

THE STRUCTURE OF SCHOOL ENGAGEMENT AMONG YOUTH
IN CHINA: AN EXPLORATORY STUDY¹

A thesis submitted by

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Abstract

Using a translated measurement model that was originally developed by Li and Lerner (2011) for U.S. youth, and data from a sample of 8th, 9th and 11th grade Chinese adolescents ($N = 364$), exploratory factor analysis (EFA) was used to identify a multidimensional school engagement construct in China. Results were not consistent with existing theoretical and empirical literature in Western countries. Instead of three factors, four factors were found: school compliance, self-expression, emotional engagement, and cognitive engagement. In addition, a relatively weak correlation was found between behavioral engagement and academic performance, and no significant correlation was found between Emotional or Cognitive engagement and academic performance. Based on the differences between this study and previous studies in Western countries, the need for an emic approach in studying school engagement among youth in China is discussed.

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Youth academic success is predictive of higher levels of academic achievement, vocational success, and civic engagement in adulthood (e.g., Attar-Schwartz, 2009; Schiff & Benbenishty, 2006; Tylor, Johnson, & Brownridge, 2008). Among various factors that influence youth academic success, student engagement in school has become an increasingly important construct to examine as a consequence of findings indicating that school engagement strongly predicts academic success in both Eastern and Western countries (Fredricks, Blumenfeld, & Paris, 2004; Lam et al., 2012; Li & Lerner, 2011). School engagement has been conceptualized in Western cultures as the extent to which students are psychologically committed, emotionally involved, and actively behaviorally participating in academic and non-academic activities in school. However, little research has been conducted on conceptualizing and assessing the structure of school engagement in Eastern countries. The present study seeks to begin to address this gap in knowledge by examining school engagement among a cohort of secondary school students in China.

The concept of school engagement is of particular importance in middle school and high school, because biological growth, psychological development, and expansions of social contexts become prominent during this age period (Eccles, 1993; Li, 2011). The rapid changes in internal and external characteristics of youth could have profound impacts on school engagement and on subsequent youth well-being (e.g., Fall & Roberts, 2012). For instance, an expansion of social interaction, such as joining peer groups, might encourage youth to become more devoted to school activities, or encourage youth to diverge from positive school

experiences.

The influence of school engagement on academic success can be seen from results of studies of the positive effects of school engagement and negative effects of school disengagement. Recent studies in Western and Eastern countries have found that when students are engaged in school, they are more likely to be on and continue on a pathway to academic success (e.g., Fall & Roberts, 2012; Lam et al., 2012; Maslak, Kim, & McLoughlin, 2010; Ogbu, 2003; Rumberger & Larson, 1998; Smerdon, 1999). Student disengagement from school, on the other hand, is found to predict academic problems such as underachievement, academic failure, and high dropout rates (e.g., Archambault, Janose, Fallu, & Pagani, 2009; Finn, 2006; Ogbu, 2003).

Given school engagement's influence on academic outcomes, the concept and measurement of school engagement could help both researchers and educators gain a comprehensive understanding of the process between engagement and academic success. For the past 20 years, social scientists have introduced various conceptualizations of school engagement. A major shift in conceptualizing the school engagement literature over the past two decades has involved changing the definition of the construct from a single-dimensional structure (involving mostly behavioral attributes), to more multidimensional conceptions of engagement (Li, 2011).

Although there are still debates about the conceptualization of school engagement, mainly involving discussions of the number of dimensions, there is a growing consensus that school engagement should be conceptualized as a

tridimensional construct (Fredricks et al, 2004). This conceptualization involves a behavior-emotion-cognition model, which offers a comprehensive characterization of engagement and avoids unnecessary redundancy (Lam et al., 2012; Li, 2011). Behavioral engagement draws on the idea of participation, which often refers to involvement in school-based activities or points to the absence of disruptive behaviors (e.g., Archambault et al., 2009). Second, emotional engagement represents students' emotional reactions to school, teachers, and schoolmates, such as interest and value towards any of these contextual factors (Stipek, 2002). Third, cognitive engagement stresses the investment in learning, self-regulation, personal goals, and being strategic in learning (Appleton, Christenson, Kim, & Reschly., 2006, Greene, Miller, Crowson, Duke, & Akey, 2004).

One advantage of this conceptualization is that defining multiple dimensions of school engagement enables researchers and educators to discern which aspects of engagement are the most important for improving different school outcomes (Glanville & Wildhagen, 2007). For instance, although not yet examined in the extant literature focusing on school engagement, it may be that one dimension of engagement may be more important for preventing behavioral problems in school, whereas another dimension may be more important for improving academic test scores.

Based on the conceptual model that Fredricks et al. (2004) proposed and that was revised by Li and Lerner (2011), Li and Lerner (2011) developed a measurement model that assessed the behavioral, emotional, and cognitive

dimensions of school engagement. The measurement model, which consists of 15 items, has been tested on a large U.S. nationwide sample of high school students participating in the 4-H Study of Positive Youth Development (Lerner et al., 2005, 2010, 2011). This measure has shown good convergent and discriminant validity (Li & Lerner, 2011). Importantly, this measurement model has been found to have measurement invariance across adolescent males and females, and among youth from different socioeconomic backgrounds and ethnicities (Li & Lerner, 2011).

From a developmental perspective, the tri-dimensional school engagement conception may represent the breadth of the psychological and behavioral characteristics of students and may be considered to be universal (Furlong et al., 2003; Walberg, 1981). This tripartite construct has gained increasing popularity in recent studies that have been mainly conducted in Western cultures (e.g., Glanville & Wildhagen, 2007; Li & Lerner, 2011; Wang, Willett, & Eccles, 2011). However, there is a small literature that has examined the structure of school engagement in Eastern, for example Chinese, cultural settings, where school engagement has been suggested to be particularly important for researchers, educators and students (Hannum & Park, 2002).

Examining the structure of school engagement among youth in China has theoretical and practical importance. First, there is a lack of comprehensive understanding of school engagement in Eastern cultures, including China. There is a growing body of literature that shows the difference between Eastern and Western countries in various contextual factors surrounding youth, such as school settings, peer relationships, academic expectations from parents, and educational

policies (e.g., Kim, 2005; Leung, Wong, Chen, & Tang, 2008; Liao, Lee, Roberts-Lewis, Hong, & Jiao, 2011; Hannum, Kong, & Zhang, 2009; Maslak et al., 2010; Zhai and Gao, 2009). These differences might shape youth engagement with school in a different way in China than in Western cultures. For instance, in China, classroom discussions are not encouraged and are sometimes replaced by teacher-centered question-and-answer sessions, where teachers are inclined to pressure students to agree with them (Li & Ni, 2011). While participation in classroom discussions is conceptualized as a component of behavioral school engagement in the Li and Lerner (2011) measurement model, this kind of activity is relatively inhibited in classrooms in China and measurement of this behavior might not precisely reflect youth behavioral engagement with school.

Moreover, in China, students are expected to be working hard in school and getting good grades, even when adults know they do not like school. As research indicates, in Chinese culture working hard and having good grades are considered to be important ways that children maintain good relationship with their parents (e.g., Zhai and Gao, 2009; Leung et al., 2008). In most Asian cultures, including Chinese culture, children understand their parents' expectations of them and study hard to make good grades to avoid or alleviate a guilty conscience and to avoid disgracing their parents (Kim, 2005). It is therefore reasonable to hypothesize that the emotional aspect of school engagement is less necessary among youth in Chinese culture, because the youth are asked work hard to make good grades regardless of their emotional reactions towards school. However, these interpretations are not based on a strong empirical literature about

youth school engagement in China.

Nevertheless, because school engagement may play a significant role in preventing school dropout in both Western and Eastern countries (e.g., Archambault et al., 2009; Lam et al., 2012), the concept of school engagement may particularly important in China, where the number of school dropouts is a huge problem. For instance, data show that in Chinese rural areas the average high school dropout rate may be 40% or higher, and that this rate has continued to rise over the past five years (Hannum, & Park, 2002; Peng, 2004; Yi et al., 2012). The dropout crisis in Chinese urban areas not well addressed in the literature, but the future outlook for the educational attainment of urban Chinese youth is not promising given the growing number of migrant workers in big cities, where children are denied access to public schools in many cities. These children may go to private schools, which usually have poorer education quality because they do not have sufficient educational resources (Gui, Berry, & Zheng, 2012). Given the educational and practical constrains in China, having a comprehensive understanding of school engagement could provide insights about how to intervene in the dropout crisis and increase school engagement in these underprivileged areas and in particular among underdeveloped urban schools.

Accordingly, the current study focuses on exploring the structure of school engagement among youth in China. To explore the structure of school engagement, I examined the measurement model developed by Li and Lerner (2011). First, emerging literature on the conceptual model of school engagement among Chinese youth sample suggests that school engagement can also be

conceptualized as comprising behavioral, emotional, and cognitive components (Lam et al., 2012). However, little empirical research has systematically explored the construct of school engagement in China. Second, although the Li and Lerner (2011) measurement model shows good psychometric properties and measurement equivalence across age, gender, socioeconomic status, and ethnicity in United States samples, it is not known whether the measurement model is appropriate for Chinese youth. Thus, in the current study, a sample of Chinese high school students was assessed using the Li and Lerner (2011) measurement model. Exploratory factor analysis was used to identify factors of school engagement in the Chinese sample of youth. Additional statistical analyses were employed to explore the reliability and validity of the measures.

Method

Participants

The present investigation used data from adolescent participants in a cross-sectional study that was conducted in Guangdong Province, China, by a research team from Department of Psychology in South China Normal University (SCNU). The data were collected at the beginning of the fall academic semester in 2011. The sample for the present investigation included 364 Chinese youth, aging from 13 to 20 years old, from four urban middle and high schools in Zhanjiang City. About 60% of the youth were female (see Table 1), and the mean age of the sample was 16.70 years ($SD = 1.69$). Participants were from 8th, 9th, and 11th grades¹. Among the youth from the sample, maternal education ranged from 6 years (6th grade or less) to 16 years (Bachelor's degree). The average maternal

education was 7.94 years ($SD = 2.36$ years).

Due to the relatively small sample and broad range of ages, cases were divided into two groups by age for descriptive analysis, operationalized as the younger group (13-to-16 year-olds, $N = 164$) and the older group (17-to-20 year-olds, $N = 189$).

Zhanjiang is a developing city in Southeastern China with approximately 1.4 million inhabitants living in urban areas. Most of the people speak both Mandarin and Cantonese as their native languages. As the economy is developing in the city, more migrant workers are moving into Zhanjiang city, which makes the city representative of most urban areas in Southeastern China. Although precise statistics are not available for this study's sample, and that convenience sampling was used, it is possible to infer that the sample in the current is representative of Southeastern China.

 Insert Table 1 about here

Measures

To examine the measurement model of school engagement that was developed by Li and Lerner (2011), the present study used a Chinese version of the survey instrument. The survey was translated and back-translated by a graduate student from SCNU. In addition, students' recent standardized test scores were included to indicate students' academic performance and were used in the analyses to validate the measurement model. However, only half of the

participants included their valid identifiers in the survey forms, and the researchers could only integrate data from this part of the sample with the academic records as a result. As a result, a subsample of 149 children with completed data (i.e., with less than 5% missing data) was used in the validity test component of the study.

School Engagement. The translated version of school engagement questionnaire (Li & Lerner, 2011) was used to measure youth engagement with school. There are three subscales on the 15-item version of the school engagement questionnaire: Behavioral engagement, emotional engagement, and cognitive engagement subscales. In the behavioral engagement subscale, five questions are presented with a 4-point response scale in which participants are asked to decide how often they would behave on each of the statements. Response alternatives were: never, sometimes, often, and always. In the emotional and cognitive subscales, 5 items of each subscale are rated on a 4-point scale in which participants are asked to decide how much they would agree on each of the statements. Response alternatives were: strongly disagree, disagree, agree, and strongly agree. Examples of behavioral engagement, emotional engagement, and cognitive engagement, respectively, are: “How often do you complete homework on time”, “I am happy to be at my school”, and “school is very important for later success”.

Demographic Information. Age and sex were assessed in the survey. In addition, to estimate students’ socioeconomic status (SES), the survey also measured maternal education by asking about the mother’s highest level of

education. There were four categories from 6th Grade or less to bachelor's degree or above.

Procedure

The whole collection process lasted for four days. The data collection was performed by the research team and facilitated by classroom teachers at the four participating schools. Classroom head teachers gathered students in the classrooms and gave each student a paper survey form to read and complete. Before having students start the survey, teachers read the instructions to the youth. Participants were instructed that they could skip any questions they did not wish to answer. Most students who were unable to be surveyed at their schools were absent during the day of testing. When collecting the completed survey forms from the teachers, the researchers also gathered students' recent standardized test scores and integrated the test scores into the survey data.

Chinese universities, including SCNU, do not use Institutional Review Boards to vet studies for ethics. However, the SCNU research team stated that the research was minimal risk to students, and that before conducting the survey they had gained oral consent from parents. All the data collected from the study were kept in a password protected folder on a password protected computer to which only the research team had access. There were no incentives given to students who participated in the study.

Data Analyses

To address the objectives of the study, the following data analysis plan was used; all with the software package, SPSS 16.0. First, to investigate the structure

of school engagement with the sample of Chinese youth, an exploratory factor analysis (EFA) was conducted using varimax rotation. Varimax rotation was used to maximize the sum of the variances of the squared loadings (Kaiser, 1958). The Bartlett's test of sphericity was conducted to indicate whether there was sufficient correlation among the variables to proceed with the analysis. An item loading criterion of .4 and an eigenvalue threshold of 1.0 were preset for the EFA (McDonald, 1985). Items with low factor loadings were deleted (e.g., Fabrigar, Wegener, MacCallum, & Strahan, 1999).

Second, each factor that was accepted was considered as an independent scale. Reliability tests for each of the scales were conducted using Cronbach's alpha. Descriptive analyses by sex and age were conducted based on the factors found in the EFA. The concurrent validity of each of the scales was tested by examining the correlation between the three subscales, the full scale, and students' academic records. Multiple regression models, controlling for age, sex, and mother's education, were built to test whether components of school engagement found in EFA were, either independently or together, predictive of students' academic performance.

Results

Exploratory Factor Analysis

In order to assess if there was evidence in the Chinese data for a tripartite school engagement construct, an exploratory factor analysis using varimax rotation was conducted for the 15 school engagement items (see Table 2). The Bartlett's test of sphericity was significant ($p < .001$), indicating sufficient

correlation among the variables to proceed with the analysis. Given the size of the sample (using listwise deletion, a decision I discuss in the Discussion section, $N=342$), the variables-to-cases ratio for this analysis was satisfied.

Based on a rigorous item loading criterion of .4 and an eigenvalue threshold of 1.0, five factors were extracted from the model, explaining 62% of the variance. The initial eigenvalues were 4.18, 1.55, 1.32, 1.17, and 1.03. Among the original items from the measurement model, item 10 was removed because it loaded as a single item on Factor 4 and did not provide more information than Factor 1. Item 9 and Item 11 were removed because they did not meet the loading criteria on any of the factors. Considering the contents of items from the measurement model and factor loadings, the school engagement scale was then comprised of four factors, with a total of 12 items. The four-factor model consisted of emotional engagement, cognitive engagement, school compliance, and self-expression. Emotional engagement (Items 6, 7, and 8) represents students' emotional reactions toward school as well as their feelings of belong with school. Cognitive engagement (Items 12, 13, 14, and 15) represents students' academic goals and learning strategies. For behavioral engagement, Factor 3 and Factor 5 addressed two different components of this construct. Based on the content of the items, Factor 3 (Items 1, 2, and 3) was named students' School Compliance after similar findings from the extant literature (Wang et al., 2011). Factor 5 (Items 4 and 5) was named Self-Expression.

Insert Table 2 about here

Reliability Test

According to the results of the EFA, four subscales can be extracted from the data set using the Chinese version of Li and Lerner (2011) school engagement measure. Cronbach's alpha for the whole scale was .76, indicating an acceptable internal reliability. The Cronbach's alpha for School Compliance, Self-Expression, and Cognitive Engagement were fairly low ($\alpha = .55, .65, \text{ and } .65$, respectively). Given the nature of the exploratory study, these subscales were retained, but interpretations should be made with caution. The number of items and Cronbach's alphas for each of the subscales as well as the full scale are shown in Table 3.

Insert Table 3 about here

Descriptive Analyses: Sex and Age

On average, males and females scored relatively highly on compliance to school ($M_s = 3.20$ and 3.38 , respectively), as did younger and older age groups ($M_s = 3.37$ and 3.26 , respectively) (see Table 4). Students also had relatively high emotional and cognitive engagement with school across sex and age (M_s ranged from 3.09 to 3.34). On the other hand, students scored lower on being prepared to express themselves in class across sex and age (M_s ranged from 2.21 to 2.34). An analysis of variance found that girls scored higher on the compliance scale than

boys (3.38 vs. 3.20, respectively), $F(1, 321) = 16.81, p < .001$, and girls scored higher on emotional engagement with school than boys (3.34 vs. 3.09, respectively), $F(1, 321) = 11.47, p < .01$ (see Table 5). Students from the younger age group scored higher on the compliance scale than the older age group (3.37 vs. 3.26, respectively), $F(1, 321) = 6.04, p < .05$, and the younger students scored higher on the cognitive engagement than the older students (3.22 vs. 3.06, respectively), $F(1, 321) = 6.07, p < .05$.

Insert Tables 4 and 5 about here

Validity Test

To perform a validity test with all the scales, a subsample of youth with integrated academic scores was used in the analysis ($N = 149$). Given the theoretical association between school engagement and academic performance, it was hypothesized that school engagement and academic performance would be positively correlated. As expected, overall school engagement was positively correlated with academic performance ($r = .28, p < .01$). Both of the subscales of behavioral engagement were positively correlated with academic performance ($r_{SC} = .18, p < .05$; $r_{S-E} = .26, p < .01$). However, it is interesting that the correlation between academic performance and emotional engagement was not significant, nor was the correlation between academic performance and cognitive engagement (see Table 6). Some of the intercorrelations among factors of school engagement were significant. Emotional engagement was positively correlated

with self-expression ($r = .35, p < .01$) and cognitive engagement ($r = .23, p < .01$). School Compliance was not correlated with any of other dimensions of school engagement.

 Insert Table 6 about here

As another validity test, multiple regression analysis was conducted to determine whether adolescents' engagement with school would predict academic performance. The regression analysis included seven models to assess the unique contribution of the full school engagement scale and each school engagement subscale in predicting youth academic performance, controlling for sex, age, and mother's education. The initial model (Model 1) included the control variables. Model 2 added mean scores for the full school engagement scale. In Model 3 through Model 6, the four subscales of school engagement were separately tested as independent predictors. Model 7 included all of the four subscales of school engagement in predicting the outcomes (see Table 7). It may be noted that previous research has showed that all components of school engagement are important for students' academic performance, and therefore in the present study I elected to just look at one component at a time as well as look at all of the components together (Li & Lerner, 2011).

Results from Model 1 in the analysis indicated that some control variables, sex and mother's education, were not significant predictors of students' academic performance. Age was a significant predictor. As expected from previous findings

(e.g., Lam et al., 2012), the addition of school engagement in Model 2 significantly predicted academic performance. Self-expression significantly predicted academic performance in Model 4 and Model 7. Cognitive engagement was found to be a significant predictor in Model 6. In Model 7, only school compliance was found to predict academic performance. Neither school compliance (Model 3) nor emotional engagement (Model 5) was a significant predictor.

Insert Table 7 about here

Discussion

This exploratory study assessed the structure of school engagement among a sample of youth in China, using the Li and Lerner (2011) measurement model and Li's (2011) and Fredicks and colleagues (2004) theoretical model of a tri-dimensional model. Past research indicates the importance of school engagement. Across adolescence, youth who are more engaged in school have better academic performance and are on a better pathway toward academic, social, and civic well-being (e.g., Attar-Schwartz, 2009; Schiff & Benbenishty, 2006; Tylor et al., 2008). These findings have been found consistently across cultures, including within China (e.g., Lam et al., 2012). However, there is little understanding about how school engagement is conceptualized and structured among youth in China. Moreover, although the Li and Lerner (2011) measurement model shows good reliability and validity in a U.S. sample, it is not known whether the model is

appropriate for Chinese youth.

To explore these issues, a first goal of the present study was to assess whether there was evidence for a multidimensional structure of school engagement for Chinese youth. The results of the study indicated that it is possible to define school engagement as a multidimensional construct. Moreover, although exploratory factor analysis extracted four factors from the data set, Factor 3 and Factor 5 conceptually describe two different aspects of school-related behavior and could be nested within the behavioral component of school engagement. These findings were consistent with results from previous theoretical and empirical studies that were mainly conducted in Western countries (Fredricks et al., 2004; Furlong & Christenson, 2008; Li, Lerner, & Lerner, 2010), that is, evidence shows that school engagement in a Chinese sample can be measured within the behavioral-emotional-cognitive theoretical model.

Responses for subscales of school engagement were found to be different across sex and age in the present study. For example, compared to boys, girls were more compliant to school and more emotionally engaged with school. Older students were not as compliant to school or cognitively engaged with school than younger students. These findings were consistent with the existing literature, and could be explained from a perspective which stresses the importance of how social relations, maybe moderated, by variables related to age and sex (Archambault et al., 2009; Goodenow, 1993; Lam et al, 2012; Maslak et al., 2010). For example, previous research suggested that girls might have higher social relation scores with parents and teachers, and therefore may be more compliant to

rules made by adults, and more emotionally attached to school than is the case with boys (Goodenow, 1993). In regard to age differences, it is often suggested that younger children are more connected to teachers in school, and thus more compliant to school rules, while older children are gaining more independence and trying to be more diverge from adults and thus be less compliant to school rules (e.g., Pomerantz et al., 2009). Future research needs to test directly these theoretical ideas.

Results from the validity test showed that school compliance and self-expression components of behavioral school engagement were significantly correlated with students' academic performance, but at low levels. These findings are consistent with previous research conducted with U.S. samples that indicates that behavioral school engagement predicts academic functioning (Li et al., 2010). School engagement, as an overall concept, was also found to be associated with students' academic performance. This result is consistent with results that were found in Western countries and in other research in China, and indicates the positive link between school engagement and academic performance. For instance, Lam et al. (2012) conducted a cross-cultural study and measured school engagement as an integrated concept. They found that school engagement predicts students' academic performance among youth from several countries, including China.

It is interesting to note that, after demographic variables were controlled, only Self-Expression among the four aspects of school engagement significantly predicted academic outcomes. This relation is constant with previous findings

that showed that self-expression is not encouraged in Chinese classrooms, where teachers are inclined to pressure students to agree with them (Li & Ni, 2011).

These findings may suggest that, even though self-expression is not encouraged, it would be an important factor for educators in China to consider in attempts to improve students' academic success.

A weak association between students' emotional engagement and their academic performance was found in the current study. This result can be explained in two ways. First, previous studies with samples of Western youth have also found similarly low correlations between emotional engagement and academic performance (e.g., Furrer & Skinner, 2003; Li et al., 2010). Although researchers did not explicitly explain these low correlations, they suggested that emotional school engagement is indirectly linked with academic performance by its association with behavioral engagement (Li et al., 2010). This idea is consistent with the significant correlation between behavioral engagement and emotional engagement in the current study. The relatively small sample size in the current study might be one of the reasons that the correlation was not significant, given the similar, but significant, results found in other studies with larger sample sizes.

Second, the low correlation between emotional engagement and academic performance from the Chinese data set is understandable, considering educational philosophy in China. For example, in China, students are expected by adults to work hard in school and get good grades regardless of their emotional reaction toward school (e.g., Zhai and Gao, 2009; Leung et al, 2008; Kim, 2005). It is

therefore not surprising to see a low correlation between emotional engagement and academic performance. However, given the exploratory nature of the current study, more research needs to be conducted with samples of Chinese youth in order to have a more definitive understanding of the relationship between emotional engagement and academic performance among youth in China.

In the current study, no evidence was found for the association between cognitive engagement and academic performance. This result is consistent with findings from previous studies that found low correlations between cognitive engagement and academic performance (e.g., Sedaghat, Abedin, Hejazi, & Hassanabadi, 2011). However, this result is not consistent with many other studies conducted in Western cultures and the literature in Eastern cultures, where cognitive engagement has been found to be highly correlated with academic performance (e.g., Greene et al., 2004; Reeve & Tseng, 2011). First, the conceptualization of cognitive engagement is still under construction and calls for wider agreements. Cognitive engagement has been defined as an integration of four components: Investment in learning, self-regulation, personal goals, and being strategic in learning (Appleton et al., 2006; Greene et al., 2004). However, not all the researchers measured the four components in a single study (Appleton et al., 2006). For instance, Sedaghat et al. (2011) measured personal goals and learning strategy, and defined these attributes as cognitive engagement. Reeve and Tseng (2011) assessed cognitive engagement by measuring students' learning strategies and self-regulation. In the current study, the items measuring cognitive engagement focused more on personal goals and learning strategies, which might

explain why the results were consistent with some studies but not with others.

Second, the low correlation between cognitive engagement and academic performance might result from contextual specificity in China. As was noted in the Results section, there is little variation in the response to the cognitive engagement items, while more variation can be found in studies conducted in Western countries (e.g., Archambault et al, 2009; Sedaghat et al., 2011). It can be hypothesized that Chinese students share similar orientations regarding cognitive engagement, and supporting evidence can be found in the extant literature. For instance, research about the Chinese classroom environment has noted that students are asked to accommodate themselves to teachers' learning goals and strategies instead of having their own ones (Li & Ni, 2011). Thus, every student may have the same learning goals and strategies, that is, the ones given by teachers. Therefore, cognitive engagement would have little variations among those students. Similarly low variation for a cognitive engagement was found in studies conducted in Chinese culture (e.g., Reeve & Tseng, 2011). On the other hand, students in Western countries were found to have various learning strategies and goals (Fredricks et al., 2004). Therefore, the low variation of cognitive engagement in the current sample, possibly resulting from a uniform learning strategies and goals among students, might lower the correlation between cognitive engagement and academic performance.

However, although not explicated in the extant literature, it could be argued that students in China have various deep learning strategies and goals that the current measurement is not sensitive enough to reveal. As well, students may

vary in other aspects of cognitive engagement in school. The measurement instrument might not be appropriate in the present study given the specific context of China. However, these ideas could not be tested in the present exploratory study, given its design, measurement model, and sample. The features of the future research will be highlighted in the next two sections of the paper.

Limitations and Implications for Future Research

Interpretation of the findings of this study should be made with caution. For example, the study uses a relatively small, convenience sample of participants from one developing city in China. Although the homogeneity of the sample would suggest that the participants were representative of the focal city, and Southeast China, a precise description of the sample was not available. In order to understand whether the school engagement measure is a valid and reliable measure for Chinese students, future studies should more systematically create samples that are representative of China, or at least a region within China, and make sure to collect adequate data to assess how representative the sample actually is.

In addition, the small sample size resulted in insufficient numbers of participants for some ages for between-group analyses. To increase the sample sizes for between-group analyses, ages were aggregating into two groups, which made the age ranges for each of the groups wider. It was a compromise with consideration for the small sample size, but the aggregation consequently made it harder to examine the nuances of school engagement within a wide range of ages. Future research should ensure that there are sufficient numbers of participants

within the range of ages in the studies.

Given the exploratory nature of the study, the processes of data collection and data integration were limited in the small sample size and incomplete academic records. Cases were consequently removed for the validity test, which impacted the size and representative character of the subsample. Using pairwise and listwise deletion in the present study created selection bias and weakened the power of data analyses (King, Honaker, Joseph, & Scheve, 1998). Moreover, the measurement equivalence of the survey among youth from different age groups in China is not yet well understood, and it might not be appropriate to test the measurement model with youth from a wide range of ages. If possible, future studies should use methods, appropriate for the planned analysis, that account for missing data, such as multiple imputation or Full Information Maximum Likelihood.

Finally, this study took an etic approach in exploring the structure of school engagement in China. That is, the measurement model was based on a theoretical model from Western culture and studies of U.S. samples. Question wording and theoretical perspectives used in the conceptual and measurement model of school engagement may not have been appropriate to use, or they might have different meanings for Chinese youth. Since evidence shows that the structure of school engagement in the present Chinese sample is different from the structure reported in Western countries, an emic approach in studying school engagement in China may be of particular importance. An emic approach can provide a more precise understanding of school engagement among Chinese

youth. For example, future research could include cognitive interviews and focus groups with youth and parents to understand how they understand school engagement. These steps could help researchers find out whether the questions are appropriate to ask under the context in China, and whether the questions are assessing what the survey has been designed to assess. Moreover, in order to better represent the youth in China and unravel the nuances of school engagement across different sex and age groups, as well as geographies, a larger sample size with various age groups from various parts of China, should also be considered in future studies.

The present study adopted the Li and Lerner (2011) measurement model and found some results consistent with previous studies. However, more evidence needs to be attained about the structure of school engagement and its relationship with academic performance in China. Future research should explore whether the emotional and cognitive aspects of school engagement are associated with academic performance among Chinese youth, or if questions should be asked in different ways. In addition, two dimensions of behavioral engagement were found in the current study. Future research should further investigate the difference between these two aspects of behavioral engagement among Chinese youth.

In conclusion, the current study found a multidimensional structure for school engagement in a Chinese sample. However, more research is needed. Future research about the structure of school engagement in China, as well as its relationship with youth academic performance may provide a more comprehensive understanding of school engagement. Such research about school

engagement construct may offer a rich, new way of understanding the dynamic between youth and schools in China.

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Footnote

1. The data were collected in the second wave of a longitudinal study conducted by the Department of Psychology at South China Normal University, one year after the first wave of data collection. Participants were first recruited from 7th, 8th, 10th, and 11th grades. Students from 9th and 12th Grade were not recruited because their schools stated that their curriculum was too intense for the students in those grades to take the survey. For the second wave of data collection, the researchers were able to retain the incoming 9th graders but were not able to retain the incoming 12th graders. As a result, in the current study, participants were from 8th, 9th, and 11th grades.

Table 1. Counts and percentages of age and sex of participants within the data set.

	Age (years)			Total
	unknown	13-16	17-20	
Male	3	60	80	143 (38.5%)
Female	7	101	101	209 (59.1%)
unknown	1	3	8	12 (3.3%)
Total	11	164	189	364 (100%)

Note: Cases were removed using pairwise deletion.

Table 2: Factor loadings based on an exploratory factor analysis with varimax rotation for 15 items related to adolescents' engagement with school (N=342).

Original items	Component Loading				
	F 1	F 2	F 3	F 4	F 5
1. Come to class unprepared*	.02	-.02	.61	.02	.004
2. Complete homework on time	.14	.11	.56	.25	.10
3. Skip classes without permission*	.14	.21	.43	.14	.07
4. Actively take part in group discussions	.17	.07	.18	.05	.64
5. Work hard to do well in school	.09	.11	.04	.07	.71
6. I feel part of my school	.80	.15	.15	.17	.09
7. I care about the school I go to	.75	.22	.16	.23	.17
8. I am happy to be at my school	.44	.11	.29	.14	.19
9. I don't find school fun and exciting*	.20	-.01	.39	-.01	.14
10. I enjoy the classes I am taking	.23	.14	.21	.93	.10
11. I want to learn as much as I can at school	.21	.18	.07	.34	.06
12. I think it is important to make good grades	.04	.60	-.01	-.01	-.02
13. I think the things I learn at school are useful	.16	.49	.23	.26	-.02
14. I think a lot about how to do well in school	.09	.61	-.01	.11	.21
15. School is very important for later success	.18	.46	.12	.14	.12
<i>Factor loadings</i>	1.68	1.39	1.30	1.28	1.10
<i>% of variance</i>	11.20	9.26	8.65	8.54	7.32

Note: Items with * have been reverse coded. Loadings in bold are values above .4.

Table 3: Reliability tests on subscales of the school engagement measurement model

Factor	Number of items	α
School Engagement	12	.76
Behavioral Engagement	5	
School Compliance	3	.55
Self-Expression	2	.65
Emotional Engagement	3	.79
Cognitive Engagement	4	.65

Table 4: Means, standard deviations, and valid N of cases for school compliance, self-expression, emotional engagement, and cognitive engagement by sex.

	Male		Female	
	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>
School Compliance	3.20 (.47)	138	3.38 (.33)	204
Self-Expression	2.21 (.78)	138	2.34 (.64)	207
Emotional Engagement	3.09 (.69)	137	3.34 (.52)	201
Cognitive Engagement	3.10 (.66)	138	3.16 (.48)	207

Note: Cases were removed using pairwise deletion.

Table 5: Means, standard deviations, and valid N of cases for school compliance, self-expression, emotional engagement, and cognitive engagement by age.

	13-16 years		17-20 years	
	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>
School Compliance	3.37 (.39)	157	3.26 (.40)	186
Self-Expression	2.32 (.71)	158	2.24 (.71)	188
Emotional Engagement	3.31 (.57)	153	3.16 (.63)	186
Cognitive Engagement	3.22 (.52)	158	3.06 (.58)	188

Note: Cases were removed using pairwise deletion.

Table 6. Means, standard deviations, and correlations for academic performance, school engagement, age, and subscales of school engagement ($N = 149$).

	1. Academic Performance	2. School Compliance	3. Self-Expression	4. Emotional Engagement	5. Cognitive Engagement	6. School Engagement	7. Age	8. Sex
1	---							
2	.18*	---						
3	.26**	.10	---					
4	.13	.15	.35**	---				
5	.14	.05	.05	.23**	---			
6	.28**	.44***	.58***	.74***	.66***	---		
7	-.18*	-.24**	-0.14	-.18*	-0.01	-0.21*	---	
8	.004	.13	.04	.13	-.06	.08	-.10	---
<i>Mean</i>	219.95	3.34	2.31	3.24	3.29	3.13	16.06	1.57
<i>SD</i>	26.18	0.39	0.68	0.56	0.46	0.31	1.29	.50

Note: Scores for Academic Performance are indicated by the sum of the most recent standardized test scores of three academic subjects, Chinese, Mathematics, and English. The scores ranged from 0 to 300. Sex was coded binary as: 1 = male, 2 = female.
Key: * $p < .05$; ** $p < .01$; *** $p < .001$

Table 7. Parameter estimates and approximate *p* values for regression models that describe the relations among factors of school engagement and students' recent standardized test scores, controlling for Sex, Age, and Mother's Education.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	280.8	196.86	233.62	253.38	261.38	242.2	183.39
Sex	.02	-.04	-.02	-.02	-.03	.00	-.02
Mother's Ed	-.02	-.03	-.01	-.03	-.02	-.003	-.01
Age	-.19*	-.13	-.15	-.16	-.16	-.18*	-.11
School Engagement (whole scale)	---	.28**	---	---	---	---	---
School Compliance	---	---	.16	---	---	---	.12
Self-Expression	---	---	---	.24**	---	---	.24**
Emotional Engagement	---	---	---	---	.10	---	-.02
Cognitive Engagement	---	---	---	---	---	.18*	.16 ^a
<i>R</i> ²	.04	.10	.05	.09	.04	.07	.13
<i>df</i>	143	138	136	138	136	138	131

Note: Betas are standardized partial regression coefficients reported from each model of the regression equation.

Key: * $p < .05$. ** $p < .01$. ^a $p = .057$