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The Longitudinal Relationship Between School Belonging and Subjective Well-Being in School Among Elementary School Students

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Abstract Situated within a positive psychology perspective, the present study explored the relationship between school belonging and subjective well-being (SWB) in school among elementary school students. In order to ensure the applicability of the Brief Adolescents' Subjective Well-Being in School Scale (BASWBSS) to elementary school students, firstly, we provided evidence for its validity using two samples (total $n = 1333$) of elementary school students. Secondly, we used cross-lagged structural equation modeling techniques to evaluate the nature and directionality of relationships between school belonging and SWB in school. To test these relationships, 890 students (58.54 % male) completed a measure of school belonging and SWB in school at two time points, 6 weeks apart. The results showed that (1) BASWBSS has good applicability among elementary school students and (2) significant bidirectional relationships were found between school belonging and SWB in school. Overall, the present study provided important evidence of applicability of the BASWBSS with elementary school students and the role of school belonging in elementary school age children's SWB in school.

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Introduction

With the rise of positive psychology, subjective well-being (SWB) has become a hot research topic in recent years, with the focus of research in children extending from their reports on SWB as a whole to domain-specific reports of SWB (Gilman and Huebner 2000; Huebner 2010; Elmore and Huebner 2010), such as SWB in school (Long et al. 2012; Tian et al. 2014a). As noted, community psychologist Seymour Sarason (1997) summarized years ago, "Wellness is an individual phenomenon, but it is always embedded in an interpersonal, social-familial, or institutional context" (p. ix). For children and adolescents, schools represent one of their major life domains. They devote substantial amounts of time and effort in school, and school thus serves as a major institutional context and growth environment. A review of the extant literature suggests that the research has mainly focused on adolescents (Bird and Markle 2012; Long et.al 2012; Casas et al. 2013; McNeely et al. 2002; Niehaus et al. 2012), with considerably less attention given to the younger age groups, such as students in elementary school (Proctor et al. 2009). Elementary school reflects the foundational period of students' formal education; thus, students' experiences in elementary school directly affect their subsequent school development (Bond et al. 2007; Tian et al. 2014b) and perhaps lifelong SWB (Park 2004).

A comprehensive analysis of the linkages between students' experiences in school and their subsequent well-being and growth will require sophisticated, longitudinal research methodology. However, most of the existing studies of students' well-being are based on cross-sectional designs. For example, theorists have postulated that students' well-being in school is in part dependent upon their development of sense of belonging (Anderman 2003). Nevertheless, few studies have examined the influence of school belonging on SWB in school among elementary school students using longitudinal designs. Guay et al. (2008) pointed out, "educational studies using cross-lagged longitudinal data are less frequent and by conducting such studies, we could more accurately test the direction of causality amongst variables" (p. 237). Therefore, in the present study, we examined the relationship between school belonging and SWB in school among elementary school students using cross-lagged designs.

Subjective Well-Being in School

According to Noddings (2003), "Happiness and education are, properly, intimately connected. Happiness should be an aim of education, and a good education should contribute significantly to personal and collective happiness" (p. 1). Therefore, in order to fully acknowledge the contextual and social-emotional factors that relate to students' school functioning and subsequent development, educational leaders and professionals should pay attention not only to students' academic achievement, but also to their SWB in school.

The conceptualization of SWB proposed by Diener (1994) is widely accepted. In his theoretical framework, SWB is composed of partially separable cognitive (i.e., life satisfaction or domain satisfaction) and affective components (i.e., frequency of positive and negative affect) (Diener et al. 1995, 1999). Numerous studies have supported this two-component model of SWB (Cummins 2010; Davern et al. 2007; Diener et al. 1999). Furthermore, studies have also supported the benefits of assessing domain-

specific SWB as well as overall SWB (e.g., Antaramian et al. 2008). Children as young as elementary school age differentiate among major life satisfaction domains, such as family, school, and self (Huebner 1994).

Grounded in Diener's theory of SWB, Tian (2008) proposed a theoretical model of SWB *in school*, which represents how students subjectively evaluate and emotionally experience their lives, specifically in the context of school. In her model, SWB in school consists of students' reports of school satisfaction and affect in school. School satisfaction refers to a student's subjective and cognitive evaluation of school life using her or his own standards related to several specific school life domains (e.g., academic learning, teacher–student relationships). Affect in school refers to a student's positive and negative emotions experienced during school. Based on this model, Tian et al. (2015) developed the Brief Adolescents' Subjective Well-Being in School Scale (BASWBSS), which has shown good psychometric properties in Chinese adolescents. The reliability and validity of BASWBSS among elementary school students should be further studied.

School Belonging

In their extensive literature review, Baumeister and Leary (1995) asserted that feelings of belonging are a fundamental human need and that all individuals are inherently motivated to connect with others and form social bonds. As one aspect of students' important emotional connectedness with their school, school belonging represents students' perceptions of the social context of schooling and their place in it, including their feelings of being respected and safe in their particular school (Anderman 2003).

Developing a sense of belonging in school appears to be a crucial positive experience in elementary school students' school lives. Whether a student's need to belong is satisfied or not in a particular school and time will directly affect her or his evaluations and experiences in their later school years (Buhrmester 1990). The results of a variety of studies converge on the finding that perceiving a sense of belonging or connectedness with one's school is related to academic motivation (Anderman and Anderman 1999; Anderman 2003; Furrer and Skinner 2003; Goodenow and Grady 1993), more frequent positive emotions in school (Anderman 1999; Battistich et al. 1995; Roeser et al. 1996) and less frequent negative emotions, such as depression (Hale et al. 2005; Sargent et al. 2002). In contrast, researchers have found that if students' needs for school belonging are not met, students are more likely to become depressed (Millings et al. 2012; Ross et al. 2010), engage in violence and other risk behavior (e.g., alcohol use), and drop out of school altogether (Battistich et al. 1997; Finn 1989; Rostosky et al. 2003). Thus, the satisfaction of the need for school belonging appears to be a significant determinant of various aspects of students' positive development throughout their schooling.

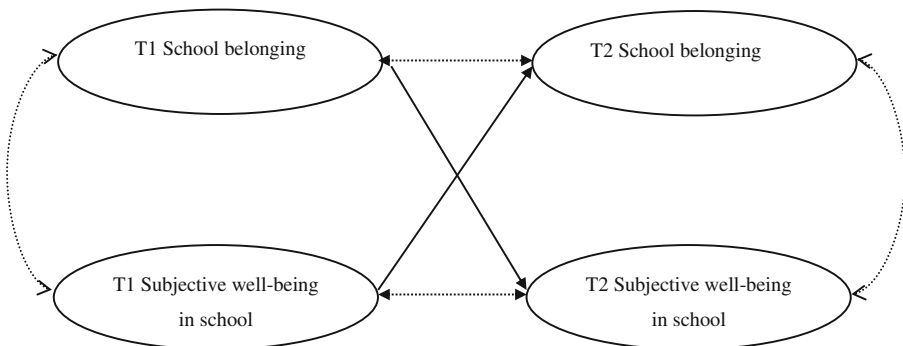## School Belonging and Subjective Well-Being in School

The basic psychological needs theory (BPNT; Deci and Ryan 1985, 2000) of Self-Determination Theory (SDT; Deci and Ryan 1985, 2000) proposed that human behavior is motivated by three essential psychological needs: competency, autonomy, and relatedness. As one of the main needs, the relatedness need involves the "desire to feel connected to others" (Deci and Ryan 2000), that is, experiencing a sense of closeness with others (Baumeister and Leary 1995), which is a positive experience. According to BPNT,

satisfaction of each basic need is a necessary condition for a person's ongoing growth and well-being (Connell and Wellborn 1991; Deci and Ryan 2000; Ryan and Deci 2000; Ryan and Powelson 1991). A few studies have shown that school belonging positively correlated with general adjustment and well-being in the school context (Frydenberg et al. 2009) and school satisfaction (Griffith 1997; McMahon et al. 2008). Meanwhile, some studies have shown that adolescents' school satisfaction is not only important in and of itself, but it also correlates with important adaptive outcomes, such as higher levels of school belonging (Roeser et al. 1996; Tian 2007; Zullig et al. 2011), and lower levels of internalizing behavior problems (Loukas and Murphy 2007). In addition, some studies have examined the relationship between sense of belonging and subjective life evaluations using longitudinal designs. For example, Gillison et al. (2008) conducted a longitudinal study across three time points examining the link between psychological need satisfaction, including relatedness at school, and quality of life *overall*. They found reciprocal effects between relatedness at school and overall quality of life. Based on a review of the previous research, we know that *few* studies have examined the longitudinal relationships between belonging and SWB in a specific context, such as school.

In conclusion, the BPNT (Deci and Ryan 1985, 2000) and previous studies suggest the possibility of a reciprocal relation between students' school belonging and their SWB in school rather than a solely unidirectional relation. Therefore, we speculated that there would be a bidirectional relationship between school belonging and SWB in school among elementary school students.

The Present Study

This study examined the nature and directionality of relationships between school belonging and SWB in school among elementary school students. Specifically, we formulated two hypotheses: (1) school belonging at time 1 would predict SWB in school at time 2. (2) SWB in school at time 1 would predict school belonging at time 2. Furthermore, if both hypotheses were supported, there would be preliminary evidence for a reciprocal relationship between school belonging and SWB in school. In order to test the two hypotheses, a model of bidirectional relationships between school belonging and SWB in school was evaluated (Fig. 1).

Fig. 1 Hypothesized Relationships between school belonging and subjective well-being in school. *Solid lines* indicate hypothesized relationships. *Dotted lines* indicate variables are allowed to covary. Controlled covariates are not diagrammed in the figure. T1=Time 1, T2=Time 2

A literature review shows that few scales have been developed by Chinese researchers to measure elementary school students' SWB in school. Moreover, the rare, existing scales are lengthy, reducing their suitability for longitudinal research. Therefore, we also provided evidence for the validity of the BASWBSS among elementary school students in the present study.

Method

Participants

The convenience samples used in the present study were from public elementary schools in a city located in the Guangdong province of southern China. According to the information provided by the local education authorities, the schools participating in the current study were all coeducational, ordinary elementary schools, and all were reasonably representative of the schools in this province. All the schools were comparable in terms of the quality of students, school size, class size, and teachers' teaching ability. Almost all of the participants were from middle-income families with parents who had earned at least a high school degree. Three independent samples of elementary school students were used in this study.

> Sample 1: This sample was prepared for the item analysis and exploratory factor analysis (EFA) of the BASWBSS. It consisted of 629 students (358 boys). The mean age of the participants was 11.13 years (SD=1.12) with a range of 9–13 years.
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> Sample 2: This sample was prepared for the confirmatory factor analysis (CFA) and reliability testing of the BASWBSS. It consisted of 704 students (394 boys). The mean age of the participants was 11.02 (SD=1.10) with a range of 9–14 years.
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> Sample 3: This sample was prepared for the examination of the nature and directionality of relationships between school belonging and SWB in school. A total of 975 students completed the first survey in April 2014. Of the 975 students, 890 students completed the second survey 6 weeks later. The time lag of 6 weeks was chosen on the basis of previous research on well-being (Brunstein 1993; Daniels and Guppy 1994; Ouweneel et al. 2011). Specifically, Daniels and Guppy (1994) argued that a time lag of a month between two measurements is quite suitable in studies of well-being and its predictors. They noted that the time interval must allow enough time for well-being to change, but it must also be short enough to allow some constancy in the sampling process. At time 1, the mean participants' age was 11.15 (SD=1.07). At time 2, the mean age was 11.13 (SD= 1.06). Of the participants, 57.74 % were male and 42.26 % were female at time 1, and 58.54 % were male and 41.46 % were female at time 2. Based on time 1, 29.44 % of students were from grade 4, 32.92 % of students were from grade 5, and 37.64 % of students were from grade 6, and at time 2, 29.10 % of students were from grade 4, 33.60 % of students were from grade 5, and 37.30 % of students were from grade 6.

Measures

Subjective Well-Being in School

Elementary school students' SWB in school was measured using the Brief Adolescents' Subjective Well-Being in School Scale (BASWBSS: Tian et al. 2015). The BASWBSS is an 8-item self-report scale comprised of two subscales: School Satisfaction (SS) and Affect in School (AS). The SS subscale consists of six items (e.g., "The teachers' instructional methods and quality are good."). Items were rated on a 6-point scale, with response options ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The AS subscale consists of two items. One item assessed the frequency of positive affect (PA) in school, and the other item assessed the frequency of negative affect (NA) in school. The PA item was worded as "In school, the frequency of my pleasant feelings is…". The NA item was worded as "In school, the frequency of my unpleasant feelings is…". Both of the two items were rated on a 6-point scale with response options ranging from 1 (*never*) to 6 (*always*). The score for the SS subscale was computed by averaging the responses to the six items. The score for the AS subscale was computed by subtracting the NA from the PA score. Finally, the SS and AS subscale scores were summed to create a total BASWBSS score. Empirical support for this SWB in school model and the BASWBSS has been garnered with Chinese adolescents (Tian et al. 2015). In this study, the Cronbach's alpha coefficient for the SS subscale was 0.82 for the sample 3 at time 1 and 0.85 for the sample 3 at time 2.

School Belonging

Elementary school students' school belonging was measured using the School Belonging Scale (SBS: Anderman 2002). The SBS is a 5-item self-report measure developed by Anderman (2002). Sample items included "I feel safe in my school." Items were answered on a 5-point Likert scale (1=*strongly disagree*; 5=*strongly agree*) and were summed so that higher scores indicated a higher level of school belonging. Empirical support for the SBS has been garnered with Chinese students (Tian et al. 2015). In this study, the Cronbach's alpha coefficient of SBS was 0.83 for the sample 3 at time 1 and 0.88 for the sample 3 at time 2.

Procedure

The data collection procedure was the same for all of the samples in this study. This study was approved by Human Research Ethics Committee, South China Normal University. In addition, appropriate permissions from the school boards and the students' assent and parents' informed consents were obtained before the surveys were conducted. All the participants were voluntary and had the right to withdraw from the study at any time. Trained graduate students administered the questionnaires to the students in their classrooms. Participants were assured of strict confidentiality regarding the collected data and that only research personnel would have access to the completed questionnaires. The data collectors were available during survey completion if participants had any questions about the questionnaires. The questionnaires were collected immediately upon completion. Prior to responding to the study measures, students answered some demographic questions regarding age, grade level, and gender.

Data Analysis

The data analysis plan was composed of two parts. The first part aimed to provide evidence for the validity of the BASWBSS among elementary school students. The second part aimed to examine the relationship between school belonging and SWB in school. No missing data was included in the data analysis procedure, for participants whose questionnaires were blank or had missing values were excluded in the final database.

The first part of the data analysis followed three steps. First, the item analysis was conducted using the corrected item–total correlations for the six items of the SS subscale of BASWBSS. Also, EFA using the SPSS 19.0 statistical package (Norusis 2010) was conducted to explore the initial framework of the BASWBSS. Second, CFA using the AMOS 17.0 statistical package (Arbuckle 2008) was performed to examine the factor structure of the BASWBSS. Third, the internal consistency for the SS subscale of the BASWBSS was determined using Cronbach's alpha coefficient.

The second part of the data analysis followed two steps. First, preliminary analyses including attrition analysis, descriptive statistics, and correlations were conducted using the SPSS 19.0 statistical package (Norusis 2010). Specially, χ^2 tests and analyses of variance (ANOVAs) were conducted to assess bias related to attrition between students who completed the survey at time 1 only and students who completed surveys at both time 1 and time 2. Descriptive statistics for the measures SWB in school and school belonging at time 1 and time 2 were calculated. Spearman correlations were performed to determine the zero-order relationships among the predictor and criterion variables with a dichotomized demographic variable (gender). Pearson correlations were conducted to ascertain the associations between school belonging and SWB in school. Second, structural equation modeling (SEM) in AMOS was further used to examine the relationship between school belonging and SWB in school at a 6-week follow-up using fully cross-lagged panel models. Strict measurement invariance was imposed, and the error terms for school belonging and SWB in school at time 1 and time 2 were allowed to covary. Effects of all time 1 measures of school belonging and SWB in school were modeled on time 2 school belonging and SWB in school. Effects of covariates were modeled as paths from each covariate to all study factors. The models were thus saturated at the structural level. Controlled covariates in the model included gender (female=1) and age. The covariance matrix of the hypothesized model was analyzed using maximum likelihood estimation. Because chi-square (χ^2) is highly sensitive to sample size (Saris 1982; Jöreskog and Sörbom 1996), the χ^2 statistic is likely to overestimate the lack of fit and will always suggest a lack of fit (Bollen 1989). Therefore, structural model fit was analyzed using multiple indicators, including the non-normed fit index or Tucker-Lewis index (TLI: Tucker and Lewis 1973; Bentler and Bonett 1980), comparative fit index (CFI: Bentler 1990), and the root mean-square error of approximation (RMSEA) and the standardized root mean squared residual (SRMR). Based on simulated data, Hu and Bentler (1999) proposed that CFI and TLI measures should be close to or greater than 0.95 to indicate good fit. Marsh et al. (2004) proposed that CFI and TLI cutoff values greater than 0.90 indicate adequate fit. Therefore, we interpreted CFI and TLI values greater than 0.95

as indicating good fitting models, and greater than 0.90 as indicating acceptable and adequate fitting models. With regard to RMSEA and SRMR, values less than 0.06 are typically considered indicative of good fit, while RMSEA values between 0.06 and 0.10 are considered adequate fit and SRMR below 0.09 meant the model was acceptable Z (Hu and Bentler 1999; Kaplan 2000). An alpha level of 0.05 was used for all tests of significance.

Results

Validation of the BASWBSS Among Elementary School Students

Item Analysis of the SS Subscale

The item analysis was determined using the corrected item-total correlations for the six items of the SS subscale of BASWBSS. Corrected item-total correlations for the SS subscale ranged from 0.58 to 0.70 for all the participants in sample 1.

Exploratory Factor Analysis of the BASWBSS

To explore the factor structure of the 8-item instrument, an EFA was conducted using principal component analysis. The criteria for determining the number of factors was an eigenvalue of one criterion in conjunction with item loadings greater than 0.40. This analysis was conducted by using SPSS 19.0 (Norusis 2010). The Bartlett's test was statistically significant, $\chi^2=1955.89$, $df=28$, $p<0.001$, and the Kaiser-Meyer-Olkin statistic (KMO=0.85) was greater than its threshold value of 0.50. A KMO value larger than 0.50 and meaningful Bartlett sphericity test indicated that the data were suitable for EFA.

The result of EFA indicated a clear two-factor solution based on a scree test and eigenvalues greater than one criterion. The magnitude of factor loadings ranged from 0.56 to 0.92 (see Table 1); the eigenvalues of these two factors were 3.95 and 1.16, respectively. These two factors accounted for 49.38 and 14.46 % of the total variance, respectively, and the overall scale explained 63.84 % of the variance.

Confirmatory Factor Analysis of the BASWBSS

In order to assess the construct validity of the BASWBSS, a CFA was conducted by using the AMOS 17.0 statistical package (Arbuckle 2008). The eight items of the BASWBSS were the observed variables of the model, and the two previously extracted factors were the latent variables. Results showed that the two-factor model provided an acceptable fit to the data: $\chi^2=104.50$ ($df=19$), $p<0.001$; CFI=0.94; TLI=0.93; RMSEA=0.08, 90 % CI [0.065, 0.095]; SRMR=0.04. The factor loadings were at least moderately large in magnitude, ranging from 0.56 to 0.78, indicating that all the items converged meaningfully (see Fig. 2).

**Table 1** Exploratory factor analysis of the BASWBSS

Items	Factor loadings	
1. I perform well in school.	*0.66*	0.07
2. My school is provided with good school rules and facilities.	*0.77*	−0.06
3. I have good relationships with my teachers.	*0.76*	0.10
4. I get along well with classmates.	*0.56*	0.26
5. The teachers' instructional methods and quality are good.	*0.88*	−0.16
6. The curriculum and homework assigned are reasonable.	*0.81*	−0.01
7. In school, the frequency of my pleasant feelings is.	0.03	*0.87*
8. In school, the frequency of my unpleasant feelings is.	0.07	*−0.92*
% of variance	49.38 %	14.46 %
Cumulative %	63.84 %	

Numbers in italics represent the highest loadings

BASWBSS Brief Adolescents' Subjective Well-Being in School Scale

Reliability of the SS Subscale

The internal consistency reliability of the SS subscale of the BASWBSS was estimated by the calculation of the Cronbach's α coefficient. The alpha of the SS subscale of the BASWBSS was 0.78.
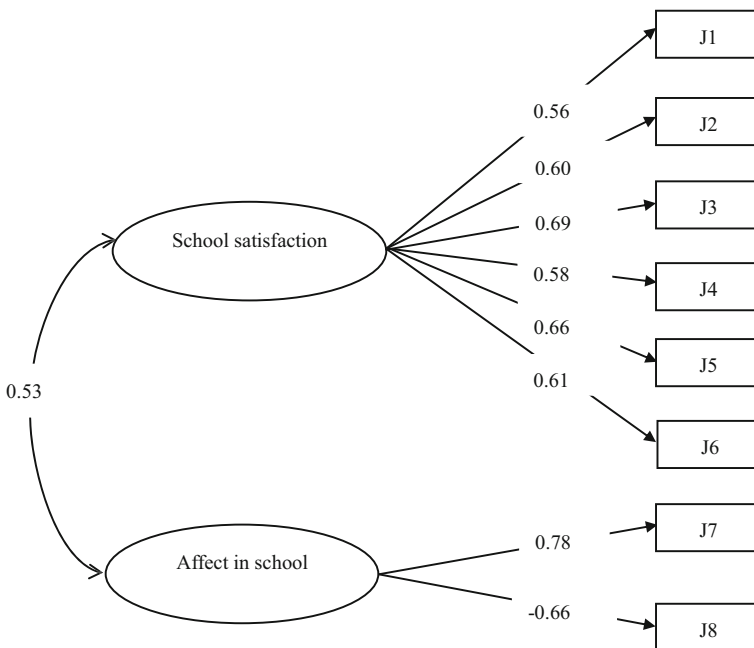
Fig. 2 Confirmatory factory analysis of the BASWBSS. *Note.* BASWBSS=Brief Adolescents' Subjective Well-Being in School Scale. *J1* to *J8* denote the items of BASWBSS

Relationship Between School Belonging and SWB in School

Preliminary Analyses

Attrition Analysis χ^2 tests on demographic variables were conducted to assess bias related to attrition between students who completed surveys at time 1 only and students who completed surveys at time 1 and time 2. There was no association between administration time and gender (χ^2 (1)=2.65, $p>0.05$) or time and grade level (χ^2 (2)=2.09, $p>0.05$). ANOVAs on school belonging and SWB in school were conducted to assess bias related to attrition between participants at time 1 only and participants at time 1 and time 2. There were no differences in school belonging (F (1, 974)=0.09, $p>0.05$), school satisfaction (F (1, 974)=0.15, $p>0.05$), and affect in school (F (1, 974)=0.07, $p>0.05$) for time 1 and time 2 samples.

Descriptive Statistics The means and standard deviations for time 1 and time 2 school belonging and SWB in school are presented in Table 2. For school belonging, higher scores indicated higher levels of belonging. For school satisfaction, higher scores indicated higher levels of satisfaction. For affect in school, higher scores indicated that more positive affect than negative affect was experienced in school. Students moderately to strongly agreed to having a high level of school belonging (T1M=4.12, SD= 0.78; T2 M=4.10, SD=0.76), being satisfied with their school lives (T1M=5.11, SD= 0.73; T2 M=5.08, SD=0.78), and experiencing more positive affect than negative affect (T1M=1.71, SD=1.67; T2 M=1.74, SD=1.60) which was similar to levels reported by previous research with Chinese middle school students (Tian 2008). In order to assess univariate normality, skewness and kurtosis were examined for all variables. The values of skewness and kurtosis fell within the acceptable range of −1 to 1 (Tabachnick et al. 2001); thus, there was non-significant non-normality in the data.

Correlation Analysis Spearman rho correlations between a dichotomized demographic variable (gender) and the predictor and criterion variables are found in Table 3. Gender was coded 0 for male and 1 for female. At both time 1 and time 2, gender was non-significantly correlated with school belonging, school satisfaction and affect in school. Pearson correlations between the continuous demographic variable (age) and the predictor and criterion variables are found in Table 3. At both time 1 and time 2, age was significantly correlated with school belonging, school satisfaction, and affect in school. Gender was non-significantly correlated with these variables. Pearson correlations among time 1 and time 2 school belonging and SWB in school are shown in

Table 2 Descriptive statistics

Variables	Time 1				Time 2			
	M	SD	Skewness	Kurtosis	M	SD	Skewness	Kurtosis
School belonging	4.12	0.78	−0.79	−0.04	4.10	0.76	−0.53	−0.73
School satisfaction	5.11	0.73	−0.88	0.28	5.08	0.78	−0.74	−0.25
Affect in school	1.71	1.67	−0.34	−0.11	1.74	1.60	−0.48	−0.10

Table 3 Time 1 and time 2 correlations among school belonging and SWB in school

Variables	SB1	SS1	AS1	SB2	SS2	AS2
SB1	1					
SS1	0.64**	1				
AS1	0.51**	0.48**	1			
SB2	0.64**	0.52**	0.40**	1		
SS2	0.54**	0.62**	0.36**	0.68**	1	
AS2	0.43**	0.39**	0.61**	0.52**	0.49**	1
Gender	−0.00	−0.01	0.01	−0.03	−0.03	−0.01
Age	−0.11**	−0.14**	−0.07*	−0.15**	−0.13**	−0.07*

SB school belonging, *SS* school satisfaction, *AS* affect in school, *1* time 1, *2* time 2. Gender is coded 0 male and 1 female

*$p<0.05$; **$p<0.01$; ***$p<0.001$

Table 3. Significant modest to moderate correlations were found among school belonging and SWB in school at time 1 and time 2. Also, positive correlations between school satisfaction and affect in school were moderately high in magnitude at both time 1 and time 2.

Structural Equation Modeling

As seen in Table 4, in the two models, school belonging and SWB in school at time 1 showed a positive and significant effect on the same latent variable at time 2.

The first hypothesis that time 1 school belonging would predict SWB in school at time 2 was supported. When controlling for covariates and time 1 SWB in school, in the model in which school belonging was used at time 1, time 1 school belonging significantly predicted time 2 school satisfaction ($\beta=0.23$, $p<0.001$) and time 2 affect in school ($\beta=0.15$, $p<0.05$).

The second hypothesis that SWB in school at time 1 would predict school belonging at time 2 was also supported. When controlling for covariates and time 1 school belonging, in the model in which SWB in school was used at time 1, time 1 school satisfaction significantly predicted time 2 school belonging ($\beta=0.18$, $p<0.001$) and time 1 affect in school also significantly predicted time 2 school belonging ($\beta=0.12$, $p<0.05$).

Table 4 χ^2 Value, fit indexes and standardized path coefficients in the model

Model	χ^2	df	p	TLI	CFI	RMSEA	T1 SB-T2 SB	T1 SWBS-T2 SWBS	T1 SB-T2 SWBS	T1 SWBS-T2 SB
SS	1149.65	238	0.000	0.90	0.91	0.07	0.55***	0.50***	0.23***	0.18***
AS	260.48	90	0.000	0.96	0.97	0.05	0.59***	0.63***	0.15*	0.12*

SB school belonging, *SS* school satisfaction, *AS* affect in school, *SWBS* subjective well-being in school, *T1* time 1, *T2* time 2

*$p<0.05$; **$p<0.01$; ***$p<0.001$

Thus, bidirectionality between the school belonging and SWB in school was supported. Regarding the fit indexes of the two models, although the value χ^2 was significant in the two models, the various fit indexes showed acceptable values. The two models were over identified.

Discussion

Validation of the BASWBSS Among Elementary School Students

In longitudinal studies, brief scales can be more facilitative by reducing the participants' time needed to complete the questionnaires and saving the cost and labor of importing data. However, there is currently a paucity of brief, psychometrically sound measure of SWB in school appropriate for elementary school students in China. Thus, in the present study, we examined the psychometric properties of the BASWBSS in elementary school students. Using item analysis, EFA, CFA, and internal consistency reliability procedures, we provided evidence to support the reliability and validity of the BASWBSS with Chinese elementary school students.

The Relationship Between School Belonging and SWB in School

We adddressed the directionality of the relationship between school belonging and SWB in school among elementary school students. The results supported the hypothesis that the constructs would be bidirectionally related.

The first hypothesis that time 1 school belonging would predict changes in SWB in school at time 2 was supported. Specifically, time 1 school belonging predicted changes in school satisfaction and affect in school at time 2. Thus, the elementary school students who experienced higher levels of school belonging at time 1 reported subsequent higher levels of school satisfaction and more frequent positive affect in school, even after controlling for age and gender. Similar findings have been demonstrated in previous research. For example, McMahon et al. (2008) found that perceiving school belonging predicted increased school satisfaction in US students in grades 5 to 12. In addition, in a longitudinal study, Shochet et al. (2006) suggested that Australian middle school students' school belonging has shown to be positively related to positive affect in the school context. The findings are consistent with the BPNT of SDT (Deci and Ryan 2000; Ryan and Deci 2000) in that school belonging, as a relatedness need, appears to be a crucial determinant of SWB, regardless of cultural backgrounds or students' school levels such as elementary vs. secondary.

The second hypothesis that time 1 SWB in school would predict changes in time 2 school belonging was also supported. Specifically, time 1 school satisfaction and affect in school predicted changes in time 2 school belonging. Thus, the elementary school students who experienced higher levels of school satisfaction and more frequent positive affect in school at time 1 reported subsequent higher levels of school belonging, even after controlling for age and gender. The finding is consistent with previous cross-sectional research with adolescents in China and US which suggests that students' school satisfaction positively relates to their school belonging (Tian 2007; Zullig et al. 2011). This study thus extended the previous findings to a younger age group.

Most importantly, support was demonstrated for a bidirectional relationship between school belonging and SWB in school in elementary school students. Students who reported higher levels of school belonging experienced higher school satisfaction and more positive affect in school, which in turn enhanced their school belonging. The bidirectional link between school belonging and SWB in school suggests a possible causal role for school belonging in understanding and determining students' individual differences in SWB in school as well as vice versa. This study is one of the few studies to investigate the role of individual differences, such as school belonging, in explaining SWB in school, particularly in students as young as elementary school age. This finding may thus inform positive educational practices and policies because both students' perceptions of school belonging and SWB in school can be altered through interventions, especially early interventions, unlike personality/temperament variables that are more resistant to interventions (Lyubomirsky et al. 2005a; Lyubomirsky et al. 2005b; Sin and Lyubomirsky 2009). The bidirectional relationship between school belonging and SWB in school also underscores the importance of SWB in school to elementary school students. The present study suggests that elementary school students' SWB in school is not just a by-product of doing well in school but also may contribute to positive school experience, such as students' perceptions of school belonging.

Implications

This study yields implications for school professionals in understanding the relationship between school belonging and SWB in school for those students as young as elementary school students. The finding of bidirectionality between school belonging and SWB in school has important implications for school professionals for the development of healthy school environments. Support for models in which school belonging is theorized to cause individual differences in SWB in school would suggests that school professionals should focus their efforts exclusively on creating a safe, friendly, receptive, respectful, and comfortable campus environment that satisfies students' important need for school belonging, and that such efforts will result in increased SWB in school. Support for the model in which the effects are in the opposite direction, that is, where SWB in school is theorized to influence individual differences in school belonging, would result in different implications. The latter model would suggest that professionals should exert exclusive or primary efforts toward improving SWB in school, particularly with enhancing school satisfaction and positive affect and reducing negative affect, in order to promote greater school belonging. In contrast to such simplistic models, a bidirectional model implies that school belonging and SWB in school are reciprocally related and mutually reinforcing. The bidirectional model suggests that the most effective professional efforts will involve attending to elementary school students' school belonging and SWB in school simultaneously. If practitioners and school professionals ignore one construct at the expense of the other, the effects of their efforts are likely to be attenuated or short-lived. Furthermore, this research suggests the benefits of including measures of school belonging as well as measures of SWB in school in more comprehensive assessments of students' school experiences.

Limitations and Future Research

Strengths and limitations of the study should be noted. The major strength of the study was that information was provided about the nature and directionality of the relationship between school belonging and SWB in school beyond that of cross-sectional studies since two waves of data were collected and analyzed. However, future research may also include three or more waves of data in order to more comprehensively assess school belonging and SWB in school connections, including explorations of possible specific psychosocial mechanisms that account for the connections. A major limitation of the study was that the samples for this study were drawn from elementary schools in a mid-sized city located in a Southern China province and influences of its single city culture may have affected the observed relationship between school belonging and SWB in school and thus limit the generalizability of the inferences that can be drawn from the findings. Future research needs to be conducted with different populations in different parts of the country, as these results may not be nationally representative or generalizable. Additionally, all data were based on students' self-reports. Common method bias effects are of concern, given the exclusive use of self-report methods. Considering possible limitations with respect to self-reports of very young students, we sampled from older elementary school, namely students in grades 4 to 6. Even so, future studies should include a multi-trait, multi-method assessment of school belonging and SWB in school to improve confidence in the measurement of the constructs. Objective school records, such as teacher and parent reports of the elementary school students' school behavior and subjective experience, could help in further understanding the relationship between school belonging, SWB in school, and important school outcomes.

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