

The Effect of Gratitude on Elementary School Students' Subjective Well-Being in Schools: The Mediating Role of Prosocial Behavior

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Abstract The purpose of this study was to examine the mediational role of prosocial behavior on the relationship between gratitude and subjective well-being (SWB) in school (school satisfaction, positive affect in school, and negative affect in school) in elementary school students. We also explored the moderating effect of gender. A total of 706 Chinese elementary school students (375 males and 331 females) from classes in Grades 4 through 6 completed a packet of questionnaires. This packet consisted of the Gratitude Questionnaire, the Elementary School Students' Subjective Well-Being in School Scale, and the Prosocial Dimension adapted from the Mental Health Scale of Primary and Secondary School Students. The results showed that individual differences in elementary school students' (1) gratitude significantly related to SWB in school; (2) prosocial behavior partially mediated the relations between gratitude and school satisfaction and positive affect in school; (3) gender moderated the relation between gratitude and school satisfaction, with boys showing greater benefits of gratitude. Limitations and practical applications of the study are discussed.

Keywords Gratitude · Prosocial behavior · Subjective well-being in school · Mediatorial role · Elementary school students

1 Introduction

During the past several decades, social scientists have become increasingly interested in the positive aspects of human functioning. With the emergence of positive psychology,

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researchers have focused attention on a number of key psychosocial constructs, such as subjective well-being (SWB), hope, and gratitude. With respect to gratitude in particular, psychologists had conducted a variety of studies about gratitude from different perspectives by the end of the twentieth century (Eisenstein and Bodman 1986; Klein 1997; Klosko and Walker 1989; Lazarus and Lazarus 1994; Ventimiglia 1982; Weiner and Graham 1989). Interest in gratitude has continued to grow, and the relation between gratitude and SWB is currently one of the important, emerging topics in the research on gratitude. Although research has consistently shown that gratitude is strongly related to SWB (see Wood et al. 2010, for a review), past research has mostly focused on adults (Froh and Bono 2008; Wood et al. 2010). In addition, researchers have focused mostly on the association between gratitude and *global* SWB, paying little attention to the *domain-specific* SWB of individuals, such as *SWB in school*. As Sarason (1997) observed, “wellness is an individual phenomenon, but it is always embedded in an interpersonal, social-familial, or institutional context” (p. ix). Furthermore, some research has suggested that relative to domain-based measures of satisfaction, measures of overall life satisfaction may reveal different patterns of correlates (Antaramian et al. 2008). Thus, our scholarly interests address the SWB of students in schools, particularly elementary school students.

School is an important environment for students’ learning and social activities. The time and energy invested in school life contributes significantly to students’ lifelong development (Park 2004). Educational leaders and professionals in China and many nations pay much greater attention to the academic achievement of students than to students’ SWB in school (Dello-Iacovo 2009). However, recent research suggests that such a disproportionate emphasis on academic goals to the neglect of well-being goals may be counterproductive (Huebner 2010; Huebner et al. 2009).

Based on the view that childhood is a critical period for gratitude development (Graham and Weiner 1986), researchers have demonstrated that gratitude interventions can enhance students’ academic achievement, quality of social relationships, and SWB (Bono and Froh 2009). Furthermore, students’ academic achievement, and SWB have been linked to individual differences in students’ prosocial behavior (Chen et al. 1997). Such relations are reflected in the Moral Affect Theory of McCullough et al. (2001), which posits that gratitude may affect individuals’ SWB through the psychosocial mediator of prosocial behavior. Therefore, based on the above theory and the existing research, this study examined (1) the link between elementary school students’ levels of gratitude and SWB in school (school satisfaction, positive affect in school, and negative affect in school) and (2) the mediating role of prosocial behavior in accounting for this empirical link between gratitude and SWB in school.

1.1 Moral Affect Theory

Although other theories of gratitude have been proposed, the Moral Affect Theory of McCullough et al. (2001) has been widely cited. This theory defined gratitude as a moral emotion with three essential functions. As a moral barometer, gratitude signals the beneficiary that a benefactor has bestowed a gift upon him. As a moral motive, gratitude encourages prosocial behavior in the beneficiary either directly toward the benefactor or others. Finally, as a moral reinforcer, gratitude increases the probability that the benefactor will act prosocially toward the beneficiary in the future. According to this conceptualization, gratitude is hypothesized to affect individuals’ SWB through influencing their prosocial behavior. More specifically, the prosocial behavior of a benefactor to a beneficiary is thought to produce gratitude in the beneficiary, which in turn stimulates the beneficiary’s prosocial behavior, further strengthening the benefactor’s prosocial behavior.

This theory has been supported by several empirical studies, which revealed that prosocial behavior could promote good social relationships (e.g., interpersonal trust) and then promote SWB (e.g., Bartlett and DeSteno 2006; Grant and Gino 2010).

1.2 Subjective Well-Being in School

Grounded in Diener's (1984, 1994) theoretical model and empirical research on SWB, Tian (2008) has specifically conceptualized SWB in school as how students subjectively evaluate and emotionally experience their school lives. Furthermore, she has proposed a tripartite model, in which SWB in school consists of school satisfaction, positive affect in school, and negative affect in school. School Satisfaction refers to a student's subjective, cognitive evaluation of school life using her or his internal standards related to several specific school life domains (e.g., academic learning, teacher–student relationships). Positive affect in school refers to a student's frequency of positive emotions experienced during school (e.g., happy, delighted). Negative affect in school refers to a student's frequency of negative emotions experienced during school (e.g., gloomy, angry; Tian 2008). Empirical support for this SWB in school model has been garnered with Chinese adolescents and children (Tian 2008; Tian and Liu 2007; Tian et al. 2013a, b; L. Tian et al., 2013c, School-related social support and adolescents' SWB school: the mediating role of basic psychological needs satisfaction at school, Unpublished manuscript; Liu et al. 2014).

1.3 Gratitude and Its Relationship with Subjective Well-Being in School

Gratitude is a sense of real-time emotional experience such as thankfulness and joy in response to receiving a gift (McCullough et al. 2002), which can motivate individuals to help others and transmit supportive social connections (Bono and Froh 2009; Emmons and Shelton 2002). Research has shown that gratitude is one of the most important factors that influences individuals' happiness (Emmons and McCullough 2003; Froh and Bono 2008) and is thus an important basis for experiencing happiness in individuals (Watkins et al. 2003). For example, McCullough et al. (2002) conducted research on a self-directed gratitude intervention and found that the gratitude intervention increased individuals' life satisfaction and optimism.

Schools in China attach great importance to students' morality. Gratitude, in particular, has attracted extensive attention from Chinese educators. Many studies have shown that frequent experiences of gratitude are related to students' healthy development. For example, several studies demonstrated that junior high school students' gratitude correlated significantly with their school achievement (Wen et al. 2010). Gratitude experiences have also been shown to relate to adolescents' goal pursuits and achievement motivation (Bono and Froh 2009; Froh and Bono 2008). Furthermore, higher levels of gratitude are also associated with decreased burnout in learning among adolescents (Froh et al. 2011a). As a positive moral emotion, gratitude could buffer the effects of negative school experiences on students, reducing the probability of developing a mental illness (Masten 2001; Seligman 1995). Thus, it appears that gratitude plays an important role in promoting students' positive development and SWB in school.

1.4 Prosocial Behavior and Its Relationship with Subjective Well-Being in School

Prosocial behavior, also known as positive social behavior, is used to describe acts undertaken to protect or enhance the welfare of others (Schwartz and Bilsky 1990). Prosocial behavior has been shown to be associated with individuals' SWB (Ellison 1991; Weinstein

and Ryan 2010; Wheeler et al. 1998). Aristotle claimed that human happiness, which he described as “*eudaimonia*”, was furthered more “by loving rather than in being loved” (Dolan et al. 2008). This view has been supported by a number of empirical studies. For example, prosocial behavior is related significantly to a number of benefits for helpers, including greater well-being (Weinstein and Ryan 2010), personal happiness (Ellison 1991) and life satisfaction (Wheeler et al. 1998) and less frequent reports of depression (Brown et al. 1992; Rietschlin 1998). However, the aforementioned findings all come from studies focused on adults. Researchers have paid little attention to the relation between elementary school students’ prosocial behavior and domain-specific SWB, namely SWB in school.

Research has shown that children’s prosocial behavior strongly relates to the quality of their peer relationships. For example, increases in children’s prosocial behavior relates to reduced peer rejection and increased peer acceptance (Caputi et al. 2012). Furthermore, Chen et al. (1997) found a positive correlation between children’s prosocial behavior and academic achievement. Therefore, we hypothesized that elementary school students’ prosocial behavior would positively relate to their SWB in school.

1.5 Mediating Role of Prosocial Behavior in the Relation Between Gratitude and Subjective Well-Being in School

In line with the Moral Affect Theory of gratitude (McCullough et al. 2001), prosocial behavior is a response to gratitude. Gratitude thus may influence individuals to return a favor through prosocial behavior (Bartlett and DeSteno 2006; Tsang 2006). Bartlett and DeSteno (2006) found that individuals who received help from others experienced gratitude and were more likely to show prosocial behavior to the benefactor or to others. In addition, studies have shown similar findings with elementary school students. For example, Graham and Weiner (1986) concluded that the links among attributions of responsibility for positive outcomes, the experience of gratitude, and the desire to do good to one’s benefactor probably are solidified between the ages of 7–10. Based on the extant literature, we thus hypothesized that prosocial behavior would act as a mediator between elementary school students’ gratitude and their SWB in school.

1.6 Moderating Effects of Gender

Research on gratitude, SWB, and prosocial behavior has shown gender effects on all variables. For example, girls are more likely to experience and express gratitude (Gordon et al. 2004; Kashdan et al. 2009; Ventimiglia 1982) and gain greater social benefit from gratitude (Kashdan et al. 2009). Numerous studies have shown that girls’ school satisfaction is significantly higher than boys’ school satisfaction (Epstein and McPartland 1976; Karatzias et al. 2002; Okun et al. 1990; Tian and Liu 2007; Tian and Zhang 2008). Furthermore, Eisenberg et al. (1989) reported that prosocial behavior was higher among girls than boys. Based on the above findings, we therefore further hypothesized that the magnitude of the relations between gratitude and SWB in school, between gratitude and prosocial behavior, and between prosocial behavior and SWB in school would be stronger in girls than in boys.

1.7 Purpose of Current Study

This study aimed at examining the relation between gratitude and SWB in school, including examined the mediating role of prosocial behavior in accounting for the empirical link

between gratitude and SWB in school in elementary school students. Furthermore, we also examined whether gender moderated the above relations. Specifically, we formulated three hypotheses: (1) Childhood represents an important early stage in the development of individual's cognitive, social, and moral functioning (Freud 2004). Studies suggest that individual differences in dispositions to experience gratitude emerge in middle childhood (Emmons and Shelton 2002; Froh et al. 2011b). Therefore, we hypothesized that gratitude and SWB in school would be significantly, positively related in elementary school students. (2) With the analysis and findings in 1.3 and 1.4, gratitude and prosocial behavior are closely related to SWB in school. At the same time, according to the Moral Affect Theory of gratitude (McCullough et al. 2001), gratitude is hypothesized to affect individuals' SWB through influencing their prosocial behavior. Therefore, we hypothesized that prosocial behavior would act as a mediator between elementary school students' gratitude and their SWB in school. (3) On the basis of previous research (as stated in Sect. 1.6), girls' gratitude, school satisfaction and prosocial behavior are significantly higher than boys'. Therefore, we hypothesized that gender will moderate the relations between gratitude and SWB in school, gratitude and prosocial behavior, and prosocial behavior and SWB in school.

2 Methods

2.1 Participants

The convenience samples used in our study were randomly drawn from three public elementary schools in a mid-sized city located in a Southern China province. A total of 760 participants (406 males and 354 females) were from regular education (versus special education) classes in Grades 4 through 6; there were five classes in each grade. Thirty-one males and twenty-three females did not complete the survey fully. These participants were excluded from the analyses due to the missing data on their surveys. The resulting number of valid participants was 375 males and 331 females with response rates of 92.36 and 93.50 %, respectively. Of the sample, there were 218 students from Grade 4, 252 students from Grade 5 and 236 students from Grade 6. The mean age of the participants was 11.07 years ($SD = 1.07$) with a range of 8–14 years.

These schools were chosen because ongoing research relationships have been established between the schools and the first author's institution. Although the sample was a convenience sample, the participating schools were all coeducational, ordinary elementary schools, and all were reasonably representative of the schools in this province according to information available from local education authorities. Across elementary schools, the schools were comparable in terms of the quality of students, school size, class size, and teachers' teaching ability. Among the sample participants, 92.80 % of the parents earned at least a high school diploma. Almost all (94.30 %) of the students came from middle-income families.

2.2 Measures

2.2.1 Gratitude

Gratitude was measured using the Gratitude Questionnaire (GQ-6; McCullough et al. 2002), which consists of six self-report items (e.g., "I am grateful to a wide variety of people; When I look at the world, I don't see much to be grateful for"). Participants were

asked to respond using a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Considering the elementary school students' cognitive limitations, we deleted the middle response options, changing the original 7-point Likert scale to a 6-point scale. Mean scores were analyzed with reverse coding of relevant items, with higher scores indicating a stronger grateful disposition. The GQ-6 has shown adequate support for its reliability and validity in Chinese populations (e.g., Chen et al. 2012; Chen and Kee 2008), and has good applicability in Chinese elementary school students (M. Du, 2014, The relationship between gratitude, prosocial behavior, and school related-SWB in elementary students, Unpublished master's thesis, South China Normal University). Evidence of its validity with elementary school children in the United States has also been provided (Froh et al. 2011b). In this study, the Cronbach's alpha coefficient for the GQ-6 was 0.82.

2.2.2 Subjective Well-Being in School

SWB in school was measured using the Elementary School Students' Subjective Well-Being in School Scale (ESSSWBSS; Liu et al. 2014). The ESSSWBSS is a 33-item self-report scale comprised of three subscales: school satisfaction, positive affect in school, and negative affect in school.

2.2.2.1 School Satisfaction The School Satisfaction subscale of the ESSSWBSS consists of 23 items (e.g., "I have plenty of time to complete the assigned homework from teachers", "The school makes the rules and regulations on the basis of the needs of students"), covering six dimensions of students' school life, namely, academic learning, school management, teacher–student relationships, achievement, peer relationships, teaching. Students responded on a 6-point Likert scale, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The mean scores were computed, with higher scores indicating higher levels of school satisfaction. The internal consistency has been reported as 0.91 (Liu et al. 2014). In this study, the Cronbach's alpha coefficient was 0.95.

2.2.2.2 Positive Affect in School The Positive Affect in School subscale of the ESSSWBSS consists of five adjectives describing positive emotions (e.g., happy, proud) experienced during school. Participants responded on a 6-point Likert scale, ranging from 1 (*never*) to 6 (*always*). The mean scores were computed, with higher scores indicating higher levels of positive affect. The internal consistency has been reported as 0.76 (Liu et al. 2014). In this study, the Cronbach's alpha coefficient was 0.88.

2.2.2.3 Negative Affect in School The Negative Affect in School subscale of the ESSSWBSS consists of five adjectives describing negative emotions (e.g., angry, sad) experienced during school. Participants responded on a 6-point Likert scale, ranging from 1 (*never*) to 6 (*always*). The mean scores were computed, with higher scores indicating higher levels of negative affect. The internal consistency has been reported as 0.84 (Liu et al. 2014). In this study, the Cronbach's alpha coefficient was 0.89.

2.2.3 Prosocial Behavior

Prosocial behavior was measured using the Prosocial Dimension adapted from the Mental Health Scale for Primary and Secondary School Students (Zhang et al. 2004). Participants were asked to respond to each of the 11 items using a Likert scale ranging from 1 (*strongly*

disagree) to 5 (*strongly agree*). The sum of the scores was computed, with higher scores indicating more frequent prosocial behavior. The Prosocial Dimension shows sound psychometric properties with Chinese elementary students (Zhang et al. 2004). In this study, the Cronbach's alpha coefficient was 0.84.

2.3 Procedure

The study was approved by the Human Research Ethics Committee of South China Normal University and the relevant school boards, principals, and teachers. Following the approvals, letters describing the study and consent forms were sent to the students' parents. Only the children who brought back consent forms signed by a parent and who gave their own assent took part in the study. A packet of self-report instruments was administered to groups of about 50 students at a time in a regular classroom environment by a trained graduate assistant. The participants all received identical verbal and written instructions from the trained graduate assistant. The students were allowed to take as much time as needed to complete the packet of questionnaires. Generally, students took approximately 20 min to complete the study. After students finished all the measures, they were debriefed regarding the purpose of the investigation. In addition to the formal measures described above, students were asked to provide information about their age, grade, and gender.

2.4 Data Analysis

First, descriptive statistics and a set of independent sample *t* tests were performed to compare the difference between boys and girls on the variables of gratitude, prosocial behavior, school satisfaction, positive affect in school, and negative affect in school among the Chinese elementary school students. Second, Pearson correlations were separately used for boys and girls to describe the relationships among all the study variables. Thirdly, hierarchical regression analysis was used to examine the mediator effect of prosocial behavior on gratitude and school satisfaction, and gratitude and positive affect in school. Finally, hierarchical regression analysis was performed to examine the moderating effect of gender on gratitude and school satisfaction, gratitude and prosocial behavior, and prosocial behavior and school satisfaction. All of the analyses were conducted with SPSS 16.0 for Windows. The threshold of statistical significance was set at $p < 0.05$.

3 Results

3.1 Descriptive Statistics

Means and standard deviations for the study variables for girls and boys are presented in Table 1. *t* tests were also used for independent samples, which revealed significant gender differences on gratitude, prosocial behavior and school satisfaction. As shown in Table 1, the girls in Chinese elementary school reported significantly higher scores on gratitude, prosocial behavior and school satisfaction than boys. No significant gender differences were observed for positive affect and negative affect in school.

Table 1 Means and standard deviations of study variables by gender

Variables	Boys (n = 375)		Girls (n = 331)		<i>t</i>	Cohen's <i>d</i>	Effect-size <i>r</i>
	M	SD	M	SD			
Gratitude	4.48	0.70	4.81	0.77	-5.98***	-0.44	0.22
Prosocial behavior	44.00	7.60	46.16	6.02	-4.16***	-0.31	0.15
School satisfaction	4.97	0.92	5.24	0.70	-4.47***	-0.33	0.17
Positive affect in school	4.80	1.03	4.86	0.96	-0.69	-0.06	0.03
Negative affect in school	3.27	1.22	3.18	1.02	0.94	0.08	0.04

*** $p < 0.001$

3.2 Relations Among the Study Variables Across Gender

Pearson correlations among gratitude, prosocial behavior, school satisfaction, positive affect in schools and negative affect in school are shown in Table 2. The criterion of $p < 0.05$ was used to determine statistical significance.

As shown in Table 2, there was no non-normality in the data. Univariate skewness of 2.0 and higher and kurtosis of 7.0 and higher is considered moderate to high non-normality and has been found to create problems in analyses (Curran et al. 1996; Muthén and Kaplan 1985, 1992). However, all variables in the present study demonstrated values well below these levels. The correlation analysis showed that gratitude was positively related with school satisfaction and positive affect in school for elementary students (both boys and girls, all p values < 0.01), namely, the stronger the grateful disposition, the higher the school satisfaction and the more positive affect reported in school. Likewise, prosocial behavior was positively related with school satisfaction and positive affect in school for elementary students (both boys and girls, all p values < 0.01), namely, the more prosocial behavior, the higher the school satisfaction and the more positive affect reported in school. Additionally, the gratitude levels of boys and girls were all significantly and positively related with prosocial behavior (all p values < 0.01), namely, the stronger the grateful disposition, the more the prosocial behavior. The correlation analysis also showed that gratitude and prosocial behavior were negatively related to negative affect in school for

Table 2 Correlations among the study variables for boys and girls

Variables	Skewness	Kurtosis	Gender	1	2	3	4
1. Gratitude	-0.07	-0.51	Boys	-			
			Girls	-			
2. Prosocial behavior	-1.01	2.37	Boys	0.29**	-		
			Girls	0.23**	-		
3. School satisfaction	-1.21	1.47	Boys	0.43**	0.53**	-	
			Girls	0.38**	0.55**	-	
4. Positive affect in school	-0.76	0.33	Boys	0.27**	0.40**	0.50**	-
			Girls	0.34**	0.39**	0.55**	-
5. Negative affect in school	-0.02	0.19	Boys	-0.08	-0.06	-0.15**	-0.12**
			Girls	-0.14*	-0.08	-0.29**	-0.30**

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

both boys and girls. Moreover, the gratitude levels of the girls were significantly and negatively associated with negative affect in school ($p < 0.05$).

3.3 Mediating Role of Prosocial Behavior Between Gratitude and Subjective Well-Being in School

According to the procedure recommended by Baron and Kenny (1986), we tested the mediating role of prosocial behavior between elementary students' gratitude and SWB in school. A variable functions as a mediator when it meets the following four conditions: (a) the independent variable (gratitude) must affect the mediator (prosocial behavior) in the first equation; (b) the independent variable (e.g., gratitude) must be shown to affect the dependent variable (i.e., school satisfaction) in the second equation; (c) the mediating variable (i.e., prosocial behavior) must affect the dependent variable (i.e., school satisfaction) in the third equation; and (d) if the mediating variable was controlled in the predicted direction, then the effect of the independent variable on the dependent variable must be less in the fourth equation than in the second. Complete mediation holds if the independent variable has no effect when the mediator is controlled. In this study, we tested three mediating model: First, we tested the mediating effect of prosocial behavior on the link between gratitude and school satisfaction. Second, we tested the mediating effect of prosocial behavior on the link between gratitude and positive affect in school. Third, we tested the mediating effect of prosocial behavior on the link between gratitude and negative affect in school.

3.3.1 Prosocial Behavior as a Mediator Between Gratitude and School Satisfaction

The mediating role of prosocial behavior in explaining the relation between gratitude and school satisfaction was tested first. We evaluated four regression equations. Gender was controlled in each regression equation analysis.

As shown in Table 3, firstly, gender significantly predicted school satisfaction ($\beta = 0.17, p < 0.001$). In regression equation 1, gratitude significantly predicted prosocial behavior (the mediating variable, $\beta = 0.27, p < 0.001$). In regression equation 2, gratitude significantly predicted school satisfaction ($\beta = 0.41, p < 0.001$). In regression equation 3, prosocial behavior significantly predicted school satisfaction ($\beta = 0.54, p < 0.001$). In regression equation 4, after controlling for gender and prosocial behavior, gratitude continued to predict school satisfaction, but to a lesser degree ($\beta = 0.29, p < 0.001$). Prosocial behavior is thus a partial mediator between gratitude and school satisfaction, the size of the mediating effect was 0.12, which accounted for 29.27 % of the total effects. Based on these results above, we constructed the mediation model portrayed in Fig. 1.

3.3.2 Prosocial Behavior as a Mediator Between Gratitude and Positive Affect in School

In the same way, in order to examine the mediating effect of prosocial behavior between gratitude and positive affect in school, four regression equations were evaluated.

As shown in Table 4, gender did not predict positive affect in school. Gratitude significantly predicted prosocial behavior ($\beta = 0.27, p < 0.001$), and both gratitude and prosocial behavior significantly predicted positive affect in school ($\beta = 0.31, p < 0.001$; $\beta = 0.40, p < 0.001$). After controlling for gender and prosocial behavior, gratitude continued to predict positive affect in school, but to a lesser degree ($\beta = 0.21, p < 0.001$).

Table 3 Hierarchical regression analyses predicting school satisfaction

Step	Regression equation	Independent	Dependent	B	SE	β	R ²	ΔR^2	ΔF
1	1	Gender	School satisfaction	0.28	0.06	0.17***	.03	.03	19.94***
2	1	Gender	Prosocial behavior	1.34	0.52	0.10**	.09	.07	51.94***
		Gratitude		2.50	0.34	0.27***			
	2	Gender	School satisfaction	0.13	0.06	0.08*	.18	.16	136.76***
		Gratitude		0.45	0.04	0.41***			
3		Gender	School satisfaction	0.14	0.05	0.08**	.31	.28	286.72***
		Prosocial behavior		0.06	0.004	0.54***			
4		Gender	School satisfaction	0.05	0.05	0.03	.38	.35	200.37***
		Prosocial behavior		0.06	0.004	0.46***			
		Gratitude		0.32	0.04	0.29***			

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

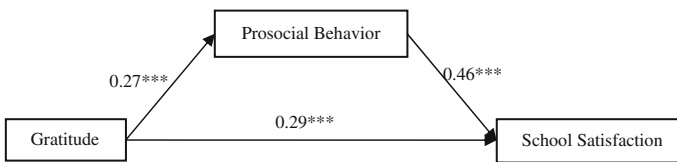


Fig. 1 Beta coefficients for the mediating role of prosocial behavior between gratitude and school satisfaction. Note: *** $p < 0.001$

Therefore, prosocial behavior partially mediated the relation between gratitude and positive affect in school; the size of the mediating effect was 0.10, which accounted for 32.26 % of the total effects. Based on these results above, we constructed the second mediation model portrayed in Fig. 2.

3.3.3 *Prosocial Behavior as a Mediator Between Gratitude and Negative Affect in School*

In the same way, in order to examine the mediating effect of prosocial behavior on the relation between gratitude and negative affect in school, four regression equations were evaluated.

As shown in Table 5, gratitude significantly predicted prosocial behavior and positive affect in school, however, prosocial behavior did not predict negative affect in school. Thus, prosocial behavior could not function as a mediator of the relation between gratitude and negative affect in school because it did not meet the above three conditions recommended by Baron and Kenny (1986).

3.4 *Moderating Analysis of Gender Among Gratitude, Prosocial Behavior and School Satisfaction*

Hierarchical regression analyses were performed to examine the moderating effect of gender on the relations between gratitude and school satisfaction, gratitude and prosocial

behavior, and prosocial behavior and school satisfaction, respectively. Gender was recoded as 0 for boys, and 1 for girls. According to the procedure recommended by Frazier et al. (2004), the predictor variables (gratitude, prosocial behavior) and the moderating variable (gender) were centered before generating the interaction terms in order to eliminate multicollinearity. We tested three interactions respectively: (a) the interaction between gratitude and gender on school satisfaction, (b) the interaction between gratitude and gender on prosocial behavior, (c) the interaction between prosocial behavior and gender on school satisfaction.

3.4.1 Analysis of Gender as a Moderator of the Relation Between Gratitude and School Satisfaction

The hierarchical regression analyses showed that the interaction between gratitude and gender significantly predicted school satisfaction ($\beta = -0.09$, $\Delta R^2 = 0.01$, $p < 0.001$). To further analyze the interaction, we calculated the slopes using the program ZumaStat and plotted the interaction using the procedure outlined by (Aiken and West 1991). The slope for boys was 0.42, $p < 0.001$, and the slope for girls was 0.33, $p < 0.001$. There was a significant difference in these two slopes. As shown in Fig. 3, the level of school satisfaction increased with the level of gratitude for boys and girls. However, the magnitude of the relation between gratitude and school satisfaction was stronger in boys than in girls, namely, boys obtained more benefits from gratitude than girls.

3.4.2 Analysis of Gender as a Moderator of the Relation Between Gratitude and Prosocial Behavior

The hierarchical regression analyses showed that the interaction between gratitude and gender on prosocial behavior was non-significant ($\beta = -0.07$, $p > 0.05$), showing that the strength of the association between gratitude and prosocial behavior did not differ significantly across genders.

3.4.3 Analysis of Gender as a Moderator of the Relation Between Prosocial Behavior and School Satisfaction

The hierarchical regression analyses showed that the interaction between prosocial behavior and gender on school satisfaction was non-significant ($\beta = 0.001$, $p = 0.97$), showing that the strength of the association between prosocial behavior and school satisfaction did not differ significantly across genders.

4 Discussion

4.1 Relations Between Gratitude and Subjective Well-Being in School

As hypothesized, elementary school students' gratitude significantly related to their school satisfaction and positive affect in school. Girls' levels of gratitude showed a significant negative correlation with their reported frequencies of negative affect in school. Hypothesis 1 was thus supported in this study, namely, gratitude demonstrated a significant relation with elementary school students' SWB in school. This finding was consistent with

Table 4 Hierarchical regression analyses predicting positive affect in school

Step	Regression equation	Independent	Dependent	B	SE	β	R ²	ΔR^2	ΔF
1	1	Gender	Positive affect in school	0.05	0.08	0.03	.02	.001	0.47
2	1	Gender	Prosocial behavior	1.34	0.52	0.10**	.09	.07	51.94***
		Gratitude		2.47	0.34	0.27***			
	2	Gender	Positive affect in school	-0.08	0.07	-0.04	.09	.09	68.27***
		Gratitude		0.41	0.05	0.31***			
3	3	Gender	Positive affect in school	-0.07	0.07	-0.04	.16	.16	131.75***
		Prosocial behavior		0.06	0.005	0.40***			
4	4	Gender	Positive affect in school	-0.15	0.07	-0.07*	.20	.20	86.89***
		Prosocial behavior		0.05	0.005	0.35***			
		Gratitude		0.28	0.05	0.21***			

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

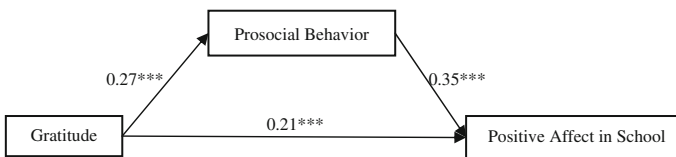


Fig. 2 Beta coefficients for the mediating role of prosocial behavior between gratitude and positive affect in school. Note: *** $p < 0.001$

previous studies in adults (Emmons and McCullough 2003; Froh et al. 2008; Watkins et al. 2003). As Emmons and Shelton (2002) suggested, the psychological characteristic of gratitude has important implications both for societal functioning and for individual well-being. Specific to this study, gratitude as a traditional virtue of Chinese people, has attracted much attention from Chinese educators. Students who show higher levels of gratitude usually receive more attention and appreciation from teachers and classmates, which helps them to establish good interpersonal relationships in school life. Students who show higher levels of gratitude generally demonstrate higher levels of achievement motivation (Bono and Froh 2009; Froh and Bono 2008) and lower levels of burnout in learning (Froh et al. 2011b; Damon 2008). Furthermore, some studies indicate that gratitude has a significant negative correlation with trait depression and has a significant positive correlation with sleep quality (Wood et al. 2009). Thus, gratitude relates to a variety of important school-related variables. Therefore, taken together, these relations support the importance of continued attention to students' gratitude and SWB in school.

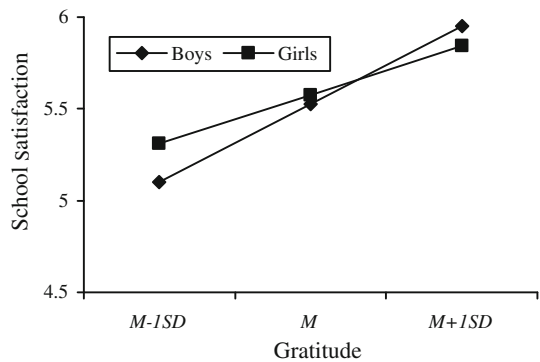
Some scholars believe there is no connection between gratitude and negative affect (McCullough et al. 2002; Watkins et al. 2003). However, Froh et al. (2008) found that counting blessings was related to decreased negative affect. Our finding was consistent with that of Froh et al., but the finding was qualified by a moderator effect of gender. Therefore, although promoting gratitude may be a useful undertaking for youth, the

Table 5 Hierarchical regression analyses predicting negative affect in school

Step	Regression equation	Independent	Dependent	B	SE	β	R ²	ΔR^2	ΔF
1	1	Gender	Negative affect in school	-0.08	0.09	-0.04	.02	.001	0.87
2	1	Gender	Prosocial behavior	1.34	0.52	0.10**	.09	.07	51.94***
		Gratitude		2.47	0.34	0.27***			
	2	Gender	Negative affect in school	-0.03	0.09	-0.01	.01	.01	8.07**
		Gratitude		-0.16	0.06	-0.11**			
3		Gender	Negative affect in school	-0.06	0.09	-0.03	.005	.004	2.97
		Prosocial behavior		-0.01	0.01	-0.07			
4		Gender	Negative affect in school	-0.02	0.09	-0.01	.01	.01	4.58*
		Prosocial behavior		-0.01	0.006	-0.04			
		Gratitude		-0.15	0.06	-0.10*			

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

Fig. 3 Interaction of gratitude with gender: predicting school satisfaction



planning, implementation, and monitoring of outcomes may need to take gender differences into account.

4.2 Prosocial Behavior’s Mediating Effect Between Gratitude and School Well-Being

The hypothesis of the mediating effect of prosocial behavior on the relation of gratitude and SWB in school in elementary school students was partially supported. This result verified the Moral Affect Theory of McCullough et al. (2001). The Moral Affect Theory proposes that gratitude influences individuals’ SWB through the psychosocial mechanism of prosocial behavior. Relevant to this study, students with grateful dispositions expressed their appreciation by prosocial behavior; in return, they experienced the benefit of increased SWB in school (Weinstein and Ryan 2010). Again, our findings are consistent with the current attention paid by Chinese educators to gratitude as an important part of the moral education of Chinese students. Both families and school professionals encourage children to express their appreciation or return the favor when they receive benefits from others. In fact, psychologists have demonstrated the importance of the expression of

gratitude through “gratitude visits” in which beneficiaries express thanks to helpers (Seligman et al. 2005). Such “gratitude visits” not only show the increase in SWB of the beneficiary, but also show that the benefactor is subsequently more willing to help beneficiaries in the future (Carey et al. 1976; McGovern et al. 1975; Rind and Bordia 1995) and to help others (Clark 1975; Goldman et al. 1982; Moss and Page 1972). Therefore, in the school environment, gratitude not only directly impacts elementary students’ SWB in school, but it also indirectly impacts it through increases in prosocial behavior.

4.3 Moderating Affect Analysis of Gender

Hypothesis 3 was partially supported. Gender acted as a moderator of the relation between gratitude and school satisfaction. Girls reported higher school satisfaction at lower levels of gratitude; boys’ reported higher school satisfaction at higher levels of gratitude. This result was consistent with that of Froh, Kashdan, et al. (2009a, b) who found that the relation between gratitude and family support was moderated by gender, indicating that boys obtain more benefit from gratitude than girls. Such a finding may partially reflect different values associated with different genders. In general, girls see more value in interpersonal relationships than boys, and girls may believe that gratitude facilitates the development of harmonious interpersonal relations (Bono and Froh 2009). Thus, girls may believe that they must be more grateful than boys, while boys become accustomed to their lower levels of gratitude. Froh et al. (2009a) found that individuals’ levels of positive affect moderated the relation between gratitude and SWB. They found that the effects of a gratitude intervention were greater for individuals who reported lower levels of positive affect. A possible explanation offered by the authors was that the people with higher baseline levels of positive affect had already reached a “nearly saturated state” so that their room for improvement in SWB was limited relative to people with lower baseline levels of positive affect. Therefore, it may be the case that the girls in this study had less room to improve their school satisfaction (having almost reached the “nearly saturated state at lower levels of gratitude) relative to the boys who had more room for improvement.

4.4 Limitations and Further Research

This study had some limitations that should be noted. Firstly, it was cross-sectional, limiting causal inferences. Longitudinal studies are needed to specify the directionality of the relations among gratitude, prosocial behavior, and SWB in school. Secondly, all data were based on students’ self-reports, which could lead to common method variance issues. The use of multiple methods of assessment would be beneficial in future research. Thirdly, this study concentrated on Chinese elementary school students to explore the relations between gratitude and SWB in school; future cross-cultural and cross-age studies of gratitude would be beneficial to clarify the generalizability of these findings (Emmons and Shelton 2002). Fourthly, additional studies of psychosocial mechanisms that may mediate and moderate the relations between gratitude and school well-being would be useful (Froh et al. 2009a, b; Kashdan et al. 2009).

4.5 Implications

Although this study reflected the above limitations, the results revealed positive relations among elementary school students’ gratitude, prosocial behavior, and SWB in school,

providing further support for Moral Affect Theory (McCullough et al. 2001) and for practical applications. Firstly, this study found that elementary school students' gratitude related significantly to SWB in school, with gratitude significantly and positively predicting school satisfaction and positive affect in school. This result suggested that educators and parents may promote elementary school students' positive SWB in school through the cultivation of students' gratitude in some situations. For example, the findings support Chinese and other educators' efforts to encourage students to express gratitude to teachers and classmates in an effort to facilitate positive social interactions on an ongoing basis. Secondly, the findings revealed that gratitude not only directly related to school satisfaction and positive affect in school, but also indirectly related to their school satisfaction and positive affect in school through increased prosocial behavior. This result illuminates the important role of prosocial behavior (e.g., altruistic behavior) in understanding and promoting the link between the expression of gratitude in students and their SWB in school. Finally, this study showed moderator effects for gender, underscoring the importance of taking gender differences into account in efforts to promote SWB in schools. Specifically, boys of this age may receive greater benefits from gratitude interventions than girls.

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