42		15.64		5.48		3.72		
α			.88 ¹		.89		.94		.93		
Factor Correlations			F1		F2		F3				
F1: Perpetrator & Assistant			—								
F2: Outsider			.700		—						
F3: Defender			.150		.088		—				
F4: Target			.496		.353		.481				

Note. G = general (factor identified by first unrotated dimension), *P* = factor pattern coefficient, *S* = factor structure coefficient (item correlation with factor), h^2 = communality estimate, α (coefficient alpha based on salient items on factor). Salient factor pattern coefficients ($\geq .40$) presented in bold. ¹Alpha coefficient included only salient Perpetrator/Assistant items. Item 16 (Assistant) had no salient factor pattern coefficients on any factor.

Table A6

Exploratory Factor Analysis Results (Principal Axis with Promax Rotation [$k = 4$]) of the Bullying Participant Behavior Questionnaire Four-Factor Extraction with an Elementary School Sample ($N = 683$) Without Item 16

BPBQ		F1: Perpetrator/ Assistant										
Item	Subscale	G <i>S</i>	Assistant <i>P</i> <i>S</i>		F2: Outsider <i>P</i> <i>S</i>		F3: Defender <i>P</i> <i>S</i>		F4: Target <i>P</i> <i>S</i>		<i>h</i> ²	
i1	Perpetrator	.603	.673	.663	-.107	.410	-.101	.066	.160	.409	.462	
i2	Perpetrator	.723	.795	.799	-.009	.554	-.051	.083	.036	.404	.641	
i3	Perpetrator	.574	.665	.640	-.092	.400	-.079	.060	.102	.362	.421	
i4	Perpetrator	.684	.759	.743	-.085	.474	.003	.148	.085	.434	.561	
i5	Perpetrator	.689	.891	.781	-.155	.463	.040	.150	-.017	.391	.624	
i6	Perpetrator	.688	.857	.787	-.060	.518	-.019	.078	-.050	.346	.625	
i7	Perpetrator	.672	.576	.702	.208	.595	.041	.120	-.050	.329	.517	
i8	Perpetrator	.657	.567	.697	.206	.592	-.038	.056	-.015	.321	.510	
i9	Perpetrator	.718	.766	.786	-.038	.530	-.090	.077	.120	.444	.628	
i10	Perpetrator	.574	.819	.682	-.179	.383	-.046	.054	-.012	.310	.483	
i11	Assistant	.669	.612	.708	.163	.577	.030	.113	-.044	.332	.517	
i12	Assistant	.579	.516	.602	.158	.499	.089	.143	-.073	.281	.382	
i13	Assistant	.666	.457	.665	.255	.595	-.004	.115	.064	.378	.479	
i14	Assistant	.732	.684	.771	.195	.635	.129	.181	-.135	.335	.629	
i15	Assistant	.733	.671	.769	.073	.574	-.033	.123	.104	.448	.601	
i17	Assistant	.733	.651	.778	.200	.645	-.023	.081	-.018	.365	.627	
i18	Assistant	.734	.610	.765	.260	.665	.041	.121	-.066	.348	.621	
i19	Assistant	.691	.565	.712	.235	.616	.065	.142	-.054	.341	.538	
i20	Assistant	.672	.515	.682	.281	.618	.098	.156	-.086	.315	.513	
i21	Target	.570	-.065	.373	.038	.283	.007	.397	.825	.809	.657	
i22	Target	.599	-.094	.388	.047	.300	-.039	.391	.916	.867	.757	
i23	Target	.561	.051	.401	-.078	.244	-.053	.346	.829	.802	.648	
i24	Target	.564	.142	.434	-.097	.257	-.056	.313	.741	.751	.576	
i25	Target	.568	-.102	.371	.152	.339	.032	.380	.728	.746	.570	
i26	Target	.595	-.023	.404	.054	.312	.038	.411	.773	.799	.641	
i27	Target	.621	.067	.444	.004	.313	.085	.445	.726	.802	.652	
i28	Target	.639	.053	.454	-.009	.315	.035	.431	.809	.849	.724	
i29	Target	.667	.129	.496	-.001	.346	.099	.459	.710	.821	.692	
i30	Target	.562	.009	.380	.016	.274	.108	.444	.693	.755	.579	

Table A6 continues

Table A6 continued

BPBQ Item	Subscale	G	F1: Perpetrator/ Assistant		F2: Outsider		F3: Defender		F4: Target		h^2
		<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	
i31	Defender	.212	-.041	.037	-.056	-.016	.737	.734	.016	.330	.545
i32	Defender	.312	-.010	.126	.012	.081	.740	.758	.038	.393	.575
i33	Defender	.365	.058	.187	.004	.119	.739	.765	.036	.420	.591
i34	Defender	.369	-.018	.157	.069	.129	.856	.859	.000	.427	.741
i35	Defender	.359	.104	.180	-.080	.069	.812	.832	.024	.437	.699
i36	Defender	.250	-.092	.043	.015	.023	.827	.817	.005	.362	.674
i37	Defender	.285	-.082	.072	.055	.063	.864	.845	-.025	.369	.719
i38	Defender	.239	-.028	.044	-.087	-.029	.840	.836	.016	.376	.710
i39	Defender	.321	-.050	.114	.053	.092	.819	.822	.013	.400	.678
i40	Defender	.332	.098	.154	-.102	.040	.826	.837	.011	.421	.708
i41	Outsider	.686	.105	.601	.632	.744	-.014	.111	.115	.382	.576
i42	Outsider	.603	.078	.522	.656	.699	.114	.153	-.060	.264	.501
i43	Outsider	.621	.039	.553	.737	.766	-.076	.004	.024	.266	.592
i44	Outsider	.658	.036	.566	.708	.759	-.007	.094	.076	.339	.582
i45	Outsider	.646	.138	.597	.661	.758	-.080	.007	.022	.284	.589
i46	Outsider	.617	-.071	.514	.812	.777	-.028	.053	.048	.284	.606
i47	Outsider	.668	-.084	.564	.918	.867	-.072	.011	.038	.284	.759
i48	Outsider	.709	-.014	.608	.868	.871	-.039	.054	.047	.325	.760
i49	Outsider	.655	-.041	.550	.857	.824	.034	.090	-.023	.274	.681
i50	Outsider	.613	.156	.574	.682	.750	.013	.036	-.120	.203	.577
Eigenvalue			17.77		8.13		3.08		2.25		
%S ²			35.44		15.88		5.57		3.79		
α			.88 ¹		.89		.94		.93		
Factor Correlations			F1		F2		F3				
F1:			—								
Perpetrator/Assistant											
F2: Outsider			0.697		—						
F3: Defender			0.147		0.085		—				
F4: Target			0.497		0.351		.0480				

Note. G = general (factor identified by first unrotated dimension), *P* = factor pattern coefficient, *S* = factor structure coefficient (item correlation with factor), h^2 = communality estimate, α (coefficient alpha based on salient items on factor). Salient factor pattern coefficients ($\geq .40$) presented in bold.

Table A7

Second-Order Exploratory Factor Analysis Results (Principal Axis with Promax Rotation [$k = 4$]) of the Bullying Participant Behavior Questionnaire with an Elementary School Sample ($N = 683$) Without Item 16

	G	F1: Pro-Perpetrator		F2: Pro-Target		
	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	h^2
Five Factors ¹						
Outsider	.766	.866	.815	-.114	.274	.674
Perpetrator	.813	.823	.833	.024	.393	.695
Defender	.307	-.171	.155	.726	.649	.444
Target	.670	.226	.536	.690	.792	.668
Assistant	.741	.747	.758	.024	.360	.575
Eigenvalue		2.70		1.17		
% S^2		46.78		14.34		
Second-order Correlation		F1		F2		
	F1	—				
	F2	.449		—		

	G	F1: Pro-Perpetrator		F2: Pro-Target		
	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	h^2
Four Factors ²						
Perpetrator/Assistant	.884	.945	.942	-.007	.440	.887
Outsider	.676	.772	.740	-.069	.296	.551
Defender	.360	-.168	.162	.698	.618	.404
Target	.715	.186	.530	.727	.815	.692
Eigenvalue		2.18		1.10		
% S^2		46.99		16.34		
Second-order Correlation		F1		F2		
	F1					
	F2	.473				

Note. ¹Higher-order factor solution based on five-factor EFA with promax ($k = 4$) rotation of first-order factor correlations from Table A5. ²Higher-order factor solution based on four-factor EFA with promax ($k = 4$) rotation of first-order factor correlations from Table A6.

Table A8

Second-Order Exploratory Factor Analysis Results (Principal Axis with Promax Rotation [$k = 4$]) of the Bullying Participant Behavior Questionnaire with an Elementary School Sample ($N = 683$)

Five Factors ¹	G	F1: Pro-Perpetrator		F2: Pro-Target		h^2
	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	
Outsider	.767	.865	.814	-.112	.276	.673
Perpetrator	.817	.826	.836	.023	.393	.699
Defender	.306	-.172	.155	.728	.651	.448
Target	.668	.228	.536	.687	.790	.665
Assistant	.751	.759	.768	.021	.361	.591
Eigenvalue		2.71		1.18		
% S^2		47.16		14.36		
Second-order Correlation		F1		F2		
	F1	—				
	F2	.448		—		

Four Factors ²	G	F1: Pro-Perpetrator		F2: Pro-Target		h^2
	<i>S</i>	<i>P</i>	<i>S</i>	<i>P</i>	<i>S</i>	
Perpetrator/Assistant	.883	.942	.940	-.005	.441	.883
Outsider	.681	.777	.744	-.068	.299	.558
Defender	.362	-.166	.165	.699	.620	.406
Target	.714	.185	.529	.727	.814	.689
Eigenvalue		2.18		1.10		
% S^2		47.09		16.30		
Second-order Correlation		F1		F2		
	F1					
	F2	.473				

Note. ¹Higher-order factor solution based on five-factor EFA with promax ($k = 4$) rotation of first-order factor correlations from Table A3. ²Higher-order factor solution based on four-factor EFA with promax ($k = 4$) rotation of first-order factor correlations from Table A4.

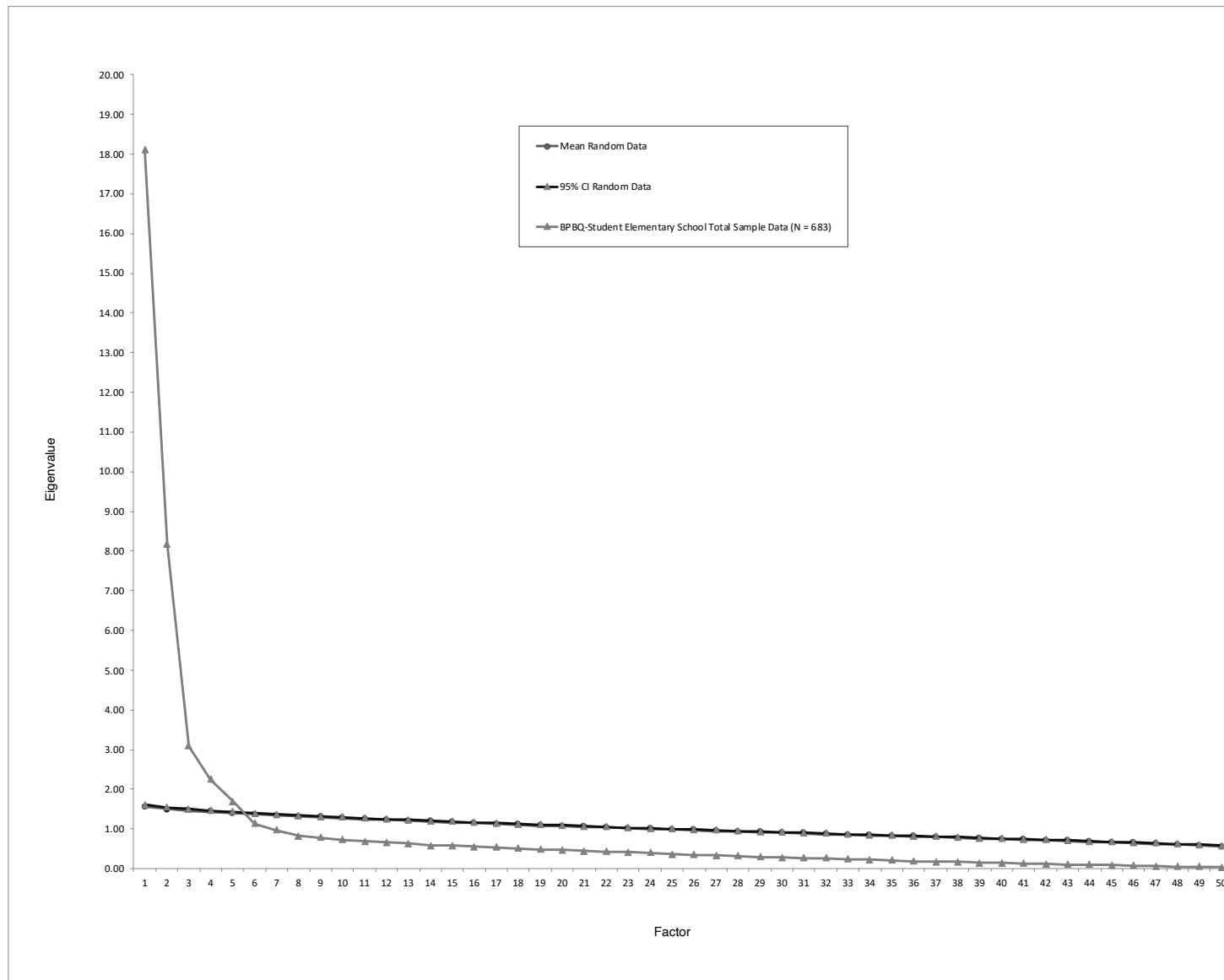


Figure A1. Scree plots for Horn's parallel analysis for the BPBQ elementary school sample ($n = 683$).

Appendix B

Supplementary tables and figures for BPBQ confirmatory factor analyses.

Table B1

Decomposed Sources of Variance for the Bullying Participant Behavior Questionnaire for the Elementary School Sample (N = 683) According to a Bifactor Model with Two General and Five Group Factors (Model 7a)

		Pro-Perpetrator														
		General		Perpetrator		Assistant		Outsider		Target		Defender				
Item/Role		b	S^2	b	S^2	b	S^2	b	S^2	b	S^2	b	S^2	h^2	u^2	ECV
i1	Perpetrator	.595		.529	.280									.634	.366	.559
i2	Perpetrator	.740	.548	.473	.224									.771	.229	.710
i3	Perpetrator	.605	.366	.177	.031									.397	.603	.921
i4	Perpetrator	.675	.456	.369	.136									.592	.408	.770
i5	Perpetrator	.748	.560	.156	.024									.584	.416	.958
i6	Perpetrator	.774	.599	.053	.003									.602	.398	.995
i7	Perpetrator	.751	.564	-.107	.011									.575	.425	.980
i8	Perpetrator	.711	.506	.050	.003									.508	.492	.995
i9	Perpetrator	.724	.524	.470	.221									.745	.255	.704
i10	Perpetrator	.629	.396	.284	.081									.476	.524	.831
i11	Assistant	.679	.461			.403	.162							.623	.377	.739
i12	Assistant	.569	.324			.657	.432							.755	.245	.429
i13	Assistant	.683	.466			.253	.064							.530	.470	.879
i14	Assistant	.790	.624			.108	.012							.636	.364	.982
i15	Assistant	.766	.587			-.018	.000							.587	.413	.999
i16	Assistant	.596	.355			.204	.042							.397	.603	.895
i17	Assistant	.814	.663			-.053	.003							.665	.335	.996
i18	Assistant	.786	.618			.130	.017							.635	.365	.973
i19	Assistant	.712	.507			.416	.173							.680	.320	.746
i20	Assistant	.683	.466			.435	.189							.656	.344	.711
i41	Outsider	.655	.429					.365	.133					.562	.438	.763
i42	Outsider	.574	.329					.424	.180					.509	.491	.647
i43	Outsider	.614	.377					.470	.221					.598	.402	.631
i44	Outsider	.617	.381					.451	.203					.584	.416	.652
i45	Outsider	.654	.428					.400	.160					.588	.412	.728
i46	Outsider	.573	.328					.525	.276					.604	.396	.544
i47	Outsider	.626	.392					.632	.399					.791	.209	.495
i48	Outsider	.664	.441					.580	.336					.777	.223	.567
i49	Outsider	.609	.371					.546	.298					.669	.331	.554
i50	Outsider	.646	.417					.380	.144					.562	.438	.743
Total Variance			.461		.034		.036		.078					.610	.390	
ECV			.756		.055		.060		.129							
ω_H/ω_{HS}			.897		.103		.106		.348							

Table B1 continues

Table B1 continued

Item/Role		Pro-Target General		Perpetrator		Assistant		Outsider		Target		Defender		h^2	u^2	ECV
		b	S^2	b	S^2	b	S^2	b	S^2	b	S^2	b	S^2			
i21	Target	.408	.166							.693	.480			.647	.353	.257
i22	Target	.411	.169							.753	.567			.736	.264	.230
i23	Target	.364	.132							.714	.510			.642	.358	.206
i24	Target	.336	.113							.671	.450			.563	.437	.200
i25	Target	.386	.149							.637	.406			.555	.445	.269
i26	Target	.420	.176							.674	.454			.631	.369	.280
i27	Target	.455	.207							.679	.461			.668	.332	.310
i28	Target	.453	.205							.730	.533			.738	.262	.278
i29	Target	.476	.227							.678	.460			.686	.314	.330
i30	Target	.450	.203							.615	.378			.581	.419	.349
i31	Defender	.694	.482									.201	.040	.522	.478	.923
i32	Defender	.754	.569									.077	.006	.574	.426	.990
i33	Defender	.815	.664									-.086	.007	.672	.328	.989
i34	Defender	.870	.757									.069	.005	.762	.238	.994
i35	Defender	.860	.740									.017	.000	.740	.260	.999
i36	Defender	.777	.604									.235	.055	.659	.341	.916
i37	Defender	.759	.576									.518	.268	.844	.156	.682
i38	Defender	.774	.599									.392	.154	.753	.247	.796
i39	Defender	.775	.601									.294	.086	.687	.313	.874
i40	Defender	.836	.699									.125	.016	.715	.285	.978
Total Variance			.402							.235		.032		.669	.331	
ECV			.601							.351		.048				
ω_H/ω_{HS}			.719							.692		.049				

Note. b = loading of subtest on factor, S^2 = variance explained, h^2 = communality, u^2 = uniqueness, ECV = explained common variance, ω_H = omega-hierarchical (general factor), ω_{HS} = omega-hierarchical subscale (group factors).

Table B2

Decomposed Sources of Variance for the Bullying Participant Behavior Questionnaire for the Elementary School Sample (N = 683) According to a Bifactor Model with Two General and Four Group Factors (Model 7b)

Item/Role		Pro-perpetrator General		Perpetrator/ Assistant		Outsider		Target		Defender		h^2	u^2	ECV
		b	S^2	b	S^2	b	S^2	b	S^2	b	S^2			
i1	Perpetrator	.571	.326	.532	.283							.609	.391	.535
i2	Perpetrator	.723	.523	.477	.228							.750	.250	.697
i3	Perpetrator	.583	.340	.249	.062							.402	.598	.846
i4	Perpetrator	.691	.477	.298	.089							.566	.434	.843
i5	Perpetrator	.715	.511	.262	.069							.580	.420	.882
i6	Perpetrator	.732	.536	.208	.043							.579	.421	.925
i7	Perpetrator	.707	.500	.055	.003							.503	.497	.994
i8	Perpetrator	.712	.507	.079	.006							.513	.487	.988
i9	Perpetrator	.708	.501	.460	.212							.713	.287	.703
i10	Perpetrator	.582	.339	.417	.174							.513	.487	.661
i11	Assistant	.758	.575	.068	.005							.579	.421	.992
i12	Assistant	.712	.507	.341	.116							.623	.377	.813
i13	Assistant	.721	.520	.097	.009							.529	.471	.982
i14	Assistant	.788	.621	.043	.002							.623	.377	.997
i15	Assistant	.732	.536	.242	.059							.594	.406	.901
i16	Assistant	.627	.393	.108	.012							.405	.595	.971
i17	Assistant	.767	.588	.187	.035							.623	.377	.944
i18	Assistant	.792	.627	.012	.000							.627	.373	.999
i19	Assistant	.803	.645	.206	.042							.687	.313	.938
i20	Assistant	.782	.612	.245	.060							.672	.328	.911
i41	Outsider	.633	.401			.397	.158					.558	.442	.718
i42	Outsider	.540	.292			.468	.219					.511	.489	.571
i43	Outsider	.590	.348			.501	.251					.599	.401	.581
i44	Outsider	.590	.348			.487	.237					.585	.415	.595
i45	Outsider	.654	.428			.403	.162					.590	.410	.725
i46	Outsider	.581	.338			.512	.262					.600	.400	.563
i47	Outsider	.613	.376			.645	.416					.792	.208	.475
i48	Outsider	.662	.438			.581	.338					.776	.224	.565
i49	Outsider	.625	.391			.524	.275					.665	.335	.587
i50	Outsider	.625	.391			.407	.166					.556	.444	.702
Total Variance			.464		.050		.083					.597	.403	
ECV			.777		.084		.139							
ω_H/ω_{HS}			.878		.091		.371							

Table B2 continues

Table B2 continued

Item/Role		Pro-target General		Perpetratorr/ Assistant		Outsider		Target		Defender		h^2	u^2	ECV
		b	S^2	b	S^2	b	S^2	b	S^2	b	S^2			
i21	Target	.408	.166					.693	.480			.647	.353	.257
i22	Target	.411	.169					.753	.567			.736	.264	.230
i23	Target	.364	.132					.714	.510			.642	.358	.206
i24	Target	.336	.113					.671	.450			.563	.437	.200
i25	Target	.386	.149					.637	.406			.555	.445	.269
i26	Target	.420	.176					.674	.454			.631	.369	.280
i27	Target	.455	.207					.679	.461			.668	.332	.310
i28	Target	.453	.205					.730	.533			.738	.262	.278
i29	Target	.476	.227					.678	.460			.686	.314	.330
i30	Target	.450	.203					.615	.378			.581	.419	.349
i31	Defender	.694	.482							.201	.040	.522	.478	.923
i32	Defender	.754	.569							.077	.006	.574	.426	.990
i33	Defender	.815	.664							.086	.007	.672	.328	.989
i34	Defender	.870	.757							.069	.005	.762	.238	.994
i35	Defender	.860	.740							.017	.000	.740	.260	.999
i36	Defender	.777	.604							.235	.055	.659	.341	.916
i37	Defender	.759	.576							.518	.268	.844	.156	.682
i38	Defender	.774	.599							.392	.154	.753	.247	.796
i39	Defender	.775	.601							.294	.086	.687	.313	.874
i40	Defender	.836	.699							.125	.016	.715	.285	.978
Total Variance			.402					.235		.032		.669	.331	
ECV			.601					.351		.048				
ω_H / ω_{HS}			.717					.692		.058				

Note. b = loading of subtest on factor, S^2 = variance explained, h^2 = communality, u^2 = uniqueness, ECV = explained common variance, ω_H = omega–hierarchical (general factor), ω_{HS} = omega–hierarchical subscale (group factors).

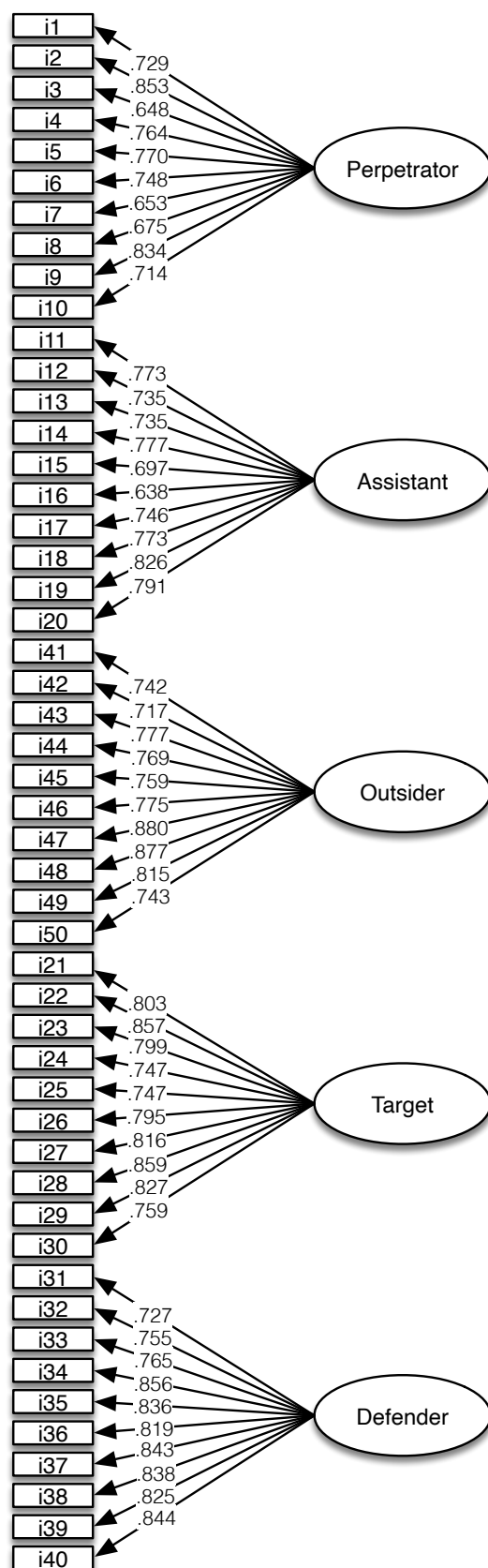


Figure B1. CFA 5 Orthogonal Factors Measurement Model (Model 1a) with standardized coefficients for the BPBQ elementary school sample.

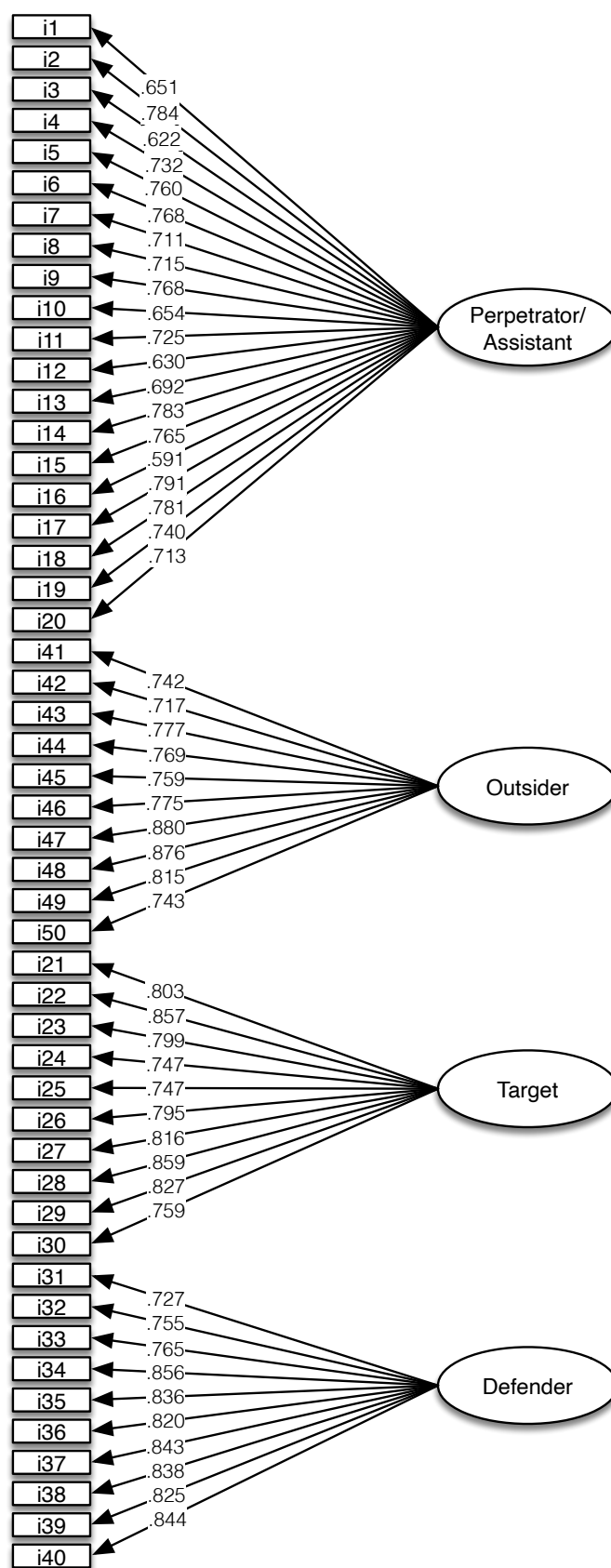


Figure B2. CFA 4 Orthogonal Factors Measurement Model (Model 1b) with standardized coefficients for the BPBQ elementary school sample.

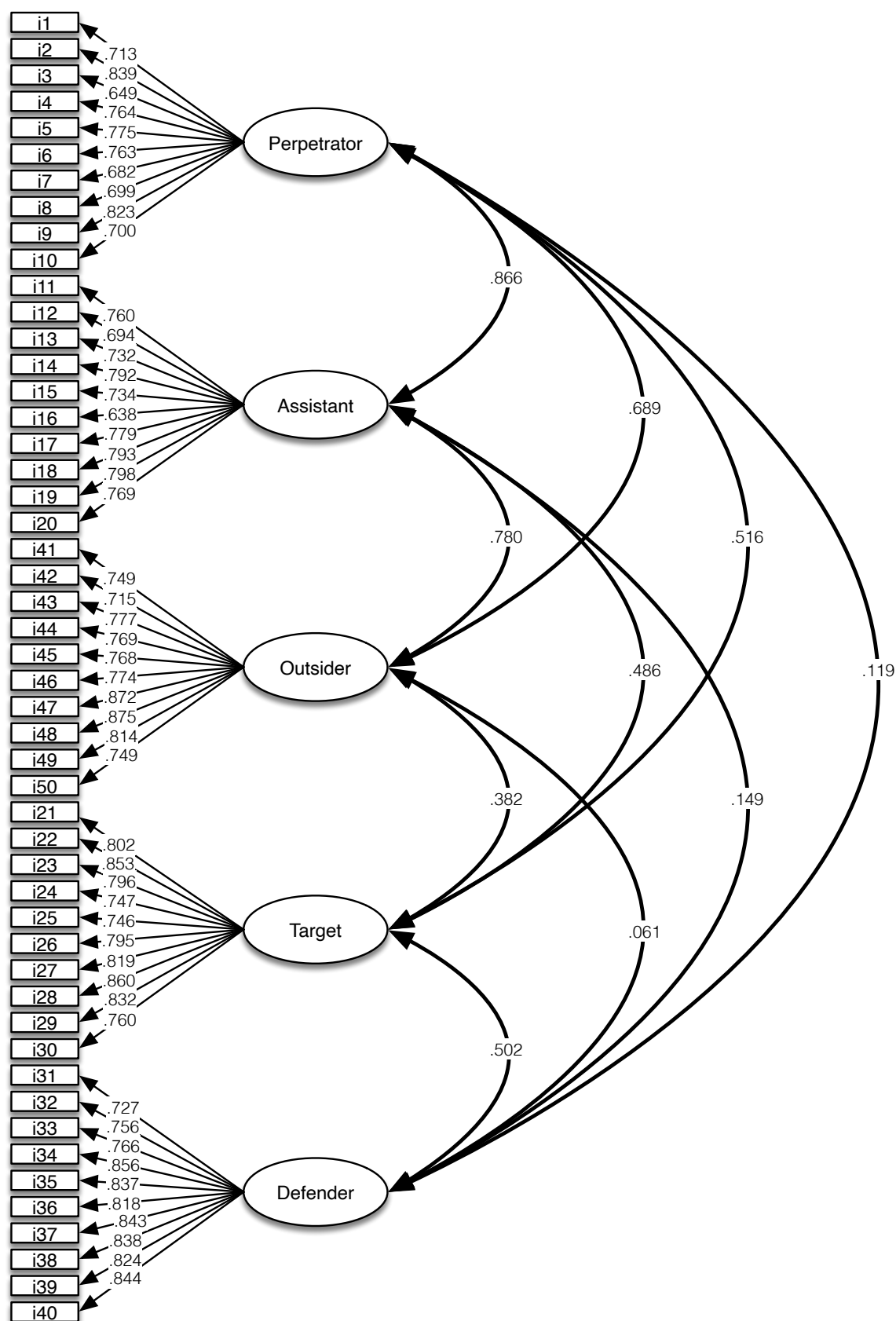


Figure B3. CFA 5 Oblique Factors Measurement Model (Model 2a) with standardized coefficients for the BPBQ elementary school sample.

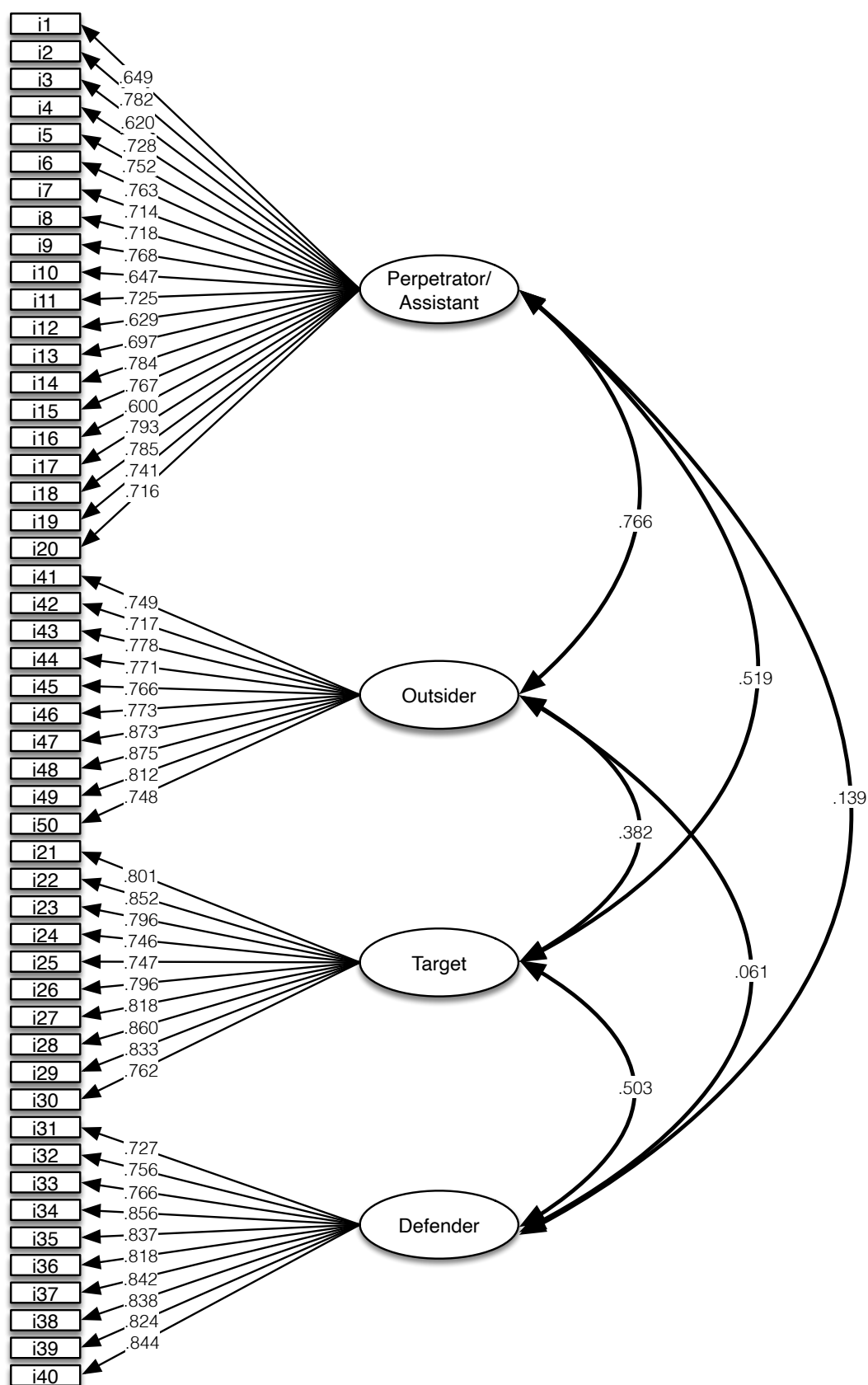


Figure B4. CFA 4 Oblique Factors Measurement Model (Model 2b) with standardized coefficients for the BPBQ elementary school sample.

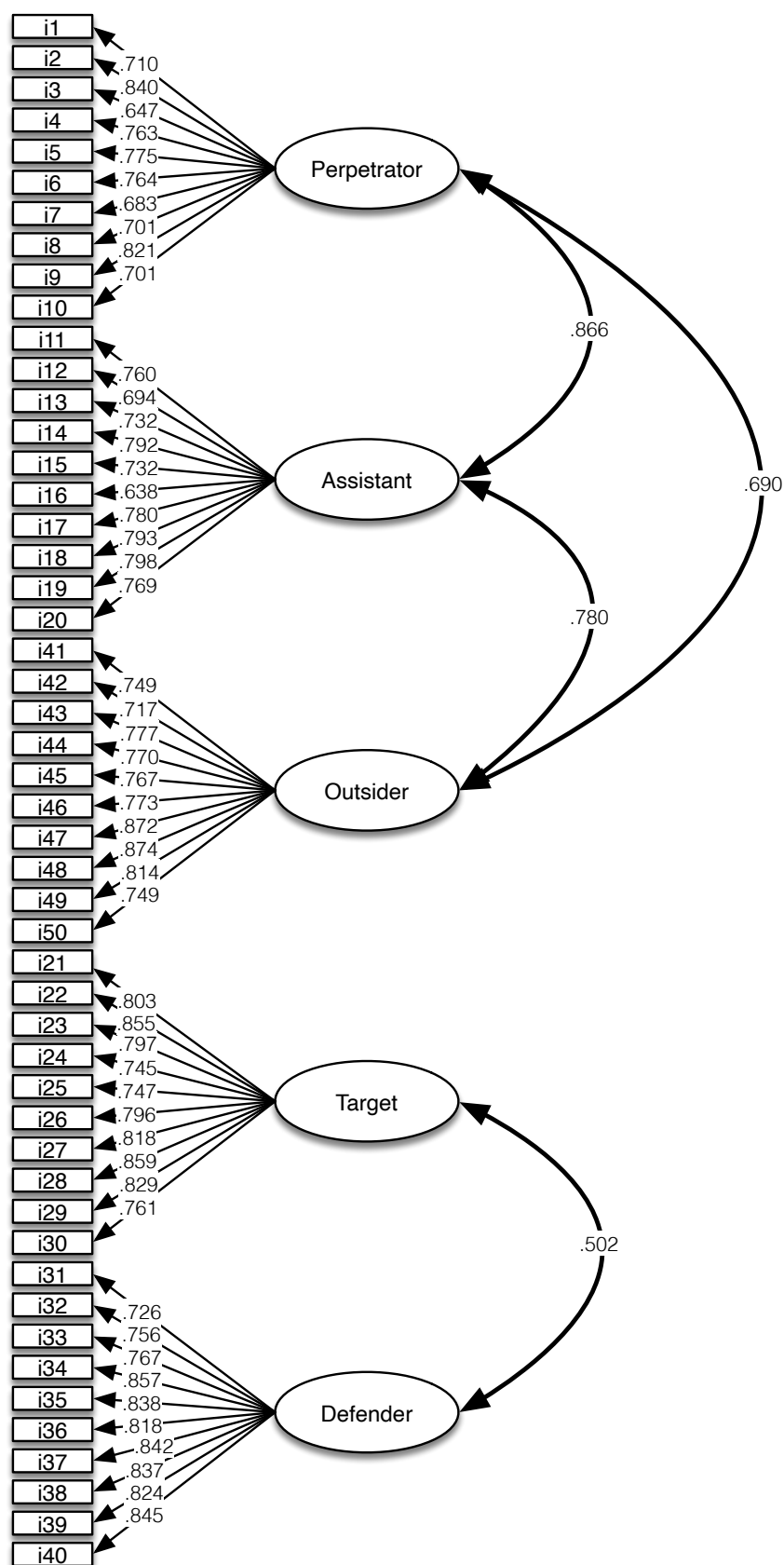


Figure B5. CFA 3 Oblique and 2 Oblique Factors Measurement Model (Model 3a) with standardized coefficients for the BPBQ elementary school sample.

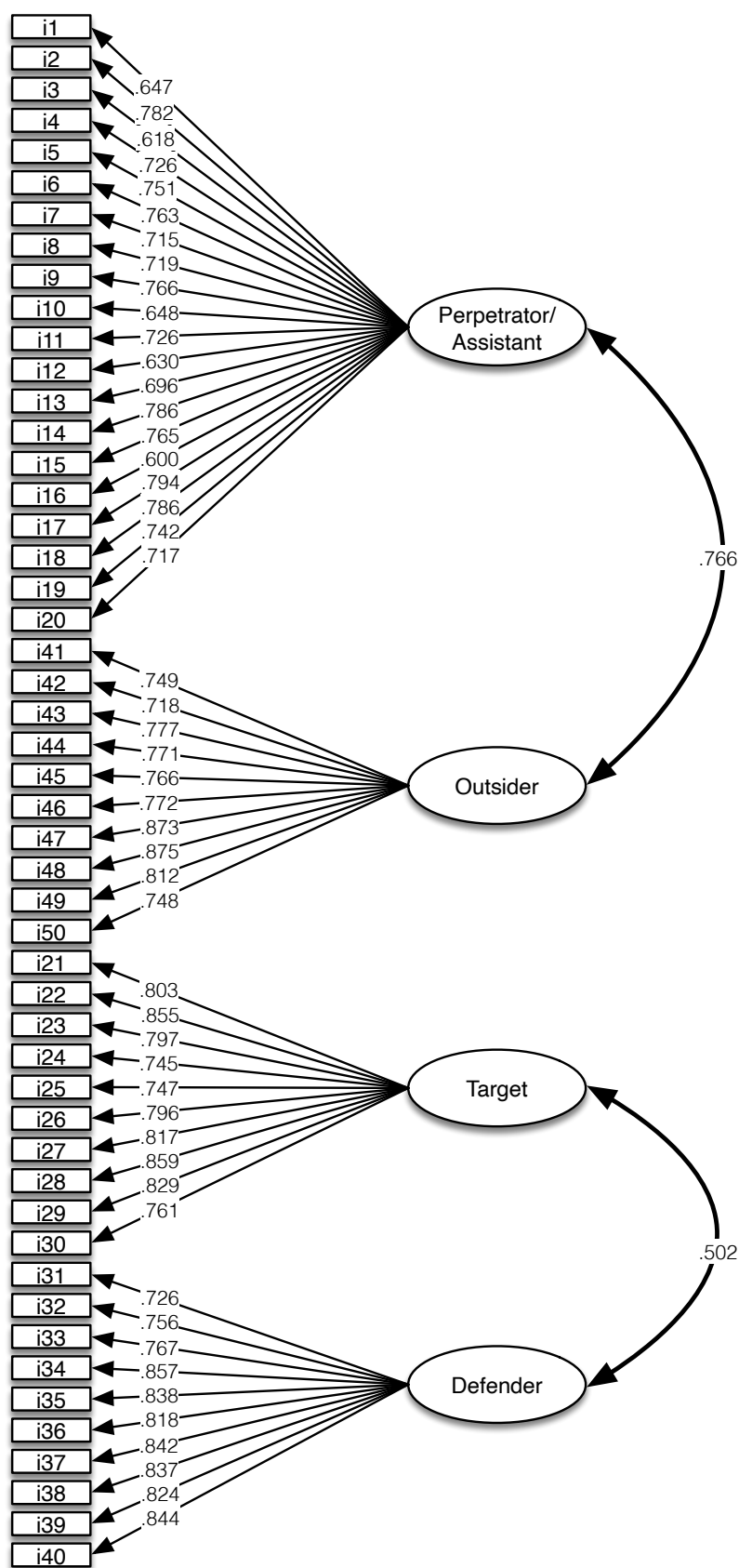


Figure B6. CFA 2 Oblique and 2 Oblique Factors Measurement Model (Model 3b) with standardized coefficients for the BPBQ elementary school sample.

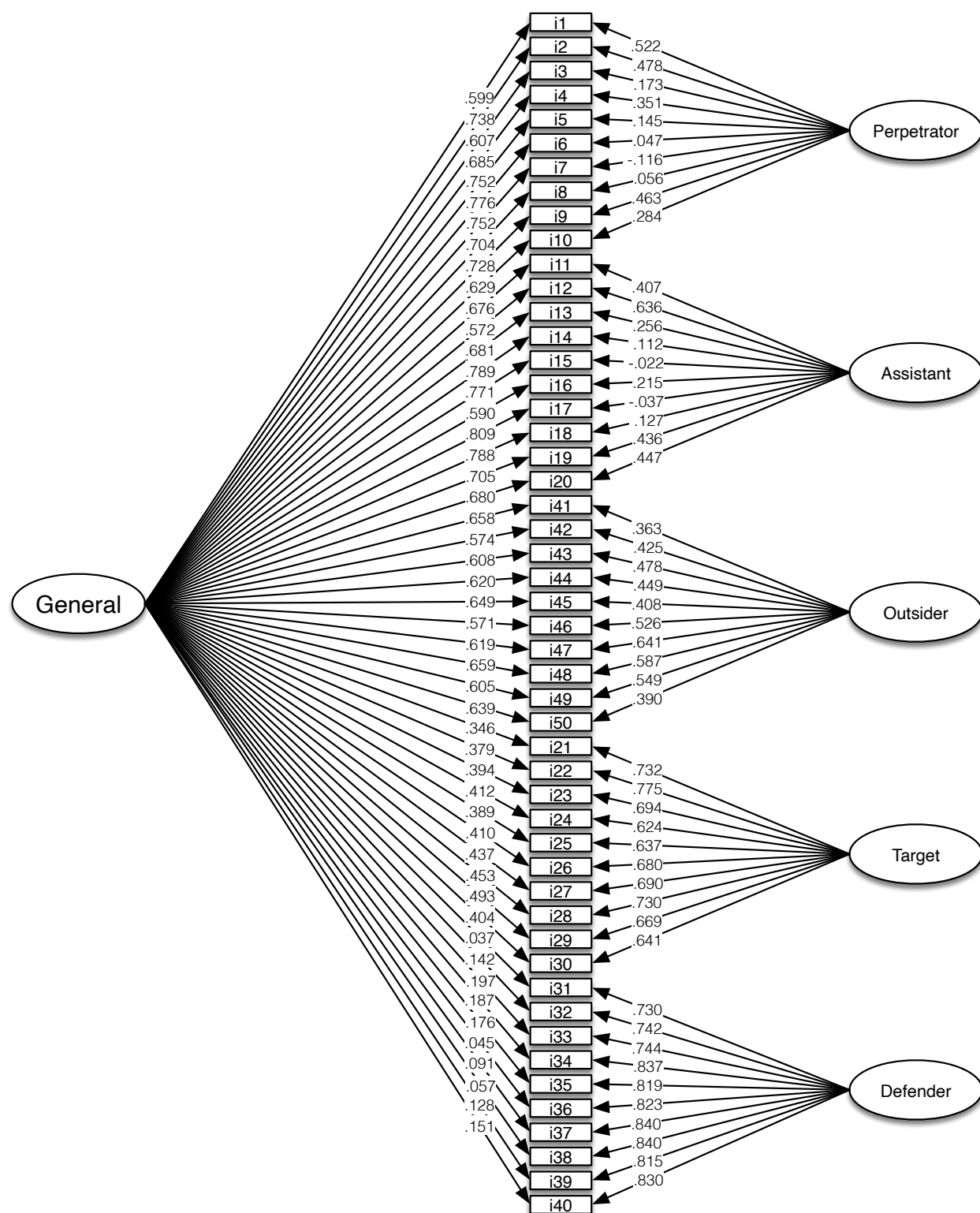


Figure B7. CFA bifactor measurement model (Model 6a) with standardized coefficients for the BPBQ elementary school sample.

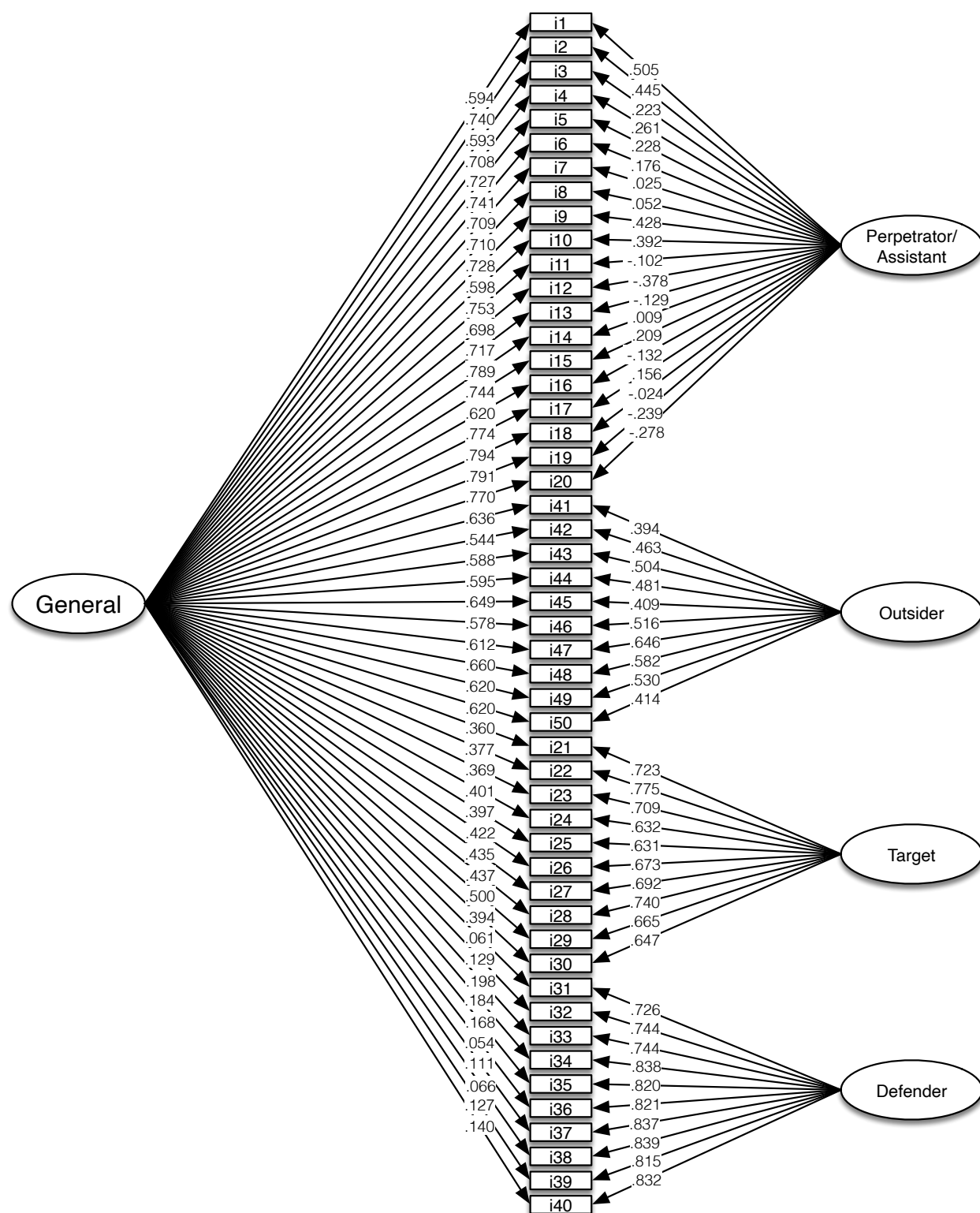


Figure B8. CFA bifactor measurement model (Model 6b) with standardized coefficients for the BPBQ elementary school sample.

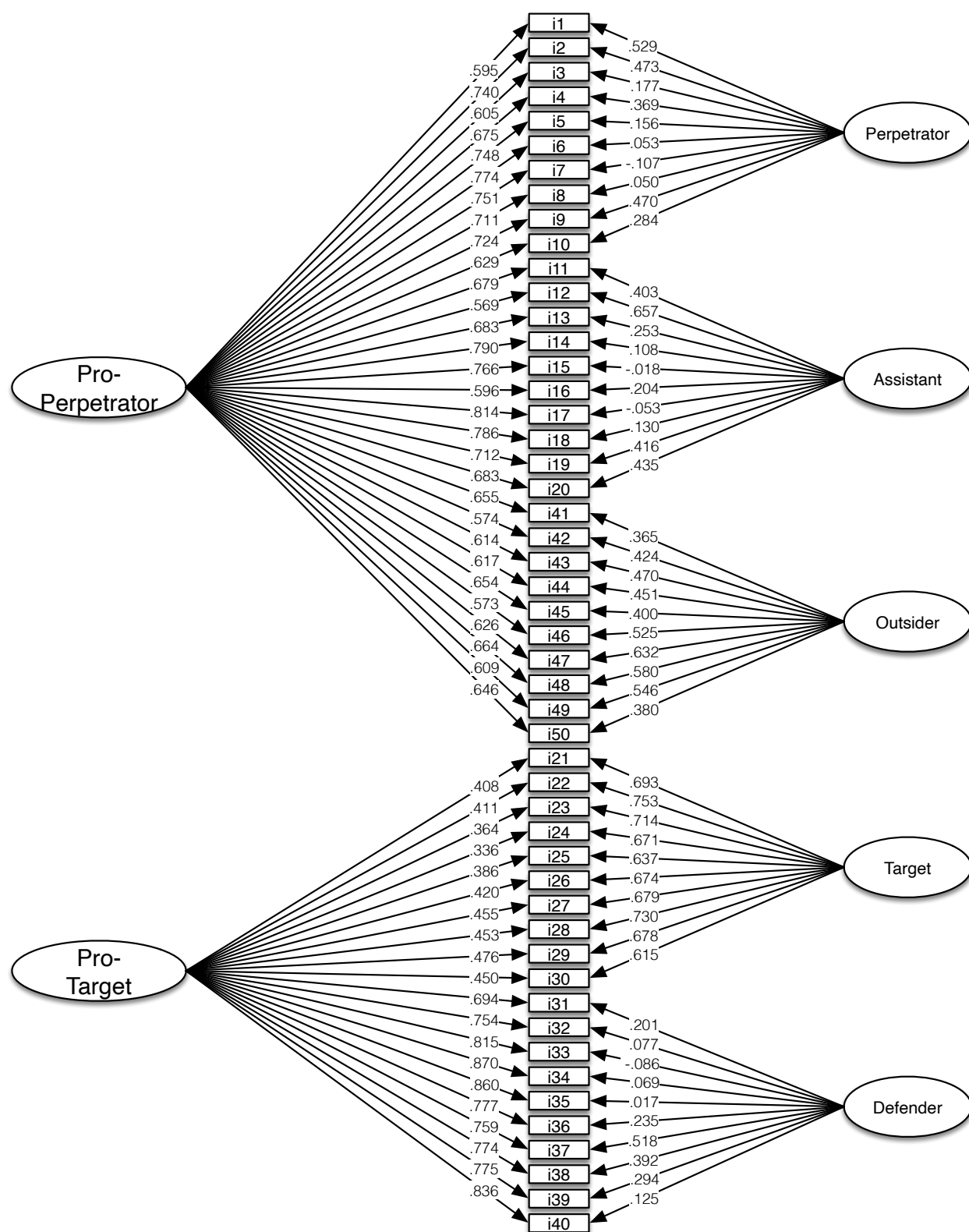


Figure B9. CFA bifactor measurement model (Model 7a) with standardized coefficients for the BPBQ elementary school sample.

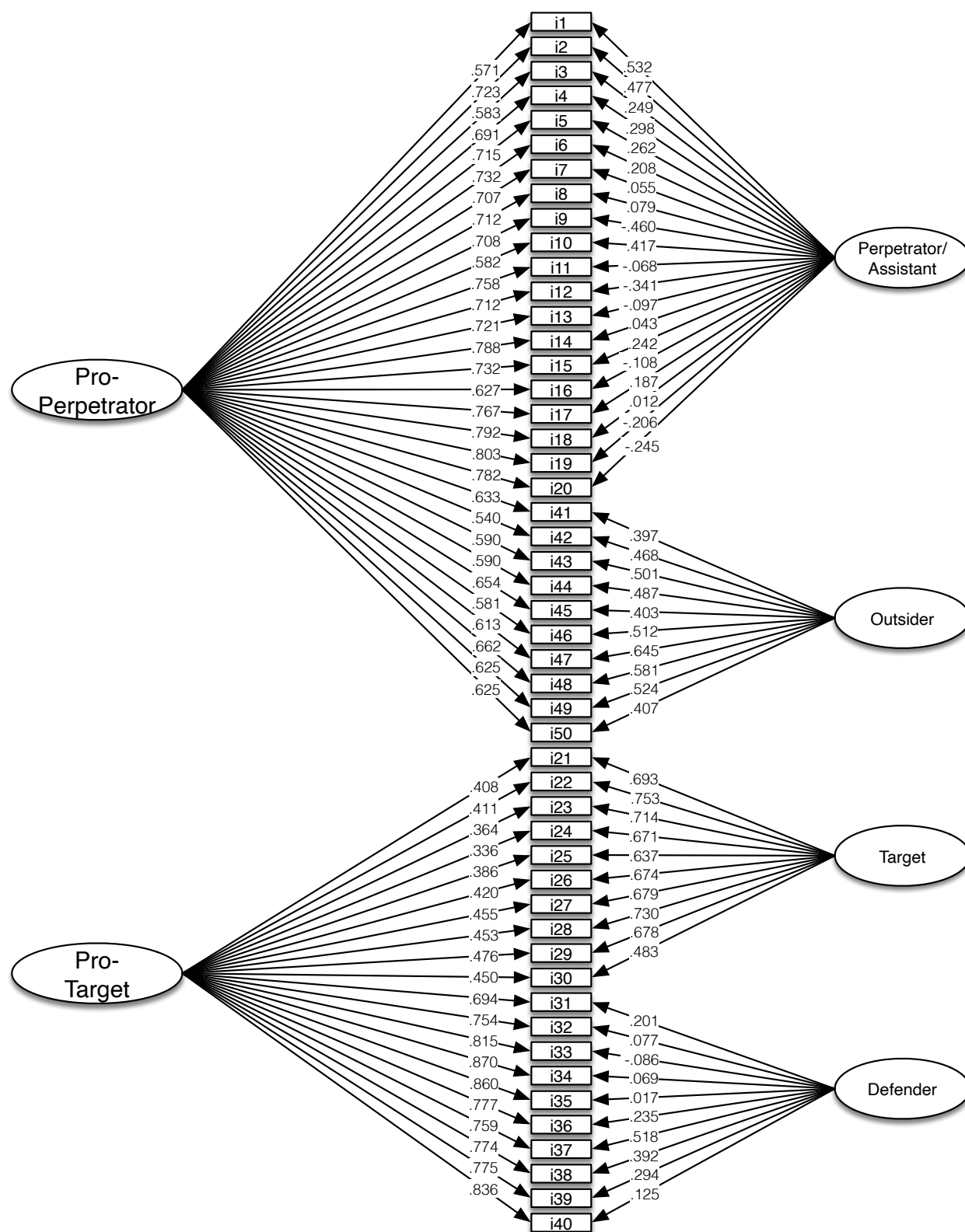


Figure B10. CFA bifactor measurement model (Model 7b) with standardized coefficients for the BPBQ elementary school sample.