

Chapter 6

GRATITUDE AND SUBJECTIVE WELL-BEING AMONG HIGHLY ACHIEVING CHINESE EARLY ADOLESCENT STUDENTS IN HONG KONG

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ABSTRACT

Despite burgeoning research studies on gratitude and on subjective well-being, and the consistent findings of a positive relationship between the two across different age groups ranging from early adolescents to elderly people, there is as yet relatively less knowledge on the mechanism of the positive relationship linking gratitude to subjective well-being. It has been suggested that gratitude as a character strength and defined in terms of the frequency, intensity, and density of grateful affect might impact differentially the different components of subjective well-being which include positive affect, negative affect, and satisfaction with life. One plausible hypothesis is that gratitude might increase the tendency to experience positive affect and reduce the tendency to experience negative affect, and this change of the hedonic balance to emotional positivity could in turn lead to greater satisfaction with life. Yet, there have been few studies examining fully and testing adequately this mediation hypothesis which is complicated by the mixed results regarding gender differences in gratitude, suggesting a moderated mediation model. Along this line, the present study examined the relationship between gratitude and satisfaction with life using positive and negative affect as two mediation links and gender as a moderator differentiating the mediation effects. Specifically, a sample of 465 highly achieving early adolescent students, aged 10 to 13, were administered the Gratitude Questionnaire, the Positive and Negative Affect Schedule, and the Satisfaction with Life Scale. We conducted path analysis to test one simple mediation model and three moderated mediation models to search for the best-fit model. Our findings revealed that only positive affect significantly mediated the relationship between gratitude and satisfaction with life, and gender moderated this mediation path, favoring boys over girls. Implications of our findings on understanding the mechanism relating gratitude to subjective well-being, as well as on promoting well-being of early adolescents through gratitude intervention were discussed.

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INTRODUCTION

In recent years, positive psychology movement has spearheaded a change in research focus from individuals' maladaptation and psychopathology to human positives and strivings, achievements, potentialities and the quality of life (Seligman, 2003; Seligman & Csikszentmihalyi, 2000; Wood & Tarrier, 2010). This important change has revitalized research interests in, among others, subjective well-being (Diener, Suh, Lucas, & Smith, 1999), happiness (Lyubomirsky, Sheldon, & Schkade, 2005) and character strengths (McCullough & Snyder, 2000; Peterson & Seligman, 2004). Consequently, researchers and practitioners have devoted increasing efforts to explore effective methods to enhance subjective well-being through using character strengths (Linley & Harrington, 2006; Wood, Linley, Maltby, Kashdan, & Hurling, 2011) and other positive interventions (Lyubomirsky et al., 2005; Seligman, Rashid, & Parks, 2006; Seligman, Steen, Park, & Peterson, 2005).

SUBJECTIVE WELL-BEING AND GRATITUDE

Subjective well-being, broadly referred to as the good life, takes central place in human life and thus has become one of the active areas of research in the positive psychology movement. It is believed that this construct denotes a psychological state during which "a person feels and thinks that his or her life is desirable regardless of how others see it" (Diener, 2009, p. 1). Specifically, Diener identified three components for subjective well-being, namely, satisfaction with life, positive affect, and negative affect. Each of these three components could be affected by multiple factors resulting in changes in subjective well-being. These factors included external factors such as demographic and circumstantial variables which might explain only a small portion of the variability in subjective well-being as well as psychological factors such as character strengths which could constitute more notable sources for individuals' subjective well-being (Diener et al., 1999).

Among the variety of character strengths, gratitude has captured widespread interest and attention. In research, gratitude has been conceptualized as both a state and a trait (e.g., Chen & Kee, 2008; Emmons & McCullough, 2003; Watkins, Woodward, Stone, & Kolts, 2003). As a state, gratitude is specifically defined as "a sense of thankfulness and joy in response to receiving a gift, regardless of the gift being a tangible benefit from a specific other or a moment of peaceful bliss evoked by natural beauty" (Emmons, 2004, p. 554). Such subjective feeling of wonder, thankfulness, and appreciation for life is episodic and malleable, requiring cognitive sophistication and thus has been considered a complex, higher-level emotion (Emmons & Shelton 2002). As a trait, gratitude is defined as a "life orientation toward noticing and appreciating the positive in life" (Wood, Froh, & Geraghty, 2010, p. 891). This stable disposition represents the individual differences in the intensity, frequency, and span with which gratitude is experienced in daily life. Research studies have demonstrated that a higher level of trait gratitude is related to more intense experiences of state gratitude in daily life (McCullough, Emmons, & Tsang, 2002; McCullough, Tsang, & Emmons, 2004). Indeed, people high in dispositional gratitude may feel more grateful following a positive emotion, and experience gratitude more times each day and across a wider array of life circumstances

than those low in dispositional gratitude. Thus, benefit appraisal has been proposed as a mechanism connecting the state gratitude to trait gratitude and the objective situation (Wood, Maltby, Stewart, Linley, & Joseph, 2008).

Since gratitude is pervasive in social life, and is related to a wide range of adaptive outcomes, including quality of relationships, generosity, compassion, and empathy (McCullough et al., 2002; Wood et al., 2010), it is of interest to explore gender differences. However, the findings yielded somewhat mixed results. In some studies, men were found to be less inclined to experience gratitude and derive less benefit from expressing gratitude whereas women expressed greater gratitude if asked to describe a recent episode when they were the beneficiaries, and their psychological needs of belongingness and autonomy were more likely to be satisfied over the course of three months (Kashdan, Mishra, Breen, & Froh, 2009). In other studies, there were no observed gender differences in the improvement in emotional positivity and satisfaction with life after gratitude intervention (e.g., Froh, Yurkewicz, & Kashdan, 2009). While such inconsistency could be attributable to the different methods used in these studies, the mixed results nevertheless warrant further investigation.

POSITIVE AND NEGATIVE AFFECT IN THE RELATIONSHIP BETWEEN GRATITUDE AND SATISFACTION WITH LIFE

Gratitude has been consistently found to be beneficial to subjective well-being. Such positive relationship was established across different age groups, including early adolescents (Froh, Sefick, & Emmons, 2008), late adolescents (Froh, Emmons, Card, Bono, & Wilson, 2010), college students (Emmons & McCullough, 2003), middle age adults (Seligman et al., 2005), and older adults (Kashdan, Uswatte, & Julian, 2006). The positive relationship was also validated in experimental (Froh et al., 2008) and intervention studies (Froh, Kashdan, Ozimkowski, & Miller, 2009). Gratitude priming in experiments or gratitude treatment in intervention studies have been found to lead to greater satisfaction with life (Emmons & McCullough, 2003), higher positive affect (Watkins et al., 2003, study 4), better well-being (Lyubomirsky, King & Diener, 2005; Seligman et al., 2005) as well as decreased negative affect (Emmons & McCullough, 2003; Seligman et al., 2005; Watkins et al., 2003) when compared with controls or no-treatment controls, at both immediate post-test and follow-up assessments.

Although there is an accumulating body of evidence supporting the positive relationship between gratitude and subjective well-being in general and between gratitude and satisfaction with life in particular, much less is known about the mechanism explaining this positive link (Emmons & Mishra, 2011; Wood et al., 2010). A number of possible accounts have been suggested, including the increase in coping skills, and the reduction of toxic emotions resulting from self and social comparison (see Emmons & Mishra, 2011, for a review), yet few of them have been thoroughly scrutinized or empirically tested.

One notable and plausible variable suggested to be mediating the relationship between gratitude and satisfaction with life is positive affect (Wood et al., 2010). Positive affect, conceptualized as the frequency of positive emotions such as feeling excited and inspired, reflects a person's experience of pleasurable engagement with the environment (Diener, 1994). Research studies have shown that the habitual experience of positive emotions

protected individuals from mental distress (e.g., Watson & Naragon-Gainey, 2010) and benefited individuals in a host of positive emotional and behavioral outcomes that included satisfaction with life (e.g., Fredrickson, 1998; Fredrickson & Losada, 2005; Gilman & Huebner, 2003). The links observed between gratitude and positive affect, and between positive affect and satisfaction with life provide the basis for examining whether these positive relationships could be synthesized such that positive affect would serve as a mediator relating gratitude to satisfaction with life. In a similar vein, negative affect, conceptualized as the frequency of individuals' painful experience of negative emotions such as feeling distressed and ashamed in daily life could be reduced by gratitude (Emmons & McCullough, 2003; Froh, Yurkewicz et al., 2009; Kashdan et al., 2006; Watkin et al., 2003; Wood, Maltby et al., 2008). Given the independent and equally important role of negative affect in shaping people's satisfaction with life judgment (Kuppens, Realo, & Diener, 2008), it has been suggested that negative affect could serve as another mediation path linking the positive association between gratitude and subjective well-being.

THE PRESENT STUDY: TESTING THE MEDIATION AND MODERATED MEDIATION MODELS

While a mediation model has been proposed to explain the positive relationship between gratitude and satisfaction with life via positive affect and negative affect as mediators, there were few studies specifically designed to put this model to the test. To our knowledge, the study of Sun and Kong (2013) was the only study specifically designed to investigate the proposed mediation paths of positive and negative affect. In their analysis, they used item responses instead of scale scores of gratitude, positive affect, negative affect, and satisfaction with life to form parcels to derive latent variables in testing measurement and structural models. However, it has been noted that the advantage of such parceling in increasing model fit might be offset by the simultaneous raising of the Type II error rate resulting in a reduction of ability to identify mis-specified models and leading to the failure to reject a model that should be rejected (Little, Cunningham, Shahar, & Widaman, 2002). In addition, even though they did not find significant gender differences in their multi-group analysis that compared a model with equivalence constraints (i.e., constraining all paths to be equal for boys and girls) against one without such restraints, they maintained that positive affect and negative affect were respective significant mediators for adolescent boys and girls linking the relationship between gratitude and satisfaction with life. They arrived at this conclusion based not on the model comparison results but on critical ratio of difference analysis, a method of conducting post-hoc comparisons of difference in coefficients. Further, this method did not allow them to locate the specific gender moderation process, that is, whether gender moderated the process from gratitude to affect, from affect to satisfaction with life, or both.

Based on the above considerations, the present study was designed to expand previous findings, especially those of the Sun and Kong study, on the relationship between gratitude and satisfaction with life. However, unlike the Sun and Kong study, we preferred to use scale scores on gratitude, positive affect, negative affect, and satisfaction with life in the path analysis to test the concurrent mediations of positive and negative affect on the association between gratitude and satisfaction with life such that our results could be more comparable to

past studies investigating this topic at the level of observed variables. Further, since it was not known whether boys and girls held different affective mediators for the relationship between gratitude and satisfaction with life, we hypothesized that the mediation processes via positive and negative affect were conditional on gender. Specifically, we tested the conditional indirect effects which specified that the proposed mediation effects, in which gratitude predicted satisfaction with life via positive and negative affect, would vary in strength or direction conditionally on gender as a moderator (Preacher, Rucker, & Hayes, 2007). By targeting the specific conditional indirect effects for testing, we identified whether gender moderated the process from gratitude to affect, from affect to satisfaction with life, or both.

In summary, we tested the following hypothesized models: a simple mediation model (Model 1) and three moderated mediation models (Models 2a, 2b, and 2c). In testing Model 1, we examined whether both positive and negative affect indeed mediated the relationship between gratitude and satisfaction with life by testing whether the two indirect effects were significant or not. Based on the initial evidence on mediation, we then explored three possibilities that gender might moderate the mediational relationships by comparing Model 2a, Model 2b, and Model 2c, postulating gender as a moderator in each of the different processes. In summary, we tested whether gender moderated the processes from gratitude to affect (Model 2a), from affect to satisfaction with life (Model 2b) or both (Model 2c) by examining the significance of the conditional indirect effects in the three models.

METHOD

Participants and Procedure

A total of 465 adolescents voluntarily participated in this study. Of these, 337 (72.50%) were senior primary school (grades 5 to 6) students, and 128 (27.50%) were secondary school (grades 7 to 9) students. These students (263 boys and 202 girls), aged 10 to 13 ($M = 11.09$, $SD = 1.03$), were nominated by their schools to participate in various enrichment courses at the Chinese University of Hong Kong. To nominate students, schools were asked to recommend students who were judged to be gifted intellectually (e.g., with a high IQ score), or academically (e.g., with exceptional school performances), or had demonstrated talents in other specific areas. This sample of early adolescents therefore represented what schools would regard as highly achieving students.

Participants completed the questionnaires anonymously in the classroom environment. Written informed consent was obtained from all participants prior to the assessment session on university campus. Students were also assured of the confidentiality of their responses which would not bear on their school performance.

MEASURES

Gratitude Questionnaire. Participants' gratitude was assessed by the Gratitude Questionnaire (GQ-6; McCullough et al., 2002), the most widely used scale for assessing dispositional gratitude (see Emmons & McCullough, 2003). This 6-item scale assesses four

different facets of grateful disposition that include intensity, frequency, span or the variety of life aspects, and density or the number of persons that can elicit grateful feeling (Sample item: “I have so much in life to be thankful for”). McCullough et al. (2002) reported sound psychometric properties of the scale, including a robust one-factor structure through exploratory and confirmatory factor analyses, convergent validity peer reports, correlations with well-being and discriminant validity from related traits. The GQ-6 has been reported as a reliable and valid scale in studies in Hong Kong with Chinese adults (Chan, 2010) and with Chinese adolescents (Chan, 2012). In completing the scale, participants were requested to indicate their judgment whether the statement in each item was descriptive of him or her on a five-point Likert scale ranging from 1 (*least like me*) to 5 (*most like me*). A total score can be obtained by summing the six item responses (item 3 and item 6 were reverse scored), with higher scores reflecting greater dispositional gratitude.

The PANAS (Positive and Negative Affect Schedule). The 20-item PANAS, constructed by Watson, Clark, and Tellegen (1988), is a widely applied instrument for assessing positive and negative affect as the affective aspect of subjective well-being. The PANAS has been found to possess high inter-item reliability, high convergences in factor structures, and high discriminant validity (Watson et al., 1988). It consists of two 10-item (each in the form of an adjective) self-report scales designed to assess the experience of positive and negative emotions. In the present study, the participants were instructed to indicate the extent to which they generally experienced positive and negative affect using a five-point Likert scale ranging from 1 (*not at all*) to 5 (*extremely*). Two total scores separately on positive and negative affect can be obtained by summing their respective item responses, with higher scores reflecting greater positivity or negativity of emotional experience.

Satisfaction with Life. The 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was used to assess general satisfaction with life or the cognitive aspect of subjective well-being. It reveals the individual’s own judgment of his or her quality of life (Sample item: “In most ways, my life is close to my ideals”). The scale has demonstrated high internal consistency (Cronbach’s $\alpha = .87$), excellent two-month test-retest reliability ($r = .82$), and convergent and discriminant validity with other scales measuring subjective well-being, independent ratings of satisfaction with life, self-esteem, clinical symptoms, neuroticism and emotionality (Diener et al., 1985; Lucas, Diener, & Suh, 1996; Pavot & Diener, 1993). The SWLS has been reported to be a valid and reliable scale with Chinese adolescents (Shek, Chan, & Lee, 1997). This study employed a Chinese version that used simple wording to replace a few complex terms or phrases in the original Chinese translation to make it suitable for children and early adolescents. This version has been piloted with grade 5 students and found to be reliable and valid in measuring satisfaction with life in early adolescents (Chan, 2012). In completing the scale, participants were requested to indicate their judgment as to whether each of the five statements was descriptive of them using a five-point Likert scale ranging from 1 (*least like me*) to 5 (*most like me*). A total score can be obtained by summing the five item responses, with higher scores reflecting greater satisfaction with life.

An Overview of Analysis in Testing Models

Tests of indirect effects (i.e., mediation effects) and conditional indirect effects (i.e., moderated mediation effects) were performed using 95% bias-corrected bootstrap confidence intervals (CIs) based on 5,000 bootstrap samples (Preacher et al., 2007). All analyses were conducted on Mplus 6.1 (Muthén & Muthén, 2010), with the codes of MODMED. The approach developed by Preacher et al. (2007) for testing the conditional indirect effects was slightly modified to accommodate our models.

When reporting fit indices, we followed Kline's (1998/2011) recommendation to include the chi-square test (χ^2 test), the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA) and the standardized root-mean-square residual (SRMR). We adopted the suggestion of Hu and Bentler (1999) to evaluate our model fit using the following criteria: CFI > .95, SRMR < .08 and RMSEA < .06.

RESULTS

Gratitude, Positive and Negative Affect, and Satisfaction with Life

We first aggregated the item responses of students to form scores on gratitude, positive affect, negative affect, and satisfaction with life. Table 1 summarizes the mean scores and the *SDs* of gratitude and the measures on the different dimensions of subjective well-being for students. It can be seen from Table 1 that the highly achieving early adolescents in this study demonstrated a high level of gratitude disposition ($M = 4.04$, $SD = .68$), and a high level of subjective well-being, as indicated by high scores on satisfaction with life ($M = 3.46$, $SD = .96$), and positive affect ($M = 3.73$, $SD = .69$), and relatively low scores on negative affect ($M = 2.41$, $SD = .76$).

Table 1. Correlations of Measures of Gratitude, and Subjective Well-Being among Early Adolescents (N = 465)

	1	2	3	4	5
Satisfaction with Life	—				
Positive Affect	.33**	—			
Negative Affect	-.11*	-.01	—		
Gratitude	.27**	.42**	.15**	—	
Age	-.21**	-.08	-.04	.02	—
α	.82	.82	.84	.72	
M	3.46	3.73	2.41	4.04	11.09
SD	.96	.69	.76	.68	1.03

Note. α is the alpha coefficient internal consistency measure; * $p < .05$; ** $p < .01$.

Table 1 also displays internal consistency and the correlation matrix of all four measures. Age was also included to check its correlations with the four measures. Scale internal consistencies of these measures were of moderate to relatively high values, ranging from .72 to .84, suggesting that these variables were all reliably assessed. All variables showed substantial and significant correlations with each other except negative affect which correlated minimally and negatively with positive affect ($r = -.01$), suggesting that students' positive and negative emotional experiences were not necessarily two ends of a continuum, and they could experience both minimal or intense negative and positive affect during their daily lives. The negative but significant correlation between age and satisfaction with life suggested that adolescents might view life less satisfactorily as they grew older.

Gender differences on gratitude and the dimensions of subjective well-being were examined by conducting t -tests, as summarized in Table 2. The results indicated that boys and girls scored significantly differently in gratitude and in negative affect. Specifically, girls tended to be more grateful than did boys, whereas boys seemed to experience negative affect more frequently than did girls. However, boys and girls seemed to share similar levels of satisfaction with life and experience with positive affect.

Testing Mediation and Moderated Mediation Effects in Hypothesized Models

Prior to testing the moderated mediation models, we first tested Model 1, the simple mediation model that postulated positive and negative affect as two mediators in the relationship between gratitude and satisfaction with life (see Figure 1). Controlling the possible effects of gender and age, this simple mediation model obtained excellent overall fit, $\chi^2 = 1.28$, $df = 1$, $RMSEA = .03$, 90% CI [.00, .13], $CFI = 1.00$, $SRMR = .01$. The results however indicated that only positive affect significantly mediated the relation between gratitude and satisfaction with life (indirect effect = .15, $z = 4.47$, $se = .03$, $p < .001$, 95% bias-corrected bootstrap CI for the indirect effect was [.09, .23]). The finding that CI excluded zero point lent further support that positive affect was indeed a mediator between gratitude and satisfaction with life.

Table 2. Gender Differences in Gratitude and Subjective Well-Being between Boys (N = 263) and Girls (N= 202)

				Diff.	t	SE
Satisfaction with Life	Boys	3.39	.98	-.16	-1.73	.09
	Girls	3.55	.93			
Positive Affect	Boys	3.76	.71	.05	.76	.06
	Girls	3.71	.67			
Negative Affect	Boys	2.49	.78	.17	2.46*	.07
	Girls	2.31	.73			
Gratitude	Boys	3.96	.71	-.18	-2.87**	.06
	Girls	4.14	.65			

Note. *Diff.* represents the difference in mean between boys and girls. * $p < .05$; ** $p < .01$

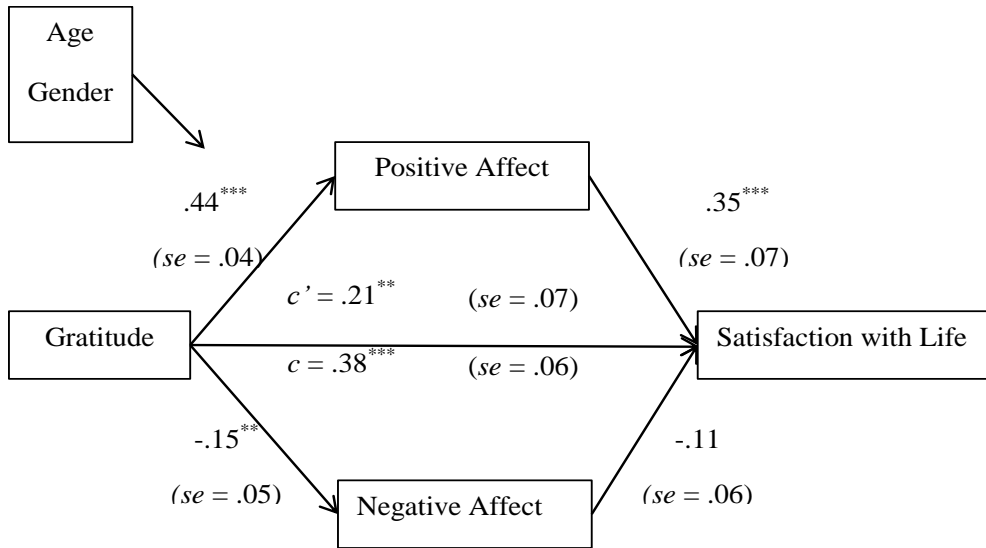


Figure 1. Model 1: Simple mediation. Age and gender were controlled. All coefficients are unstandardized. Coefficients from age and gender to positive affect, negative affect and satisfaction with life are omitted.

Based on the results of the simple mediation analysis, we retained only positive affect for our subsequent testing of conditional indirect effects in the three moderated mediation models (Model 2a, Model 2b, and Model 2c; see Figure 2). In Model 2a, gender was postulated as a moderator influencing the mediation link connecting gratitude to positive affect. Specifically, satisfaction with life was regressed on positive affect, which in turn was regressed on gratitude, while the slope of the latter regression was predicted by interaction of gratitude and gender. In all regressions, age was included and controlled as in testing Model 1. Perfect model fit to our data was obtained for this Model 2a, $\chi^2 = .00$, $df = 1$, $RMSEA = .00$, 90% CI [.00, .00], $CFI = 1.00$, $SRMR = .00$. In summary, the results of the conditional indirect effect analysis were consistent with the results obtained in the previous simple mediation analysis. Positive affect significantly predicted satisfaction with life $\beta = .36$, $se = .07$, $p < .001$, and gratitude significantly predicted positive affect, $\beta = .52$, $se = .06$, $p < .001$. Alternatively, when we included positive affect and gratitude simultaneously into the regression to predict satisfaction with life, the effect of gratitude was reduced to nonsignificance, $\beta = .11$, $se = .09$, $p = .24$ (the direct effect from gratitude to satisfaction with life was significant in the absence of positive affect, $\beta = .38$, $se = .06$, $p < .001$). The effect of interaction between gender and gratitude on positive affect was significant, $\beta = -.21$, $se = .09$, $p = .015$, suggesting that gender indeed moderated the mediation effect of positive affect between gratitude and satisfaction with life. Further, to examine the conditional indirect effect of positive affect in greater detail, we scrutinized the mediations for boys and girls separately (boys: 0, girls: 1). The results suggested that the mediation effect of positive affect was more salient for boys (indirect effect = .19, $se = .04$, $z = 4.61$, $p < .001$, 95% bias-corrected bootstrap CI was [.12,

.28]) than for girls (indirect effect = .11, $se = .03$, $z = 3.33$, $p = .001$, 95% bias-corrected bootstrap CI was [.06, .19]).

For comparison, we also tested two other alternative models that included gender moderated mediation effects. In Model 2b, gender was postulated to moderate the relationship between positive affect and satisfaction with life; and in Model 2c, gender was postulated to affect both processes from gratitude to positive affect as well as from positive affect to satisfaction with life. In both cases, poor model fit was obtained, and there was no indication of a significant interaction between gender and positive affect on satisfaction with life (see Figure 2). Taken together, our results supported the moderated mediation effects as specified in Model 2a. A comparison of the fit indices of the four tested models is summarized in Table 3.

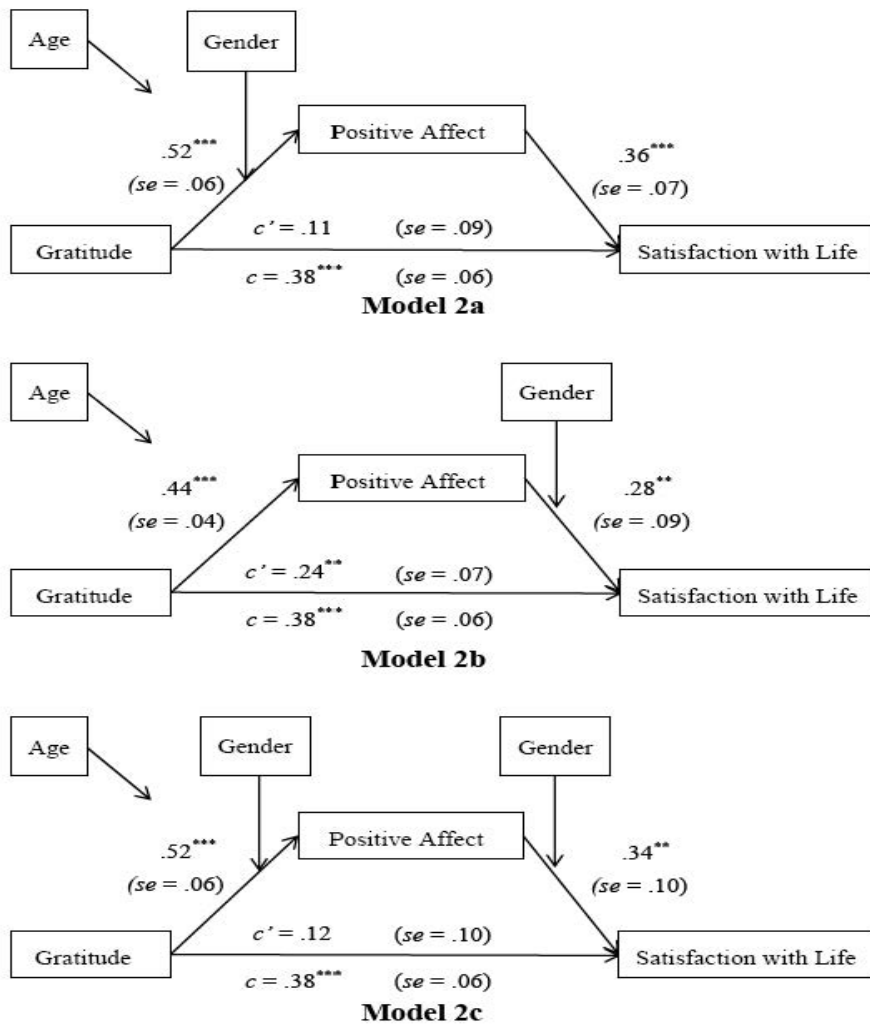


Figure 2. Three moderated mediation models (Models 2a, 2b, and 2c). Age was controlled in all three models. All coefficients are unstandardized coefficients. Coefficients from age to positive affect and satisfaction with life are omitted.

Table 3. Model Fit Indices for the Simple Mediation Model and Three Moderated Mediation Models

Model	χ^2	df	CFI	RMSEA (90% CI)	SRMR
Model 1	1.28	1	1.00	.03 [.00, .13]	.01
Model 2a	.00	1	1.00	.00 [.00, .00]	.00
Model 2b	227.93	1	.44	.70 [.62, .78]	.03
Model 2c	281.51	1	.40	.78 [.70, .85]	.02

Note. Model 1 is the simple mediation model; Model 2a, Model 2b, and Model 2c are moderated mediation models. Gender moderated the process from gratitude to positive affect (Model 2a), the process from positive affect to satisfaction with life (Model 2b), and both processes (Model 2c).

χ^2 : chi-square; *df*: degree of freedom; *CFI*: comparative fit index; *RMSEA*: the root-mean-square error of approximation; *SRMR*: the standardized root mean-square.

CONCLUSION

The present study investigated the positive relationship between gratitude and subjective well-being in a sample of highly achieving Chinese early adolescents, testing positive and negative affect as mediating pathways in the relationship between gratitude and satisfaction with life. As a first step, the pattern of bivariate correlations among these measures replicated past findings (e.g., Emmons & McCullough, 2003; Froh, Yurkewicz et al., 2009; McCullough et al. 2002; Watkins et al. 2003; Wood, Joseph, & Maltby, 2008), and indicated that satisfaction with life was positively associated with gratitude and with positive affect but negatively associated with negative affect, suggesting that individuals with a higher level of dispositional gratitude not only tended to be more satisfied with life but also experience more emotional positivity and less emotional negativity (e.g., Emmons & McCullough, 2003; Froh, Kashdan et al., 2009; Watkins et al. 2003; Wood, Maltby et al. 2008). This pattern of correlations provided the basis for our further analysis on the mediation associations.

Regarding gender differences in the measures of gratitude and subjective well-being, our results were not entirely consistent with past findings. While we found that girls reported a higher dispositional gratitude than did boys as in previous research (e.g., Kashdan et al., 2009), we found that boys experienced more negative affect than did girls, contrary to the findings with adults in past studies (e.g., Fujita, Diener, & Sandvik, 1991). It is not known whether such inconsistency could be attributable to age or developmental differences, and it would be of great interest to examine gender differences in positive and negative affect across different age groups in future research.

In testing the specific mediation effects of positive and negative affect in the association between gratitude and satisfaction with life, we only found evidence supporting positive affect as a significant mediator connecting gratitude to satisfaction with life. While our findings were consistent with the findings of Toussaint and Friedman (2009) who tested the

mediation effects of both negative and positive affect simultaneously but only found positive affect to be significant in linking gratitude to satisfaction with life, they were at variance with the findings of Sun and Kong who found significant mediation effects of both positive and negative affect in the relation between gratitude and satisfaction with life. Our findings thus added to the uncertainty of the mediation effect of negative affect in the relationship between gratitude and satisfaction with life, bearing in mind that the mixed findings could be due to, among other things, the different methods employed in different studies.

Of great interest and central to the present study is the role of gender as a moderator in the mediation process between gratitude and satisfaction with life. Although past findings have implicated gender differences in the beneficial effect of gratitude, there were few studies examining the nature of such differences, an exception being the study of Kashdan et al. (2009). Given that positive affect was found to mediate the link between gratitude and satisfaction with life, we further proceeded to investigate whether such mediation process held for both boys and girls, and what the specific sources for such differences could be if there were indeed gender differences. Specifically, we examined and tested three competing moderated mediation models to identify the locus of the moderation effect of gender on the mediation processes. We observed that gender differences emerged in terms of the strength of the same mediation path from gratitude to positive affect, such that the mediation effect through positive affect was more salient for boys than for girls. This observation was again at variance with the conclusion of Sun and Kong who compared the magnitudes of coefficients they obtained for boys and girls and attributed gender differences to two processes even though they found no significant gender differences in their initial multi-group comparison analysis. Specifically, they found that the coefficient from gratitude to positive affect was significant for boys but not for girls and was larger than that for girls. In addition, they also found that the coefficient from negative affect to satisfaction with life was significant for girls but not for boys. Since we did not find negative affect to be a significant mediator in our data, we could not verify this alternative explanation in the present study. Nevertheless, our findings suggested that gender differences at least in early adolescence could be more readily understood in the context of treating gender as a moderator in the mediation relationship between gratitude and satisfaction with life.

Admittedly, there were limitations that should be addressed in the present study. First, our data were collected entirely from self-reported measures. While we have taken serious efforts to ensure that we employed valid and reliable measures suitable for early adolescents in our sample, our self-report measures were vulnerable to bias due to their subjective nature. Our findings regarding moderated mediation effects need to be replicated and supported by future studies with data collected by other methods less affected by subjectivity. Second, our present sample was a group of highly achieving early adolescents nominated by schools and teachers to participate in university enrichment courses. Their cognitive development and social emotional experiences could be very different from ordinary adolescents (Neihart, Reis, Robinson, & Moon, 2002), which might limit the generalizability of the present findings. The extent to which the present findings can be replicated with ordinary adolescents needs to be carefully examined in future studies. Third, although our mediation analysis in the present study could shed light on the possible fundamental mechanism governing the directional relationships among our variables, we could not exclude the possibility of bidirectional relationships among these variables under investigation. Interpretation of the present findings should therefore be preceded with the recognition of the limitation of cross-

sectional design in establishing causal paths, and the need for employing longitudinal and/or experimental designs in future studies to establish causal relationships among these variables of interest.

Notwithstanding these limitations, the present study provided insight into the current literature on the intricacy of the relationships between gratitude and different components of subjective well-being in early adolescence. By highlighting the significant contribution of positive affect as a mediator in the association between gratitude and satisfaction with life, this study has also provided additional evidence supporting the implementation of gratitude intervention to enhance well-being among youth. Furthermore, our findings that gender acted as a significant moderator affecting the mediation process between gratitude and satisfaction with life also have important implications for developing gratitude intervention.

Although it has been argued that men compared with women might find expressing gratitude more challenging and anxiety provoking such that they failed to capitalize on gratitude in the savoring of pleasant life experiences (Kashdan et al., 2009), we did not find such gender differences in the present study. Rather, adolescent boys in our study were found to experience more pronounced mediation effect of positive affect than did girls in the relationship between gratitude and satisfaction with life. These results were consistent with those of the study with early adolescents by Froh, Yurkewicz et al. (2009) who found that boys benefited significantly more in terms of family support from gratitude intervention than did girls. It was plausible that adolescent boys at this young age might not feel as anxious or as uncomfortable as adult males in expressing gratitude and therefore could benefit more from the positive emotional experiences whereas adolescent girls being developmentally more mature might have become more reserved as adult females and thus could be less susceptible to gains in experiencing positive emotions. Nevertheless, our findings of gender differences in the mediation effects of positive affect in the relationship between gratitude and satisfaction of life do suggest that gratitude interventions developed for early adolescent boys and girls perhaps should be more gender-sensitive, and that interventions targeted for boys at early adolescence might be more effective than interventions targeted for men in adulthood. Certainly, these conjectures based more on speculation than empirical findings need to be more carefully examined and investigated in future research studies.

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