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Abstract

Student engagement has been researched from multiple perspectives in the literature due to its impact on academic attainment and other variables of interest. However, most of the research has focused on grades above elementary school, leaving a gap on student engagement at the elementary level. This study reports on the psychometrics of a newly developed student engagement instrument for elementary school. The hypothesis assumes that student engagement for elementary school students is a metaconstruct comprised of *cognitive*, *behavioral*, and *emotional* metaconstructs. This instrument named *The Elementary Student Engagement Survey* (ESES) instrument was piloted employing a sample of 202 minors.

Statement of the Problem

Over the past 20 years, student engagement has been researched from multiple perspectives in the education literature (Appleton, Christenson, Kim, & Reschly, 2006). Research suggests high levels of student engagement at the secondary and postsecondary levels may lead to positive outcomes including both developmental and educational outcomes (Lei, Cui & Zhou, 2018). However, there is confusion surrounding the construct of engagement regarding its definition and measurement at the elementary school level (Lam et al., 2014).

Methods

This work reports on the first set of psychometric scores of a self-reporting measuring assessment developed by the authors to measure student engagement at the elementary school level. This process took place over a period of two school semesters and a summer where researchers developed the instrument using literature review, results from a previous pilot study and the expertise of the researchers. The bank of questions first produced from this work were structured to be functional for the targeted participants and later distributed to a set of elementary school teachers who did a bias review.

Sample/Participants

Participants were recruited through convenience sampling and all participants were students from third and fourth grade of a Central Texas elementary school. Before recruitment, Institutional Review Board (IRB) approval was obtained at both the school district level and at the University level. The sample ($N=202$) was comprised of 46% students in 3rd grade and 54% students in 4th grade. Demographic distribution was as follows: 29.3% Hispanics, 58.8% White, 1.8% Asian, 9.3% Black or African American, 0.4% American Indian or Alaskan Native and 1.3% Mixed (two or more ethnicities). Also, 49.4% were females and 50.6% were males.

Procedure

Participating students completed the ESES at the beginning of the fall semester. Survey administration took place in the computer lab. The students used individual computers to complete an online survey; items were formatted using Qualtrics with one item per page and presented in a random order within each measure for each student. Students were closely monitored by the survey administrator, who made efforts to control careless responding and assist students with technical or reading support. On average, students were able to complete the ESES within 18–22 minutes.

Data Collection

A validity assessment of the interpretation of the results from the ESES was conducted using factor structure analysis. The original set of items were analyzed using Confirmatory Factor Analysis (CFA) and maximum-likelihood (ML) estimation. The factor loadings resulting from this estimation and the model indices of fit provided robust evidence for the validity of the interpretations made with respect to the developed theory of student engagement for elementary school students. The raw data collected through Qualtrics was downloaded and properly reversed coded where needed before being checked for normality. It was determined that a few items needed to be transformed to comply with model fitting assumptions.

Results

The final model produced assumes that the general factor of student engagement for elementary school students is comprised of the three second-order factors discussed above (i.e. behavioral, cognitive and emotional). Each of the second-order factors is comprised of two third-order factors. The behavioral second-order factor is comprised of the Effort and Participation third-order factors that are related to the child's internal process for learning within

the learning environment. The Cognitive factor is comprised of the Autonomy and Competence third order factors that are related to self-efficacy of the child. The Emotional factor is comprised of the Sense of Belonging and Positive Relationships third-order factors which are related to how the child internalizes the interactions the child experiences in the learning environment. The Cronbach's alpha scores for the domain specific metaconstructs were as follows: Effort was 0.736, Participation was 0.712, Autonomy was 0.722, Competence was 0.719, Sense of Belonging was 0.738 and Positive Relationships was 0.748. The loadings of all the items for each one of the domain specific constructs (e.g. Autonomy, Effort, etc.) scored appropriately except for a few items that researchers deemed critical to retain due to their value to the theory of student engagement for elementary school students.

Educational/Scientific importance of the study

The results of the current study suggest that the ESES is a promising measure for assessing elementary school students' perceptions of engagement in learning environments. The ESES allows for measurement of student engagement at the elementary level and also allows researchers to start building theories on student engagement which can be tested across different populations and locations. These initial results have practical significance and help both researchers and practitioners understand what comprises student engagement at the elementary level. Also, it can help produce plans and professional development for interventions that can increase student engagement while reducing the possibility of undesired behaviors at a later time. As a result, these data can provide support for teachers in identifying students who may need further support that may not be easily discernable otherwise. Researchers are also hopeful that an increase in student engagement will produce an increase in many of the metrics used to measure students' academic attainment.

Limitations

The current study must be viewed in light of several limitations. The sample size is small and from the same school in a suburban school district. In order to extend generalizability of current findings additional research will need to include students of different ethnic and racial backgrounds across elementary grade levels. However, current results suggest that the ESES is a promising measure of students' perceptions of their feelings of engagement in the learning environment. Therefore, the ESES has the potential to advance our understanding of student engagement and its impact on elementary students' educational experiences and academic achievement.

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