Cross-Cultural Adaptation and Validation of the Commitment-to-School Scale Using a Sample of Junior High School Youth in Ghana

David Ansong, Gina A. Chowa, and Rainier D. Masa

School of Social Work, The University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

Empirical evidence from developed countries suggests that students’ commitment to school is fundamental to their academic success. However, in developing countries, validated measures of student commitment to school do not exist. The current study helps fill this research gap by examining the validity and reliability of a commitment-to-school scale (CSS) adapted for the Ghanaian context. With a sample of 6,252 middle school–age students, the study employs exploratory and confirmatory factor analyses with weighted least squares means and variance adjusted (WLSMV) to establish and validate the construct as bidimensional. Measurement invariance tests confirm that the two-factor commitment model is generalizable across grade levels but not genders. Given its parsimony and good fit, the adapted CSS might be useful for future research in Ghana. Similarity of the model across grade levels suggests that the scale has potential uses in education research among diverse groups. We suggest that the CSS be developed further for better understanding of students’ commitment to school.

Keywords academic performance, commitment to school, factor analysis, Ghana, youth

THIS PAPER FOCUSES on the adaptation and validation of a student commitment-to-school scale (CSS) tailored to the Ghanaian context. Students’ commitment to school is an important predictor of educational outcomes and may offer key insights into the poor academic performance among junior high school (JHS) students (i.e., sixth, seventh, and eighth graders) in Ghana. Despite the increase in education-related empirical research in Ghana, we know little about how psychosocial factors, including students’ commitment to school, predict or mediate academic...
performance. Student commitment to school is a potential individual-level determinant of academic performance, but the construct has received little attention in the empirical research in Ghana. Students’ level of commitment to school could be fundamental to their learning because it may affect the seriousness with which they go about their schoolwork and how they behave in school. Previous studies show that commitment is inversely associated with stress (Pan, Hsu, & Lin, 2012). In the United States, students with strong commitment to school have lower levels of stress and are less likely to engage in school crime, misconduct, and nonattendance (Jenkins, 1997). The lower levels of stress allow students to concentrate on schoolwork and perform well.

In Ghana, student commitment may be even more necessary for students in rural communities and for girls. Students in rural areas face enormous challenges with regard to schooling because they often are marginalized. They have inadequate school infrastructure, walk long distances to go to school, and rely on underqualified teachers (Abukari & Laser, 2013; Alexander, 2008; Ansong, 2013). Similarly, girls face several schooling challenges, mostly because of limited economic resources and cultural practices that favor boys’ educational attainment (Abukari & Laser, 2013; Ansong, 2013; Chowa, Masa, Wretman, & Ansong, 2013; Lambert, Perrino, & Barreras, 2012). These rural-urban economic disparities and cultural and infrastructural barriers can dampen students’ motivation to integrate academically. Regardless of their background characteristics and academic abilities, students facing educational barriers must be committed to school to decrease their likelihood of dropping out and increase their chances of succeeding academically (Hellman, 2002).

Despite growing empirical evidence of the importance of student commitment to school and educational outcomes, many education studies in Ghana do not account for it. The lack of a unified theoretical specification of what constitutes commitment to school and the consequential lack of psychometric assessment of standardized measurement scales for the construct are two reasons for the limited research on students’ commitment to school (Ramadas, Serpa, Rosado, Gouveia, & Maroco, 2013). Without the adaptation and evaluation of a CSS that is applicable to the Ghanaian context, education researchers do not have a valid and reliable measure of the construct and cannot account for how students’ commitment may be associated with educational outcomes. Likewise, teachers and educators cannot assess students’ commitment to school empirically. This study aims to contribute to the adaptation, testing, and validation of a CSS tailored for sixth, seventh, and eighth graders in Ghana. The CSS was originally developed by Thornberry, Lizotte, Krohn, Farnworth, and Jang in 1991 for the Rochester Youth Development Study to assess youth’s agreement about the importance of school (Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1991). The scale is endorsed by the Centers for Disease Control and is used in large-scale surveys to measure developmental outcomes in violence prevention programs.

Conceptualization of a Commitment-to-School Scale

No consensus on the dimensionality of CSSes exists, and much of the available education research has conceptualized commitment to school as unidimensional (Hellman & Williams-Miller, 2005). The Rochester Youth Development Study from which we borrowed and adapted the CSS to the Ghanaian context, conceptualized the 10-item CSS as unidimensional (Rochester Youth
De Development Study, Thornberry et al., 1991). The few studies that have reviewed the construct as multidimensional have relied on the theoretical perspectives underlying organizational commitment studies. Psychometric testing in organizational behavior research—in which commitment scales are widely researched in the context of employee attitudes—drives this body of work. The dominant theoretical framework of the commitment construct in organizational behavior research was developed by Meyer and Allen (1991), who conceptualized the commitment construct as representing three domains of psychological bonds: affective (i.e., emotional ties to the organization), continuance (i.e., investments in the organization to avoid losing benefits), and normative (i.e., moral obligation to the organization as a duty) (Adenguga, Adenuga, & Ayodele, 2013; Hellman, 2002; Hellman & Williams-Miller, 2005). To build on prior education research, we adapted this framework of commitment to organizations to guide our identification of dimensions that make up the commitment-to-school construct in the Ghanaian context (Meyer & Allen, 1997). We borrow from the multidimensional framework not only because prior studies have done so but also—and most importantly—because we find parallels between students’ commitment to school, a social organization, and employees’ commitment to the workplace (McShane, 2004; Ramadas et al., 2013).

In the educational context, affective commitment to school would reflect students’ emotional attachment to, identification with, and involvement in their school. Such emotional bonds may come from students’ satisfaction with the school context, including social connections, school regulations, and the physical environment (Libbey, 2004; Resnick et al., 1997). Students will identify with their school, integrate socially and academically, and focus on learning if they are able to cultivate healthy emotional attachments in the school (Henry & Slater, 2007). Students’ affective commitment to school may originate from a strong attachment to peers, teachers, staff, the classroom atmosphere, and extracurricular activities, including athletics. Engaging with peers may interest some students, who look forward to going to school because the environment helps them overcome boredom and fosters feelings of connectedness (Schaps & Solomon, 2003). A student with poor attachments or relationships at school may have problems adjusting, which could affect their subsequent commitment to the school. Those involved in school activities (e.g., intramural sports and debate clubs) often have strong bonds with the school (Jenkins, 1997; Libbey, 2004; Voelkl, 1996).

Similarly, students’ sense of belonging to and association with a school may stem from institutional processes, regulations, and practices (Ananga, 2011). Failure to acclimate to these institutional characteristics may strain Ghanaian students’ interest in school and lead to dropout in some cases (Akyeampong, Djangmah, Oduro, Seidu, & Hunt, 2007; Hunt, 2008). Results from another study in Ghana (Ampiah & Adu-Yeboah, 2009) show that corporal punishment and grade repetition increase the likelihood that students will drop out of school.

Some students may commit to school because of the perceived benefits of having an education (Libbey, 2004). According to Meyer and Allen, people commit themselves to causes or organizations because of the benefits and returns they expect to receive in the medium to long term (i.e., continuance commitment). When students see or interact with people who are successful because of their education, they may be inspired to pursue a similar educational path (Lockwood, Jordan, & Kunda, 2002). Like most young people around the world, many Ghanaian youth are socialized to see education as the best path out of poverty (Oduro, 2000, 2008). They believe that with determination and adequate training, they will be equipped with the knowledge and skills
to become economically independent (Palmer, Wedgwood, Hayman, King, & Thin, 2007). This idea of future benefits resonates with many young people, who then commit to obtaining an education by working hard in school, taking homework seriously, and sometimes doing extra work to improve subject grades (Manlove, 1998; Ryan & Patrick, 2001; Simons-Morton & Crump, 2002).

In the Ghanaian context, the normative dimension of the commitment construct (Meyer & Allen, 1997) reflects the idea that a student may use school to conform to the values of the group with which they strongly identify (Hellman & Williams-Miller, 2005) including parents, family members, peers at school, and teachers. In other words, if a student’s referent group values education, the student will have a strong desire to conform by attending school. While this may be true for some junior high school (JHS) students in Ghana, it is also true that many JHS students in Ghana attend school regularly because their parents make sure they do. Thus, many JHS students attend school because they do not have the options of staying home or withdrawing from school if their parents insist on attendance. As a result, even students who are not committed to school could be attending school because they cannot stay home. As research suggests, direct parental involvement reduces the risks of dropout (Boal, 2004; Donkor, 2010; Teachman, Paasch, & Carver, 1996). According to a qualitative study in Ghana by Ananga (2011), when parents appreciate the benefits of education, they ensure that their children attend school regularly. This means many children in Ghana attend school because they must obey their parents. In short, students’ school attendance in Ghana depends in part on whether their parents value education and insist that their children attend school. Thus, a scale for normative commitment to school in Ghana risks being a proxy for parental involvement.

Based on the above theoretical perspective, we theorize that affective and continuance commitment (Meyer & Allen, 1991) offer the most compelling theoretical foundation for a CSS for JHS students in Ghana—that is, student commitment to school is a bidimensional construct tapping into students’ attachment to school (i.e., affective commitment) and involvement in school (i.e., continuance commitment). The only significant difference between our conceptualization and the three-dimensional (i.e., affective, continuance, and normative) model conceptualized by Meyer and Allen is that we narrow our conceptual framework to a bidimensional (i.e., affective and continuance) model based on the relevance and application to middle school–age students in Ghana.

Investigating the construct as a bidimensional phenomenon—unlike Thornberry and colleagues’ (1991) conceptualization of CSS as unidimensional—allows us to understand holistically young people’s commitment to school. Without a complete understanding of the construct, education researchers and educators in Ghana may not fully know how various aspects of students’ commitment to school affect school performance and other educational outcomes. In the absence of a multidimensional measurement scale, an education researcher would focus on a single observed variable for commitment to school. Such an approach is less reliable and could result in inconsistent and misleading research findings on the determinants and impacts of student commitment to school when employed in a significant number of studies. Therefore, this study uses exploratory factor analysis (EFA) and multigroup confirmatory factor analysis (MG-CFA) procedures to (a) confirm the hypothesized two-factor structure of the CSS, (b) determine if the adapted Rochester CSS performs adequately for sixth, seventh, and eighth graders in Ghana, and (c) test whether the CSS is invariant across genders and grade levels.
METHODS

Data and Sample

This study uses cross-sectional baseline data from the YouthSave Ghana experiment to test whether the project’s measures of student commitment to school are consistent with our hypothesized two-factor structure. The YouthSave Ghana experiment is one of the largest social experiments in the developing world to test the long-term impacts of youth savings accounts on educational, psychosocial, health, and financial capability outcomes and household financial well-being. Commitment to school is one educational outcome that the YouthSave Ghana research team is testing. Researchers from the YouthSave Ghana experiment used a cluster-randomized sampling approach to select 60 students each from 100 JHSes in eight of the ten administrative regions of Ghana to participate in the study. Researchers oversampled participants to allow for attrition (Rootman, 2001), which resulted in a final sample size of 6,252 JHS students.

The research team carefully adapted and tested the CSS scale to ensure its relevance to youth in Ghana. Before collecting data, the team followed best practices to ensure appropriateness of the data collection instrument and procedures by using the following multimethod pretesting protocol (Miller, 2003; Schneider, Dasappa, Khan, & Khan, 2009; Willis, 2005). First, a panel of experts in measurement theory, youth development and education research, and the Ghanaian context were assembled from Washington University in St. Louis, the University of North Carolina at Chapel Hill, and the University of Ghana to review the instrument to identify potential problems. We revised the instrument based on the expert panel’s feedback. Next, we pilot-tested the revised instrument in one private and three public JHSes in Ghana to validate the applicability and appropriateness of the questions and scales. The pilot test involved 55 interviewer-administered, face-to-face surveys, 20 cognitive interviews, and six in-depth qualitative interviews. We analyzed the pilot-test data and made appropriate changes to the instrument. These instrument-development and pilot-testing protocols are in accordance with the International Testing Commission guidelines on quality control standards (i.e., Version I.2, Part 1; ITC, 2012).

After the pilot tests, the research team trained 40 interviewers to administer surveys to students in the study. To qualify, interviewers needed a minimum of a bachelor’s degree and prior data-collection experience with the Institute of Statistical, Social and Economic Research (ISSER) at the University of Ghana. The institutional review boards of the University of Ghana, Washington University in St. Louis, and the University of North Carolina at Chapel Hill approved all data collection methods.

Measures

After extensively reviewing the literature on student commitment and commitment scales, the research team chose the Rochester CSS developed in 1991 by Thornberry, Lizotte, Krohn, Farnworth, and Jang. Thornberry and colleagues created their scale for the Rochester Youth Development Study to measure seventh- and eighth-grade students’ beliefs about the importance of school (Dahlberg, Toal, Swahn, & Behrens, 2005). Limited psychometric information found on the scale reveals high scale reliability ranging from .76 to .83 (Thornberry, Lizotte, Krohn, Farnworth & Jang, 1991), which is above the .60 level and thus suggestive of the similarity of the scale items (Bagozzi & Yi, 1988; Fornell & Larcker, 1981; Pan, Hsu, & Lin, 2012). The
TABLE 1
CSS Latent Factors and Observed Indicators

<table>
<thead>
<tr>
<th>Factors</th>
<th>Items used in this study</th>
<th>Items adapted for YouthSave</th>
<th>Original items from Rochester scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective commitment</td>
<td>1. I like school</td>
<td>1. I like school</td>
<td>1. You like school a lot</td>
</tr>
<tr>
<td></td>
<td>2. School is boring (R)</td>
<td>2. School is boring (R)</td>
<td>2. School is boring (R)</td>
</tr>
<tr>
<td></td>
<td>3. I belong at school</td>
<td>3. I belong at school</td>
<td>3. You don’t really belong at school (R)</td>
</tr>
<tr>
<td>Continuance commitment</td>
<td>4. I try hard at school</td>
<td>4. You try hard at school</td>
<td>4. You try hard at school</td>
</tr>
<tr>
<td></td>
<td>5. I usually finish my homework</td>
<td>5. You usually finish your homework</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Getting good grades is important to me</td>
<td>6. Getting good grades is very important to you</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. I do extra work to improve my grades</td>
<td>7. Sometimes you do extra work to improve your grades</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. I do poorly at school (R)</td>
<td>8. You do poorly at school (R)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. Homework is a waste of time (R)</td>
<td>9. Homework is a waste of time (R)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. If you could choose on your own between studying to get a good grade on a test or going out with your friends, would you:</td>
<td>10. If you could choose on your own between studying to get a good grade on a test or going out with your friends, would you:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = definitely go out?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = probably go out?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = probably study?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 = definitely study?</td>
<td></td>
</tr>
</tbody>
</table>

Note. (R) indicates an item that is negatively worded in the survey and reverse coded for data analysis.

dimensionality of the Rochester scale is also consistent with the theoretical framework of prior studies on commitment to organizations (Adenguga, Adenuga, & Ayodele, 2013; Jaros, 2007).

The last column in Table 1 presents the original 10-item Rochester CSS developed by Thornberry and colleagues. The first nine items used 4-point, Likert-type response options (i.e., 4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree). Respondents are expected to rate their level of agreement or disagreement with each statement. Item 10 also includes a 4-point response scale but with the following response options: 1 = definitely go out, 2 = probably go out, 3 = probably study, and 4 = definitely study. The developers structured all 10 items to conform to a self-report data collection format. The text is based on the readability level of an average student in fourth grade.

After choosing the Rochester scale, we refined it to fit the Ghanaian context and ensure adherence to measurement best practices. We rigorously solicited feedback from practitioners and academic experts and pilot tested the instrument in Ghana. Some significant changes to the scale include expansion from a 4-point response scale to an 11-point response scale to improve variability. We dropped one item from the original item pool (see Item 10 in column 4 of Table 1) because it did not apply to middle school–aged youth in Ghana. We revised the sentence structure of seven of the nine items from second-person to first-person statements. For instance, the research team changed the statement you try hard at school to I try hard at school. Lastly, we reverse-worded the statement, you don’t really belong at school to I belong at school to avoid response set. We made these changes so that the scale would be in line with best practices in measurement and psychometric testing (Dawes, 2002a; Hodge & Gillespie, 2007). Because the original scale
was created for youth in the United States, we needed to improve its validity, reliability, and relevance to the Ghanaian context. The final version of the CSS used in the Ghana study includes nine items listed in the third column of Table 1.

Data Analysis

We used exploratory and confirmatory factor analyses in this study to evaluate the fit and generalizability of a CSS originally developed in the United States and adapted to the Ghanaian context. Developers of the original scale, Thornberry and colleagues (1991), used exploratory factor analysis to validate the original CSS. Our use of both exploratory and confirmatory factor analyses allows for a more rigorous test of construct validity (Gable & Wolf, 1993; Stapleton, 1997).

First, we assessed the marginal skewness and kurtosis of all observed indicators and found possible violations of multivariate normality assumption. Most items were moderately negatively skewed with skewness values ranging from $-2.31$ to $1.12$ and kurtosis from $6.98$ to $0.48$. Consequently, we normalized the scores to fit the measurement models to the normal scores as recommended by Joreskog, Sorbom, du Toit, and du Toit (2001) as an effective way to fix multivariate normality violations. To be more conservative, we also used weighted least squares means and variance adjusted (WLSMV) as the estimation method for all analyses because it provides more accurate parameter estimates and a model fit that is more robust to ordinal data (Muthén & Muthén, 2010). We used Mplus software for all analyses and the following seven recommended indices to assess model fit: a nonsignificant chi-square statistic ($\chi^2$), root mean square error of approximation (RMSEA) $\leq .05$ with an upper bound $\leq .08$ for its 90% confidence interval, comparative fit index (CFI) $\geq .90$, and factor loadings of $> .30$ (Glaser, 1999; Hu & Bentler, 1999; Kline, 2005). We reported chi-square values and their degrees of freedom as customary, but we did not use chi-square values to judge model fit because of their sensitivity to large sample sizes (Thompson, 2004; Warne, 2011). We made decisions based on chi-square values only when we needed a chi-square test of difference to help identify the best fit among nested models.

Exploratory Factor Analysis

We followed Bowen and Guo’s guidelines to test measurement models. First, we randomly divided the sample into three subsamples: calibration sample, validation sample, and group invariance sample. We used the calibration subsample ($N = 2,082$) to conduct an exploratory factor analysis (EFA) to identify possible domains in the commitment-to-school construct and to assess performance of individual items in the scale. We dropped two items (i.e., I do poorly at school and homework is a waste of time) after the initial EFA because their factor loadings did not meet the .30 factor-loading threshold. We also used eigenvalues greater than 1 and visual examination of the scree plot to determine the number of factors to retain (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

Confirmatory Factor Analysis

Following the EFA, we conducted confirmatory factor analysis (CFA) with the validation subsample ($N = 2,082$) to verify the two-factor structure from the EFA results. In all CFAs, one
factor loading of each latent factor was fixed to 1.0. Fixing these factor loadings was necessary to set a metric for each latent factor. See Table 2 for the covariance matrix of the validation subsample.

**Group Invariance Tests**

After confirming that the CSS has a two-factor structure, we used the third random sample to conduct multigroup confirmatory factor analyses (MGCFA) to examine whether the underlying factor structure, factor loadings, and item intercepts of the final model are similar for different genders and grade levels per the International Test Commission’s (ITC) recommendation D.9 (ITC, 2012). Using recommendations from Meredith (1993), Okech (2012), and Little, Card, Sledgers, and Ledford (2007), we tested a sequence of three nested models beginning with the least restrictive: (1) configural invariance, (2) metric invariance, and (3) scalar invariance. After testing for strong factorial invariance, we did not invoke additional constraints to test for strict factorial invariance because it does not hold in practice. It is highly restrictive and nearly impossible to find identical error matrices across groups (Bowen & Guo, 2011; Little, Card, Sledgers, & Ledford, 2007; Okech, 2012). We used a chi-square test of difference to compare each model with the next-most-restrictive model. If results of the chi-square difference test ($\Delta \chi^2 = \chi^2_{\text{constrained}} - \chi^2_{\text{unconstrained}}$) were statistically nonsignificant at that step of model comparisons, the hypothesis that the final model works equally well regardless of gender and of grade level was supported (Bowen & Guo, 2011; Dimitrov, 2010).

### RESULTS

**Sample Characteristics**

Fifty-two percent of the sample is female, and the average age of participants is 15.30 years. Males ($M = 15.49$, $SD = 2.07$) are slightly but statistically significantly older than females ($M = 15.26$, $SD = 2.13$).

---

**Table 2**

Covariance Matrix for Validation Sample

<table>
<thead>
<tr>
<th></th>
<th>I like school</th>
<th>School is boring</th>
<th>I belong at school</th>
<th>I do extra work to improve my grades</th>
<th>I try hard at school</th>
<th>I usually finish my homework</th>
<th>Getting good grades is important to me</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like school</td>
<td>4.586</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School is boring (R)</td>
<td>1.753</td>
<td>6.623</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I belong at school</td>
<td>1.304</td>
<td>1.605</td>
<td>6.526</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do extra work to improve my grades</td>
<td>0.615</td>
<td>0.488</td>
<td>0.449</td>
<td>1.391</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I try hard at school</td>
<td>0.368</td>
<td>0.607</td>
<td>0.741</td>
<td>0.633</td>
<td>2.766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I usually finish my homework</td>
<td>0.453</td>
<td>1.190</td>
<td>0.467</td>
<td>0.604</td>
<td>0.711</td>
<td>2.601</td>
<td></td>
</tr>
<tr>
<td>Getting good grades is important to me</td>
<td>0.722</td>
<td>0.500</td>
<td>0.810</td>
<td>0.584</td>
<td>0.624</td>
<td>0.783</td>
<td>2.627</td>
</tr>
</tbody>
</table>
= 15.12, SD = 1.88) \((t = 6.55, p < .01, \eta^2 = .02)\). Almost an equal number of youth are in each grade level (i.e., sixth grade = 36.1%, seventh grade = 32.2%, and eighth grade = 31.8%).

**Exploratory Factor Analysis Results**

The first EFA with nine items showed poor fit: \(\chi^2 = 129.07, df = 19, p < .001, \text{RMSEA} = .09\) (90% CI: .08–.09), eigenvalues = 2.87; 1.23, variance explained = 45.64%. We dropped two items (i.e., *I do poorly at school and homework is a waste of time*) for three reasons. First, factor loadings of the two items (i.e., .21 and .09, respectively) were well below the recommended cutoff of .30 (Warne, 2011). Secondly, asking students whether they do poorly at school may not necessarily tap their level of commitment because it is possible for students to be committed to school and yet perform poorly (Li, 2012). Moreover, the statement that “homework is a waste of time” may have produced response set bias because the tone of the sentence somewhat conflicts with the culturally desirable response that schoolwork is important. A rerun of the EFA with seven items and oblique rotation revealed two possible underlying factors consistent with the affective and continuance components of the commitment construct: \(\chi^2 = 29.88, df = 8, p < .001, \text{RMSEA} = .04\) (90% CI: .02–.05), eigenvalues = 2.46; 1.16, variance explained = 51.66%. Results of a chi-square difference test indicate a statistically significant improvement in the respecified EFA model fit: \(\Delta \chi^2 = 117.28, \Delta df = 6, p < .001\). The factor correlations indicate a moderate relationship between the two factors (\(r = .50, p < .05\)). We employed oblique rotation because it is the most appropriate rotation method when the items and factors are conceptually correlated. Table 3 presents the EFA pattern and structure coefficients.

**Confirmatory Factor Analysis Results**

Table 4 presents results of all CFA models. The two-factor CFA with the validation sample showed good fit with the validation data: \(\chi^2 = 75.72, df = 13, p < .001, \text{RMSEA} = .05\) (90% CI: .04–.06), CFI = .95. The factor loadings, which ranged from .38 to .61, were higher than the recommended .30 cutoff (Warne, 2011). The factor correlation between affective and continuance commitment indicates a moderate relationship (\(r = .61, p < .001\)). To rule out the possibility of a one-factor model, we compared the two-factor model with a one-factor model \((\chi^2 = 206.15, df = 14, p < .001, \text{RMSEA} = .08\) (90% CI: .07–.09), CFI = .85). The two-factor model had a

<table>
<thead>
<tr>
<th>Variable</th>
<th>Affective</th>
<th>Continuance</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like school</td>
<td>0.614</td>
<td>0.009</td>
</tr>
<tr>
<td>School is boring (R)</td>
<td>0.594</td>
<td>0.035</td>
</tr>
<tr>
<td>I belong at school</td>
<td>0.381</td>
<td>0.138</td>
</tr>
<tr>
<td>I try hard at school</td>
<td>0.001</td>
<td>0.543</td>
</tr>
<tr>
<td>I usually finish my homework</td>
<td>0.012</td>
<td>0.486</td>
</tr>
<tr>
<td>Getting good grades is important to me</td>
<td>0.013</td>
<td>0.583</td>
</tr>
<tr>
<td>I do extra work to improve my grades</td>
<td>0.019</td>
<td>0.424</td>
</tr>
</tbody>
</table>
TABLE 4
Confirmatory Factor Analysis of the CSS

<table>
<thead>
<tr>
<th>Models</th>
<th>N</th>
<th>$x^2$</th>
<th>df</th>
<th>RMSEA (90% CI)</th>
<th>CFI</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: One-factor CFA model with correlated errors</td>
<td>2,041</td>
<td>127.36*</td>
<td>13</td>
<td>.07 (.06--.08)</td>
<td>.91</td>
<td>.32--.58</td>
</tr>
<tr>
<td>Model 2: Two-factor CFA without correlated errors</td>
<td>2,041</td>
<td>101.13*</td>
<td>13</td>
<td>.05 (.04--.07)</td>
<td>.90</td>
<td>.45--.60</td>
</tr>
<tr>
<td>Model 3: Two-factor CFA model with correlated errors</td>
<td>2,041</td>
<td>69.57*</td>
<td>12</td>
<td>.05 (.04--.06)</td>
<td>.97</td>
<td>.38--.60</td>
</tr>
<tr>
<td>Model 4: Female-only sample</td>
<td>1,017</td>
<td>22.51</td>
<td>12</td>
<td>.03 (.01--.05)</td>
<td>.96</td>
<td>.30--.71</td>
</tr>
<tr>
<td>Model 5: Male-only sample</td>
<td>1,046</td>
<td>31.29</td>
<td>12</td>
<td>.04 (.02--.06)</td>
<td>.92</td>
<td>.36--.63</td>
</tr>
<tr>
<td>Model 6: Sixth graders only</td>
<td>739</td>
<td>28.45</td>
<td>12</td>
<td>.04 (.02--.06)</td>
<td>.91</td>
<td>.64--.76</td>
</tr>
<tr>
<td>Model 7: Seventh graders only</td>
<td>629</td>
<td>11.96</td>
<td>12</td>
<td>.01 (.00--.04)</td>
<td>.99</td>
<td>.61--.71</td>
</tr>
<tr>
<td>Model 8: Eighth graders only</td>
<td>711</td>
<td>30.25*</td>
<td>12</td>
<td>.04 (.00--.06)</td>
<td>.91</td>
<td>.65--.76</td>
</tr>
</tbody>
</table>

*p < .05.

significantly better fit with the validation data compared to the one-factor model: $\Delta \chi^2 = 130.43$, $\Delta df = 1$, $p < .001$. Further evidence of an improved model is that the differences between the CFI s (i.e., $\Delta CFI = .10$) and RMSEAs (i.e., $\Delta RMSEA = .03$) are above the recommended cut-off of > .01 for CFI (Cheung & Rensvold, 2002) and > .015 for RMSEA (Chen, 2007). Figure 1 presents the factor structure and loadings for the final two-factor model. The Cronbach alphas for the affective ($\alpha = .70$) and continuance dimensions ($\alpha = .76$) meet the benchmark of .60, which is further indication that items in each factor hang together (Bagozzi & Yi, 1988; Fornell & Larcker, 1981; Pan, Hsu, & Lin, 2012).

The adequate fit and stability of the final two-factor model with the validation data suggest that there is statistical support for the bidimensional model of the commitment construct in the

---

**Item #** | **Item label**
---|---
1 | I like school
2 | School is boring (R)
3 | I belong at school
4 | I try hard at school
5 | I usually finish my homework
6 | Getting good grades is important to me
7 | I do extra work to improve my grades

**FIGURE 1** Two-factor commitment to school scale with full sample.
Ghanaian context. In total, seven items were specified in the final model. The following three items loaded onto the affective component of commitment: 1 = I like school, 2 = school is boring (reverse coded), and 3 = I belong at school. The other four items that loaded onto the continuance commitment domain are 1 = I try hard at school, 2 = I usually finish my homework, 3 = getting good grades is very important to me, and 4 = I do extra work to improve my grades.

Multigroup Confirmatory Factor Analysis Results

We tested whether the final two-factor model is generalizable across genders and grade levels using model = configural metric scalar, which is a new model option for invariance testing in Mplus 7.1 (Muthén, 2013, p. 5). First, we tested adequacy of the final model separately for males and females as well as for sixth, seventh, and eighth graders. All five models yielded adequate fit with the data. Results of all MGCFAs are in Table 5. Next, we tested for configural invariance to examine similarity of factor structure across groups. We found adequate model fit for gender (χ² = 88.35, df = 26, p < .001, RMSEA = .05 [90% CI = .04–.06], CFI = .95) and grade level (χ² = 104.91, df = 39, p < .001, RMSEA = .05 [90% CI = .04–.06], CFI = .95). This means that the population covariance matrices for males and females and sixth, seventh, and eighth graders are invariant; therefore, the covariance structure parameters are similar across groups. Next, we tested for metric invariance (i.e., weak factorial invariance) to assess similarity of factor loadings across groups. The fit of the metric invariance was adequate for gender (χ² = 92.12, df = 31, RMSEA = .04 [90% CI = .03–.05], CFI = .95) and grade level (χ² = 113.78, df = 49, p < .001, RMSEA = .04 [90% CI = .03–.05], CFI = .95). Next, we compared the gender and grade-level configural invariance models and their corresponding metric invariance models. The gender comparison yielded statistically nonsignificant results, suggesting that the males and females have similar factor structures (Δχ² = 3.77, Δdf = 5, p = .58, ΔCFI < .01, ΔRMSEA = .01). The grade level comparison also yielded statistically nonsignificant results, suggesting that the different grade levels have similar factor structures (Δχ² = 7.81, Δdf = 10, p = .65, ΔCFI < .01, ΔRMSEA = .01).

After finding empirical support for weak factorial invariance for gender and grade level, we proceeded to test scalar invariance (i.e., strong factorial invariance) to determine whether the item intercepts were similar across gender and all three grade levels. The overall model fit of the strong

<table>
<thead>
<tr>
<th>Models</th>
<th>RMSEA (90% CI)</th>
<th>CFI</th>
<th>Δχ²(df)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender comparison</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configural invariance</td>
<td>.05 (.04–.06)</td>
<td>.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weak factorial invariance</td>
<td>.04 (.03–.05)</td>
<td>.96</td>
<td>4.39(5)</td>
<td>.49</td>
</tr>
<tr>
<td>Strong factorial invariance</td>
<td>.04 (.03–.05)</td>
<td>.95</td>
<td>12.76(5)</td>
<td>.03</td>
</tr>
<tr>
<td>Grade comparison</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configural invariance</td>
<td>.04 (.03–.05)</td>
<td>.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weak factorial invariance</td>
<td>.04 (.03–.05)</td>
<td>.93</td>
<td>17.02(10)</td>
<td>.07</td>
</tr>
<tr>
<td>Strong factorial invariance</td>
<td>.03 (.02–.04)</td>
<td>.92</td>
<td>7.09(10)</td>
<td>.72</td>
</tr>
</tbody>
</table>

Notes. RMSEA = root-mean-square error of approximation; CI = confidence interval; CFI = comparative fit index; Δχ² = chi-square difference test.
factorial invariance was acceptable for gender ($x^2 = 104.76, df = 36, p < .001, \text{RMSEA} = .04 [90\% \text{ CI} = .03-.05], \text{CFI} = .95$) and grade level ($x^2 = 121.75, df = 59, p < .001, \text{RMSEA} = .04 [90\% \text{ CI} = .03-.05], \text{CFI} = .95$). We then compared the strong factorial invariance models with the weak invariance models and found statistically nonsignificant results for grade level ($\Delta x^2 = 8.02, \Delta df = 10, p = .63, \Delta \text{CFI} < .01, \Delta \text{RMSEA} < .01$). These statistically nonsignificant results mean that there are no grade level differences in the means of the items and covariances among the items. In short, there is empirical support for the assertion that the bidimensional CSS works similarly across grade levels. However, the gender comparison yielded statistically significant results ($\Delta x^2 = 12.63, \Delta df = 5, p = .03, \Delta \text{CFI} < .01, \Delta \text{RMSEA} < .01$), suggesting gender noninvariance. To identify the source of noninvariance, we conducted partial strong invariance tests by systematically estimating individual intercepts separately for males and females one at a time (Millsap & Yun-Tein, 2004). The partial strong invariance testing revealed that the item *I usually finish my homework* is problematic in that males and females respond to it quite differently ($x^2 = 97.31, df = 35, p < .001, \text{RMSEA} = .04 [90\% \text{ CI} = .03-.05], \text{CFI} = .95$).

**DISCUSSION**

The goal of this study is to assess the fit and generalizability of a student CSS originally developed for the Rochester Youth Development Study in the United States and adapted to the Ghanaian context in the YouthSave Ghana experiment. Findings of this study provide empirical support for the application of a bidimensional student CSS to the Ghanaian context. The study also finds that the performance of the CSS does not vary by grade level.

Student commitment to school is a bidimensional construct tapping into students’ (a) attachment to school because of the school environment (i.e., affective commitment) and (b) involvement because of anticipated benefits of education (i.e., continuance commitment) (Meyer & Allen, 1991). The bidimensional structure of the commitment construct is consistent with the underlying theoretical perspective of commitment presented earlier in this paper. As predicted, three observed indicators—*I like school, school is [not] boring,* and *I belong at school*—loaded sufficiently onto one latent factor to reflect students’ affective commitment to school. To be committed, students must develop a connection with and like the school and feel excited about the social, physical, and regulatory climate. Certain school environmental factors will push some students away and pull others in emotionally. If the attracting influences are more powerful, students will feel connected to the school, which will foster a sense of belonging.

Retention of all three observed indicators is particularly relevant for affective commitment from a theoretical and technical standpoint. Theoretically, we expect that all three observed indicators combine well (i.e., students are likely to find school exciting (not boring) if they like it and will like school if they feel a sense of belonging). In other words, these three observed indicators are interdependent. From a statistical perspective, the preferred lower bound for the number of observed indicators per latent factor is three (Hatcher, 1994). In the final model of this study, only three observed indicators loaded onto affective commitment. Eliminating any of the three indicators from the latent factor poses technical challenges for the measurement model because the affective commitment factor reached the desirable threshold for number of observed indicators.

The study also finds that four observed indicators—*getting good grades is very important to me,* *I try hard at school,* *I usually finish my homework,* and *I do extra work to improve my
grades—loaded onto the second latent factor, which reflects the continuance dimension of commitment to school. This dimension of commitment taps into students’ engagement in schoolwork because of the benefits they perceive and expect will come from having an education. Examination of the indicators under continuance commitment suggests that the observed indicators adequately reflect two important theoretical aspects of the construct: (a) people reflect on the importance of an issue or undertaking and (b) people act according to their perception of an issue or undertaking’s importance to make sure the potential benefits are realized.

Students’ response to getting good grades is very important to me is an expression of the importance they attach to schoolwork. In other words, most JHS students in Ghana who are committed to school know that good grades are a key determinant of their progression to higher education and a brighter future (Ansong, 2013). The more they espouse the view that schooling and its requirements are important, the more they may devote themselves to their schoolwork and focus on learning. This means that the other three observed indicators of continuance commitment—I try hard at school, I usually finish my homework, and I do extra work to improve my grades—are logical sequels to how students perceive grades and schoolwork. If they see grades as important, students will engage in behaviors consistent with that view, including working hard at school, finishing homework, and doing extra work to achieve good grades. If students do not see the importance of grades or schooling, they will not have a compelling reason to work hard to get good grades or progress to higher education. Therefore, a measure may fall short of adequately representing the broad spectrum of students’ continuance commitment if any of the four observed indicators is dropped from the subscale.

Although affective commitment and continuance commitment are different subscales, they are related and interdependent. The acceptable discriminant validity suggests that affective and continuance are different subconstructs, but the moderate correlation coefficient (r = .45) suggests that they are related in some ways. This finding is consistent with the theoretical connections between the different dimensions of the commitment to school construct. The extent and nature of students’ emotional attachment to school (i.e., affective commitment) could constrain their opinions and options about what is important and worth pursuing and how they pursue them (i.e., continuance commitment) (Hellman & Williams-Miller, 2005; Stryker & Serpe, 1994). Likewise, perceptions about the relevance of school and subsequent engagement in schoolwork could affect students’ behaviors. When students are hopeful and academically engaged, they might find it easier to integrate socially and like the school. Perhaps this subtle connection between affective and continuance commitment may have convinced some education researchers to conceptualize student commitment to school as a one-dimensional rather than a two-dimensional construct (e.g., Hellman & Williams-Miller, 2005). Regardless of the subtle connections between the two subconstructs, theorists and researchers should exercise caution in how they conceptualize and test student commitment. Ultimately, it is important that the final model adequately capture all relevant domains of the student commitment to school construct (Konerding, 2013) to highlight the multiple aspects of commitment to school.

Another major goal of the study was to examine the stability of the two-factor commitment model for all Ghanaian JHS students. The study finds empirical support for the similarity of factor structure (i.e., configural invariance), factor loadings (i.e., metric invariance), and item intercepts (i.e., scalar invariance) of the commitment model across grade levels but not across genders. Because the multigroup confirmatory factor analysis suggests that the revised CSS does not discriminate among sixth, seventh, and eighth graders, educators and education researchers in Ghana can use the two-factor commitment scale for all JHS students, regardless of their grade
level. This will help them avoid the challenges of developing different scales for different groups and could be useful for cross-grade-level comparison in research studies.

The noninvariance finding for gender has significant implications for the use and further testing of the scale, which must work similarly among diverse populations, including rural versus urban youth, to be widely accepted and relevant in different contexts. Because the item *I usually finish my homework* did not work equally well for males and females, studies that use the scale should consider controlling for gender. There seems to be a nuanced connection between young people’s ability to complete their homework and their level of commitment to school because of cultural dynamics around gender roles in the household. Compared to boys in the Ghanaian context, girls often bare most of the burden of the household chores, a situation that may put further strain on girls’ ability to complete schoolwork (Chowa, Ansong, & Masa, 2010). It is suggested that future studies alter the item for further invariance testing (Lugtig, Boeije, & Lensvelt-Mulders, 2011).

It is worth noting that we neither tested nor validated the normative component of commitment for two reasons. First, the original CSS developed by Thornberry and colleagues (1991) does not have items on the normative dimension of commitment. Consequently, the adapted CSS in the YouthSave Ghana experiment did not include items on normative commitment. Secondly, the most theoretically sound way to assess the normative dimension of students’ commitment in the Ghanaian context is to rely on school attendance records. Yet, school attendance is a single manifest measure of normative commitment and so from a measurement perspective, it is not necessary to apply data-reduction techniques such as factor analysis to reduce the number of observed indicators. At least three indicators are necessary to load onto normative commitment to satisfy the identification rules of factor analysis. This does not mean studies that assess student commitment—especially in the Ghanaian context—should ignore the normative dimension of the construct. As suggested earlier, administrative records on school attendance might be the appropriate measure of students’ normative commitment to school. However, psychometric testing is needed to assess the validity of school attendance as a measure of normative measurement.

**LIMITATIONS**

This study has limitations worth discussing. Contrary to the recommendation that a measurement scale should more items in the instrument to improve its reliability (Hatcher, 1994), this study has relatively few items. We began with nine observed indicators and ended with seven observed indicators and two latent factors. Although excluding the two poorly fit items resulted in an acceptable and parsimonious model, there may be more to the misfit of these two items than we are able to explain in this study. For instance, the two dropped items are negatively worded survey items. This study fails to look into whether there is a pattern misfit of negatively worded items, as was found in related measurement studies (Sabah, Hammouri, & Akour, 2013). Researchers need to conduct further studies to test the possibility that negatively worded items tend to result in a misfit. The negative phrasing of the dropped items also may have made some respondents uncomfortable reporting their true perceptions. For instance, asking students whether homework is a waste of time may have been too blunt, and they may have thought it was socially undesirable to agree with such a statement. The intent of the question is relevant for a commitment scale because it may tap into the seriousness that students attach to school requirements, but its bluntness may not elicit truthful responses.
As noted earlier, the data-collection instrument went through multiple phases of review and testing before its rollout. We believe the process helped refine the questions, but like all instruments, additional updates and reviews become necessary as situations on the ground change. Therefore, in place of the statement, homework is a waste of time, we offer the following phrasing for consideration: Spending time to finish daily homework is worthwhile. Such revision would contribute meaningfully to further development of a CSS for youth in Ghana.

Lastly, this study limited its measurement invariance test to two dimensions: gender and grade level. Thus, it cannot offer insight into whether the commitment model would work similarly in different groups not considered in this study. To further validate the scale, researchers should conduct future studies to test invariance across other relevant groupings, including geographical areas and household socioeconomic groups.

CONCLUSION

The adaptation and validation of a commitment to school measure is an important contribution to education research and programs in Ghana. The absence of a standardized CSS meant that researchers and practitioners paid little attention to the relevance of student commitment to educational outcomes (Ramadas et al., 2013). Even when researchers investigated the role of student commitment in low academic achievement in Ghana, they did not employ tailored measures of commitment that accounted for key domains of student commitment. This study contributes to the development and validation of a CSS. Drawing on theory of organizational commitment, this study tests and finds support for a two-component CSS applicable to the Ghanaian context. It also finds that the scale works just as well for sixth, seventh, and eighth graders. Given its parsimonious nature and reasonably good fit, the revised seven-item CSS might be useful as a research and assessment tool for measuring school commitment among JHS students in Ghana. The scale also has potential use in education research, especially in the context of developing countries. However, because this is the first known CSS tailored to the Ghanaian context, we recommend further psychometric assessment and validation of the scale among diverse populations. This is necessary to ensure accurate measurement and better understanding of youth’s commitment to school.

AUTHOR NOTES

David Ansong, Ph.D., MSW is an Assistant Professor of School of Social Work at the University of North Carolina at Chapel Hill. Dr. Ansong’s areas of research expertise include economic and educational disparities, youth asset development, and international social development. He is involved in international research on asset development for low-income households and youth.

Gina A. Chowa, Ph.D., MSW is the Director of Global Social Development Innovations (GSDI) and an Associate Professor of Social Work at the University of North Carolina at Chapel Hill. Dr. Chowa’s research interests are in international social development, particularly in asset building, HIV/AIDS, social protection, and financial capability. Her work has included investigating the impacts of asset interventions on financial capability, household economic and social well-being.

Rainier D. Masa, Ph.D., MSW is an Assistant Professor of School of Social Work at the University of North Carolina at Chapel Hill. Dr. Masa’s research interests are in social and
economic correlates of health outcomes in resource-limited settings, particularly the intersection of food insecurity and HIV, effects of food insecurity on individual and family well-being, and the role of assets, livelihood and social protection on health attitudes and behaviors.

REFERENCES


