



# Are the Lower Class Really Unhappy? Social Class and Subjective Well-Being in Chinese Adolescents: Moderating Role of Sense of Control and Mediating Role of Self-Esteem

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## Abstract

Empirical evidence indicates the links between social class and subjective well-being are numerous and varied, and Need Theory proposes that their relationship depends, in part, on whether people's basic needs are being met. Given that sense of control is one of the fundamental social needs of human beings, the present research examined a mediated moderation model between the social class and subjective well-being by testing whether sense of control moderates this relationship, and whether this moderating effect is mediated through self-esteem. A sample of 536 Chinese adolescents (mean age = 13.79 years, SD = 0.95) completed anonymous questionnaires about their subjective and objective social class, sense of control, self-esteem, and subjective well-being. Consistent with the hypothesized mediated moderation model, the association between social class and subjective well-being was moderated by sense of control, with social class significantly influencing the subjective well-being of adolescents when their sense of control was low but not high. This moderation effect was then mediated by self-esteem. In addition, this model was found to be more suitable for adolescent boys than girls. The findings demonstrate that adolescents' personal sense of control and self-esteem represent key mechanisms determining how social class is associated with subjective well-being.

**Keywords** Subjective social class · Objective social class · Sense of control · Self-esteem · Subjective well-being · Mediated moderation

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# 1 Introduction

Subjective well-being (SWB) may be one of the most prominent human desires, encompassing numerous positive life outcomes. For example, SWB can facilitate the pursuit of important goals, contribute to vital social bonds, broaden a person's scope of attention, and increase psychological health (Gruber et al. 2011). Yet, worldwide, numerous mental health problems start by adolescence, but most cases are undetected and untreated. These mental health problems account for 16% of the global burden of disease and injury among adolescents. The promotion of mental health and well-being helps adolescents cope with difficult situations or adverse events, it is also critical for their physical and mental health in adulthood (World Health Organization 2018). Hence, the pursuit and experience of SWB may be crucial for adolescents. Many studies have investigated the effect of social class on SWB, but their findings on the association between social class and SWB are numerous and varied. Some studies have found that people with the lower social class tend to experience lower SWB, which is what most of us think. However, other studies have found no significant association between social class and SWB, and some studies have even reported that higher social class individuals have lower SWB. The research literature suggests that the relationship between social class and subjective well-being depends, in part, on factors that have been largely unexplored. Need Theory (Kraus 2018) proposes that when people's basic needs are being met by their available resources, the impact of social class on well-being should be reduced. Given that a sense of control is one of the fundamental social needs of human beings (Williams 2007), the present research explored the potential moderating effect of sense of control on the relationship between social class and SWB. In addition, it tested whether this effect is mediated through self-esteem.

## 1.1 Measuring Social Class

Social class is a multifaceted construct that consists of both an individual's material resources and an individual's perceived rank within the social hierarchy (Kraus et al. 2009), and it is often used interchangeably with socioeconomic status (SES) in the literature (Côté 2011); in this study, we use the former concept. Traditionally, social class has been measured with objective indicators, such as income, education, and occupation (Goodman et al. 2001; Zhu et al. 2015). However, even if two individuals' objective social class (OSC) is similar, their feelings about their social class may be different; therefore, recent research has emphasized the use of subjective indicators to measure social class. Subjective social class (SSC) focuses on individuals' perceived rank relative to others in society, and it is largely based on perceived relative possession of material and social resources compared with others (Kraus et al. 2009).

It is worth noting that even though these two aspects of social class exhibit some similar relations with predicted outcomes, such as prosocial behavior (Piff et al. 2010), expectations for future hostile behavior (Kraus et al. 2011), and empathic accuracy (Kraus et al. 2010), various studies have consistently found that the OSC is only moderately related to individuals' SSC (Adler et al. 2000; Johnson and Krueger 2006), and a person's SSC appears to be more important for predicting psychological outcome variables than OSC is. For example, relative to objective indicators, SSC is a better predictor of self-rated health (Adler et al. 2000; Singh-Manoux et al. 2003), obesity (Goodman et al. 2003), and social explanations of outcomes (Kraus et al. 2009).

Current research has found that social class meaningfully affects many domains of an individual's daily life, including cognition (Dietze and Knowles 2016), emotion (Gallo et al. 2005), and behavior (Chen et al. 2018; Greitemeyer and Sagioglou 2016). The present study investigated how class influences adolescents' SWB. Guided by developments in the measurement of social class, we tested both objective and subjective indicators of social class. We expected SSC would be a more consistent predictor of SWB, independent of OSC.

## 1.2 Social Class and Subjective Well-Being (SWB)

The SWB of adolescents, like that of adults, is generally considered to include at least three components: positive affect, lack of negative affect, and life satisfaction (Ben-Zur 2003; Diener et al. 2003). Converging lines of evidence suggest that lower-class individuals experience, on average, less SWB than upper-class individuals. A meta-analysis found a significant positive relationship between social class and SWB (Haring et al. 1984). Similar findings have been observed in both developing (Howell and Howell 2008) and developed countries (Nettle 2005). In addition, the social class of adolescents' parents positively predicts the health-related quality of life and SWB of their adolescent children (Eryilmaz 2010; von Rueden et al. 2006). Moreover, studies have demonstrated that people with a lower subjective perception of their social class tend to experience reduced SWB (Haught et al. 2015) and satisfaction with family life (Botha et al. 2018). Lower perceived economic status relative to one's neighbors has also been found to be associated with lower life satisfaction (Bhuiyan 2018). However, social class is not always associated with SWB. For example, some research has found no significant effect of social class on SWB, whether social class was objectively measured or study participants' subjective perception of their class rank was manipulated (Anderson et al. 2012). A study of cancer patients found lower class patients had a poorer quality-of-life, higher anxiety and depression, and more social problems 2 months after being diagnosed, but these differences between higher and lower class patients narrowed over time and significant group differences were no longer found 10 months after diagnosis (Simon and Wardle 2008). These results indicate that social class may not have a long-term influence on SWB, at least among patients diagnosed with cancer. Diener and Oishi's (2000) analysis of the World Value Survey II data showed the relationship between income and SWB was stronger in very poor nations and weaker in wealthier nations. Longitudinal studies provide further evidence that increased income does not bring increased SWB (Schyns 2000), and one study found that even a group whose income had declined was the happiest, whereas a group whose income increased reported the lowest well-being (Diener et al. 1993). The research literature seems to suggest that although social class may account for part of the proportion of variance in adolescents' SWB, the impact of social class may be depend upon other unexplored factors.

## 1.3 Sense of Control as a Moderator

According to Need Theory (Kraus 2018), the relationship between social class and SWB may depend on whether people's basic needs are being met by their available resources; that is, if one can afford the resources necessary to meet the demands and threats inherent in the environment, the impact of social class on well-being should be decreased. Diener and Biswas-Diener (2002) have noted that the basic needs can be expanded to include some psychosocial variables, such as self-respect and seeking excitement, status, and

self-actualization. Given that sense of control is one of the fundamental social needs of human beings (Williams 2007), it has considerable potential to moderate the class-SWB connection, by strengthening or attenuating it. Sense of control refers to people's belief about the extent to which they can shape the course of their own social outcomes (Lachman and Weaver 1998), and a robust line of research highlights its vital role in promoting SWB. Earlier research found that greater freedom to make choices had a positive effect on SWB (Langer and Rodin 1976) and that a higher level of perceived control was associated with more positive affect and life satisfaction (Baumeister 2005; Lachman and Weaver 1998). Lack of control, on the other hand, can be quite aversive (Whitson and Galinsky 2008), and it has been found to be correlated with the severity of anxiety and mood disorders (Rosenbaum et al. 2012). Whether a person's need for a sense of control is met, thus, may explain the extent to which social class has an impact on SWB. Research has shown that study participants in the low income group with a low sense of control report being less satisfied than those in the high income group, whereas participants in the low income group with a high sense of control report levels of life satisfaction comparable to those in the high income group (Lachman and Weaver 1998). Hence, consistent with Need Theory (Kraus 2018), we propose when a person's need for a sense of control is not satisfied, being in the lower social class will adversely affect their SWB, whereas this effect will be attenuated when a person's need for a sense of control is satisfied.

#### 1.4 Self-Esteem as a Mediator

The proposed interaction between social class and sense of control may plausibly explain the class differences in adolescents' SWB, but the question remains how adolescents' sense of control may influence the relationship between social class and SWB. Therefore, another aim of the present study is to explore further the mediating process that is responsible for that moderation.

Adolescence, a transition period between childhood and adulthood, is a critical period in an individual's development, and self-esteem plays a vital role in development during this period (Mineev et al. 2018). According to Rosenberg (1965), self-esteem refers to one's general sense of his or her value or worth. Given the developmental importance of self-esteem, it is reasonable to hypothesize that self-esteem can mediate the moderating effect of sense of control on the relationship between social class and SWB based on the following two types of evidence. First, social class and sense of control may interact to influence self-esteem. In general, lower-class individuals have lower self-esteem than upper-class individuals (Twenge and Campbell 2002). Previous studies have, indeed, found that socioeconomically disadvantaged adolescents were at a higher risk of low self-esteem (Chen et al. 2016; Demo and Savin-Williams 1983; McLoyd 1998). One study found when lower class individuals were given an experimental manipulation to make them feel a low sense of control, they were more easily influenced by the surrounding context, whereas this tendency was attenuated when they experienced a higher sense of control (Kraus et al. 2009). Sense of control, thus, may serve as a protective factor to reduce the potential risk of low social class on low self-esteem. A previous study found that people who have a high sense of control over life are more likely to develop higher self-esteem (Moradi and Hasan 2004), and this relationship was also found to be significant in a large sample consisting of young, middle-aged, and older adults (Ryff 1989). In other words, lower class adolescents who have a high sense of control are less likely than those with a low sense of control to develop low self-esteem. Second, many empirical studies have garnered evidence that self-esteem is associated with SWB. Self-esteem is closely related to affective

processes, and high self-esteem “feels” good, whereas low self-esteem does not (Scheff et al. 1989). Higher self-esteem has been consistently found to promote positive affect and life satisfaction (Chen et al. 2016; Orth et al. 2012; Tian et al. 2013), whereas lower self-esteem contributes to negative affect (Sowislo and Orth 2013). Based on these findings, it might be assumed that self-esteem mediates the moderating effect of a sense of control on the relationship between social class and SWB.

## 1.5 The Present Study

Guided by Need Theory and previous research, we proposed a mediated moderation model to investigate the mechanisms underlying the association between social class and SWB. The moderating mechanism (When is the process most potent?), and the mediating mechanism (What process is responsible for the moderation effect?) have yet to be examined. We assumed that sense of control would moderate the relationship between social class and SWB, such that people in the lower class would report less SWB when their sense of control was low, and this relationship would be attenuated when their of sense of control was high (*Hypothesis 1*). Furthermore, we predicted that self-esteem would mediate the moderating effect of sense of control; that is, the interaction between social class and a moderator (sense of control) in a model of SWB goes through a mediator (self-esteem) (*Hypothesis 2*).

In addition, there may be gender differences in the sensitivity of processing social class information. Shaked et al. (2016) found men were more likely than women to perceive employment status to be an important element of defining their position in the social hierarchy. Therefore, the negative impact of being in the lower class may be different for male and female adolescents. Hence, we explored possible gender differences within this mediated moderation model.

## 2 Methods

### 2.1 Participants and Procedure

The participants were 536 junior high-school students who were surveyed from three schools in the Southwest China. Their mean age was 13.79 years ( $SD=0.95$ , range=12–17). A total of 265 (49.44%) participants identified themselves as male, and 216 (40.30%) as female; 55 (10.26%) participants did not report their gender.

The entire survey was conducted in classrooms after informed consent was obtained from the schools and the participants. The instructions and the anonymity of this survey were stressed before the participants completed the measures. All the data were collected by trained postgraduates; the survey instruments took approximately 20 min to complete.

### 2.2 Measures

#### 2.2.1 Objective Social Class (OSC)

We adopted a 5-item measure to assess OSC, which included family monthly income, mothers’ and fathers’ education and occupation. We used parents’ information because high-school students are not financially independent; therefore, their status is based

on their upbringing in their family's household (Henry 2009; Zhu et al. 2015). Income was rated on a 7-point scale: 1 = "under ¥600," 2 = "¥601–¥1800," 3 = "¥1801–¥3000," 4 = "¥3001–¥6000," 5 = "¥6001–¥9000," 6 = "¥9001–¥12,000," and 7 = "Over ¥12000." Participants also indicated their parents' education by selecting one of seven options: 1 = little or no literacy; 2 = primary school; 3 = middle school; 4 = high school; 5 = junior college; 6 = undergraduate; and 7 = postgraduate. Parents' occupation was classified into ten categories based on the social stratification in China (Lu 2002): 1 = unemployed or underemployed people; 2 = agricultural laborers; 3 = manufacturing workers; 4 = business and service workers; 5 = household business owners and individual industrialists and commercialists; 6 = office workers; 7 = professionals; 8 = private entrepreneurs; 9 = managers; and 10 = national cadres. We computed OSC as recommended (Zhou and Guo 2013), with the higher score of the father's or mother's education used as the index of family education level; this was also done for occupation. Family income, family education, and family occupation were then standardized and entered into an exploratory factor analysis. We extracted one principal component with an eigenvalue greater than 1, which explained 52.35% of the total variance. The factor loadings of the three items were 0.75, 0.63, and 0.78 respectively; the eigenvalue of the principal component was 1.57. Finally, we computed  $OSC = (0.75 \times Z_{income} + 0.63 \times Z_{education} + 0.78 \times Z_{occupation}) / 1.57$ , with higher scores indicating a higher level of OSC.

## 2.2.2 Subjective Social Class (SSC)

SSC was assessed with the MacArthur Scale of Subjective SES (Adler et al. 2000). This scale involves showing participants a picture of a ladder, which is accompanied by the following statement and question: "This ladder represents people with different levels of income, education, and occupational status in China, where the people who are the worst off are on the bottom rung—they have the least money, education, and the least respected jobs or no jobs, and the people who are the best off are on the top rung—they have the most money, the most education, and the most respected jobs. Where would you place your family on this ladder?" (10-point scale). Participants then selected numbers to indicate their perceived social class. Although the mean was below the scale midpoint ( $M = 4.41$ ,  $SD = 1.20$ , range from 1 to 10), 41.79% of the participants placed their family on the 5th rung of the ladder (5 points) or above, which indicated that our sample was broad enough to test our hypotheses, as it was not unusually high or low.

## 2.2.3 Sense of Control

We assessed sense of control using the Chinese version of the Sense of Control Scale (Lachman and Weaver 1998; Li 2012). This scale is divided into two dimensions: personal mastery (four items) and perceived constraints (eight items). The two dimensions measure one's sense of efficacy or effectiveness in carrying out goals, and the extent to which one believes there are obstacles beyond one's control that interfere with reaching goals. Each item was answered on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. After the reversed scoring of the perceived-constraints items, both subscales were standardized and summed to yield a standardized measure of sense of control. Cronbach's  $\alpha$  in this study was 0.52 and 0.70 for the subscales and 0.67 the whole scale.

### 2.2.4 Self-Esteem

Self-esteem was measured by a Chinese version of the Self-Esteem Scale (Rosenberg 1965; Wang et al. 1999). This scale consists of 10 items that are rated on a 4-point Likert scale, ranging from 1 = strongly disagree to 4 = strongly agree. The scale's score is the sum of the item ratings, with five items reverse-scored. Cronbach's  $\alpha$  was 0.72 in this study.

### 2.2.5 Subjective Well-Being (SWB)

SWB was assessed by three measures. Life satisfaction was assessed by a Chinese version of the Satisfaction with Life Scale (Diener et al. 1985; Xiong and Xu 2009), which includes five items rated on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree; Positive affect and negative affect were assessed by a Chinese version of the Positive and Negative Affect Schedule (Qiu et al. 2008; Watson et al. 1988), which includes nine positive adjectives and nine negative adjectives. Participants were asked to indicate the extent to which they had the feelings that the adjectives described during the past week; each adjective was rated from 1 = very slightly or not at all, to 5 = extremely. We computed the SWB score by summing the standardized scores of life satisfaction (Cronbach's  $\alpha=0.72$  in this study) and positive affect (Cronbach's  $\alpha=0.85$  in this study), and then subtracting the standardized score of negative affect (Cronbach's  $\alpha=0.77$  in this study).

## 2.3 Statistical Analysis

All the data were entered into a computer using Epidata 3.1 and analyzed by SPSS 22.0 and Amos 23.0. Missing values were replaced by the means of the measures because the mean maybe the best estimate of the value of a variable in the absence of all other information, and this procedure is conservative for it does not change the mean of the distribution as a whole (Tabachnick and Fidell 2012). As noted above, two hypotheses formed a mediated moderation model. Mediated moderation refers to the phenomenon in which a moderation effect between X and the moderator W in a model of Y goes through a mediator (Hayes 2018); this can happen only when moderation occurs (Muller et al. 2005). Thus, the data analysis was performed according to the following four steps. First, as all the data were collected using self-report scales in a single setting, we assessed whether there was common-method bias (CMB), which is a type of measurement error that can threaten the validity of conclusions about the relationships between measures and influence the results of behavioral research (Podsakoff et al. 2003). Some descriptive analyses were also conducted. Second, we examined the moderating effect of sense of control on the relationship between SSC and SWB, while controlling OSC. Third, we tested whether the influence of the interaction between SSC and sense of control on SWB was mediated by self-esteem, we also controlled for OSC in this analysis. Bias-corrected bootstrap confidence intervals (CIs), based on 5000 bootstraps (Hayes 2009; MacKinnon et al. 2004), were calculated to test the significance of the mediating effect. Bootstrapping is a re-sampling method that provides CIs for the indirect effect; an effect is considered statistically significant if zero is not included within the CIs (Shrout and Bolger 2002). Fourth, we conducted a multi-group analysis to test for gender differences in the proposed mediated moderation model.

### 3 Results

#### 3.1 Preliminary Analyses

We conducted Harman's one-factor analysis to assess CMB (Podsakoff et al. 2003). All the variables of interest were subjected to exploratory factor analysis to see whether one common factor explained the majority of the covariance between these measures. The unrotated factor solution extracted 15 distinct factors that accounted for 59.79% of the total variance, with the first factor explaining 15.09%. As no single factor emerged, and no single factor accounted for most of the variance, CMB was not considered to be a major concern in the present study.

The means, standard deviations, and inter-correlations of the main variables are presented in Table 1. OSC was positively correlated with SSC, and higher levels of OSC and SSC were associated with a higher sense of control. As predicted, individuals with higher SSC were more likely to have higher self-esteem and SWB. In contrast, self-esteem and SWB were not correlated with OSC; sense of control, self-esteem, and SWB were all positively correlated with each other.

#### 3.2 Test of Moderation

We conducted moderation analyses to test whether SSC's effect on SWB was moderated by sense of control while controlling for OSC, using the PROCESS v3 macro (Hayes 2018) in SPSS 22.0. Consistent with Hypothesis 1, the effect of the cross-product term between SSC and sense of control on SWB was significant ( $B = -0.10$ ,  $SE = 0.05$ ,  $p < 0.05$ ; see Table 2). Simple slope analysis (Aiken et al. 1991) was performed to understand the underlying nature of the interaction effect, by calculated the corresponding simple slopes at the 16th, 50th, and 84th percentiles of sense of control, as recommended (Hayes 2018). This analysis showed that adolescents with lower SSC experienced significantly less SWB among those with relatively low (16th percentile) sense of control (simple slope = 0.33,  $SE = 0.09$ ,  $p < 0.001$ ), and those with moderate (50th percentile) sense of control (simple slope = 0.20,  $SE = 0.07$ ,  $p < 0.01$ ). However, SSC did not significantly predict SWB among adolescents with relatively high sense of control (simple slope = 0.05,  $SE = 0.10$ ,  $p > 0.05$ ; see Fig. 1). We also used the Johnson–Neyman (J–N) technique (Bauer and Curran 2005; Hayes and Matthes 2009; Johnson and Neyman 1936) to identify the region of significance of the conditional effect of SSC on

**Table 1** Descriptive statistics and inter-correlations of all the study variables

	<i>M</i>	<i>SD</i>	OSC	SSC	SOC	Self-esteem	SWB
OSC	0.00	1.00	–				
SSC	4.41	1.20	0.34***	–			
SOC	0.00	1.51	0.12**	0.10*	–		
Self-esteem	26.15	4.27	0.01	0.12**	0.42***	–	
SWB	0.00	2.06	0.07	0.16***	0.47***	0.52***	–

OSC, objective social class; SSC, subjective social class; SOC, sense of control; SWB, subjective well-being

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$  (two-tailed);  $N = 536$

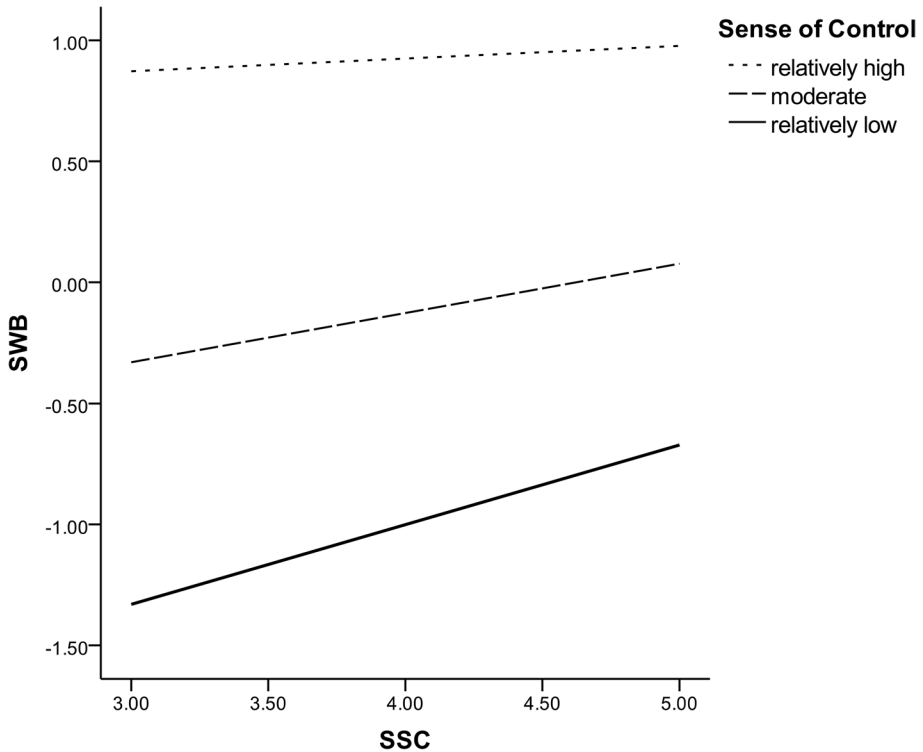


**Table 2** Path analysis results for the mediated moderation model

Antecedent	Consequent								
	SWB			Self-esteem			SWB		
	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>
OSC	-0.04	0.08	0.61	-0.27	0.18	0.13	0.01	0.08	0.93
SSC	0.19	0.07	<0.01	0.33	0.15	<0.05	0.13	0.06	<0.05
SOC	1.06	0.21	<0.001	2.29	0.45	<0.001	0.63	0.20	<0.01
SSC×SOC	-0.10	0.05	<0.05	-0.24	0.10	<0.05	-0.05	0.04	0.23
Self-esteem							0.19	0.02	<0.001

SSC×SOC = the cross-product term of SSC and sense of control

SWB. When sense of control was  $\leq 0.49$ , all the CIs were above zero, which indicates a significant effect of SSC on SWB. When sense of control was  $> 0.49$ , SSC had no significant effect on SWB and the CIs contained zero (see Fig. 2). These results indicate that participants' SWB were influenced by their perceived social class when their sense of control was low, but were free from such influence when their sense of control was high.



**Fig. 1** Sense of control as a moderator of the relationship between SSC and SWB. OSC was controlled as a covariate

### 3.3 Test of Mediated Moderation

Next, we examined whether moderation was mediated by estimating the indirect effect of the cross-product of SSC and sense of control on SWB through the proposed mediator (i.e., self-esteem), using Amos 23.0, with both SSC and sense of control as covariates; we also controlled for OSC in the model. Then, we calculated the 95% bias-corrected bootstrap CIs for the indirect effect, based on 5000 bootstrap samples, as recommended (Hayes 2009).

The results confirmed Hypothesis 2, that self-esteem exerted a significant indirect effect on the interaction between SSC and sense of control on SWB ( $B = -0.05$ ,  $SE = 0.02$ , 95% CI  $[-0.0927, -0.0003]$ ). As shown in Table 2 and Fig. 3, the effect of the interaction on SWB was not significant when the proposed mediator (i.e., self-esteem) was in the model ( $B = -0.05$ ,  $SE = 0.04$ ,  $p > 0.05$ ), therefore, self-esteem completely mediated the interaction.

Additionally, the interaction had a significant effect on self-esteem ( $B = -0.24$ ,  $SE = 0.10$ ,  $p < 0.05$ ), which indicated that sense of control also moderated the relationship between SSC and self-esteem. Figure 4 shows predicted self-esteem as a function of SSC and sense of control; the relationship between SSC and self-esteem was significantly positive when participants' perceived sense of control was relatively low (simple slope = 0.67,  $SE = 0.19$ ,  $p < 0.001$ ) and moderate (simple slope = 0.35,  $SE = 0.15$ ,  $p < 0.05$ ), but not significant when participants' sense of control was relatively high

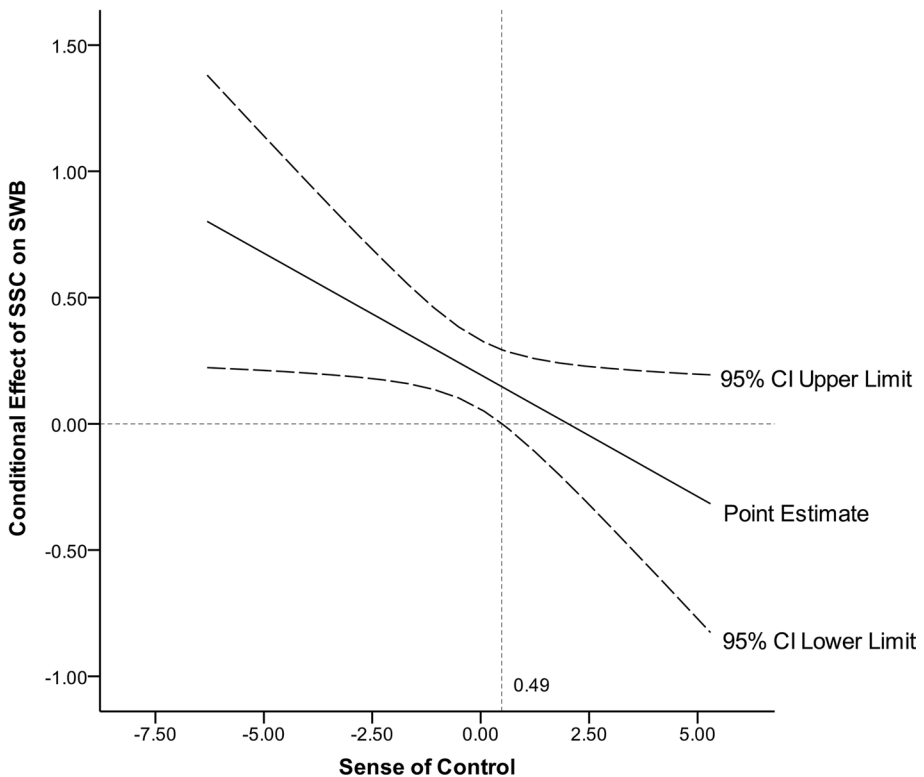


Fig. 2 The conditional effect of SSC on SWB as a function of sense of control

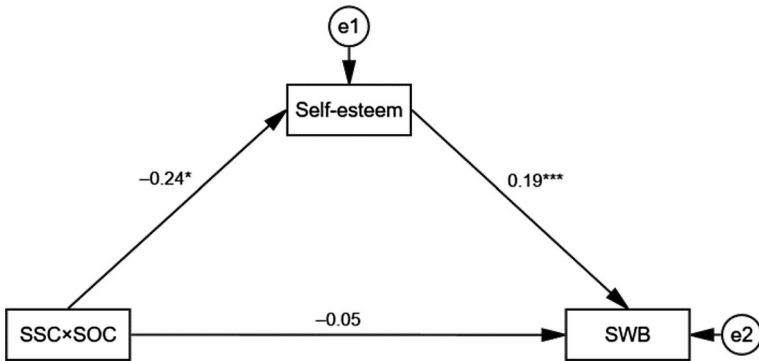


Fig. 3 Mediated moderation model with SSC, sense of control, and OSC as covariates

(simple slope =  $-0.03$ ,  $SE = 0.21$ ,  $p > 0.05$ ). The J–N technique (see Fig. 5) demonstrated that SSC had a statistically significant effect on self-esteem when sense of control was  $\leq 0.14$ , with those adolescents with lower SSC tending to have lower self-esteem (the CIs were entirely above zero). When sense of control was  $> 0.14$ , SSC had no significant effect on self-esteem (the CIs contained zero). Moreover, the results showed that self-esteem was positively related to SWB ( $B = 0.19$ ,  $SE = 0.02$ ,  $p < 0.001$ ).

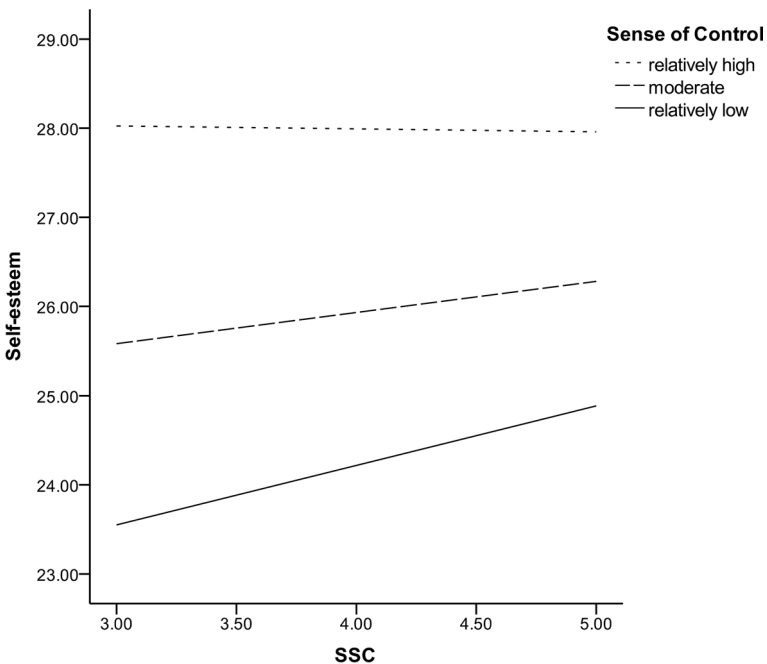
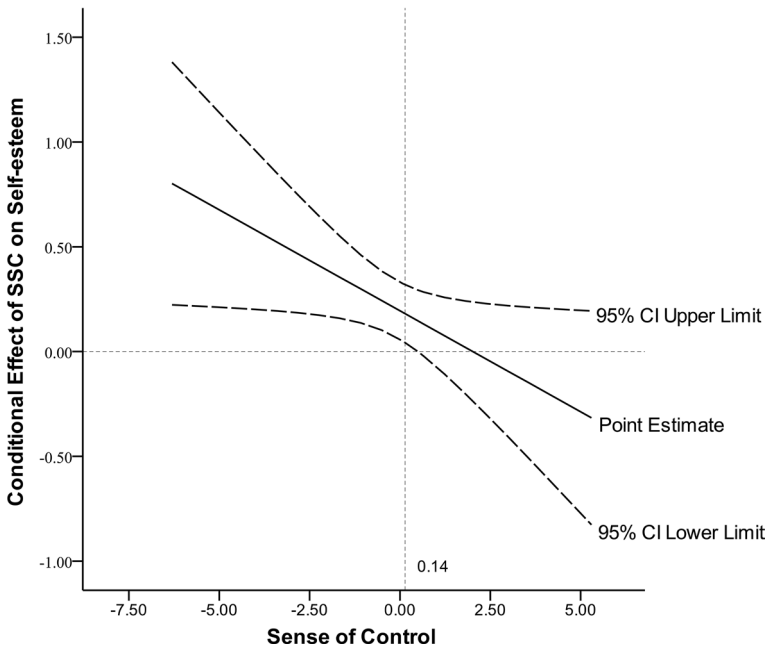


Fig. 4 Sense of control as a moderator of the relationship between SSC and self-esteem. OSC was controlled as a covariate



**Fig. 5** The conditional effect of SSC on self-esteem as a function of sense of control

### 3.4 Test of Gender Differences

We created a multi-group model in AMOS 23.0 and used the *Stats Tools Package* (<http://statwiki.kolobkcreations.com>) to test for gender differences in the mediated moderation model. The results showed a significant gender difference in the relationship between the interaction effect (SSC×SOC) and self-esteem; for males, it was negative and significant, whereas for females, the relationship was positive but not significant (see Table 3). A moderated moderation analysis was then conducted to examine this difference using the PROCESS v3 macro (Hayes 2018), with sense of control as the primary moderator, gender as the secondary moderator, and OSC as a covariate. The three-way interaction effect of SSC, sense of control, and gender significantly predicted self-esteem ( $B=0.80$ ,  $SE=0.23$ ,  $p<0.001$ ). Specifically, SSC significantly and positively predicted self-esteem when participants' sense of control was relatively low (simple slope = 1.22,  $SE=0.25$ ,  $p<0.001$ ) and moderate (simple slope = 0.51,  $SE=0.20$ ,  $p<0.05$ ) for the male adolescents, but not for the female adolescents ( $ps>0.05$ ). However, SSC did not significantly predict self-esteem when participants' sense of control was relatively high for both male and female adolescents ( $ps>0.05$ ).

**Table 3** Multi-group analysis of the mediated moderation model

	Male ( <i>N</i> =265)		Female ( <i>N</i> =216)		z-score
	<i>B</i>	<i>p</i>	<i>B</i>	<i>p</i>	
Self-esteem ← SSC × SOC	-0.53	0.000	0.25	0.140	3.58 <sup>c</sup>
Self-esteem ← SSC	0.49	0.020	0.22	0.330	-0.88
Self-esteem ← SOC	3.55	0.000	0.19	0.800	-3.36 <sup>c</sup>
Self-esteem ← OSC	-0.24	0.370	0.00	0.990	0.64
SWB ← Self-esteem	0.16	0.000	0.20	0.000	1.01
SWB ← SSC × SOC	-0.07	0.210	-0.01	0.850	0.59
SWB ← SSC	0.24	0.010	0.00	1.000	-1.75 <sup>a</sup>
SWB ← SOC	0.79	0.000	0.32	0.380	-1.00
SWB ← OSC	0.05	0.620	0.06	0.610	0.07

<sup>a</sup>*p* < 0.10<sup>b</sup>*p* < 0.05<sup>c</sup>*p* < 0.01 (two-tailed)

## 4 Discussion

The present study tested a mediated moderation model to investigate the mechanisms underlying the association between social class and SWB. The results supported the hypotheses that sense of control moderated the association between SSC and SWB, and that this moderating effect was mediated by adolescents' self-esteem. It is important to note that these results were statistically significant controlling for OSC. The study also examined the effect of gender differences on the model.

Our findings confirm the results of earlier studies that found lower SSC was related to lower SWB (Bhuiyan 2018; Botha et al. 2018; Haught et al. 2015). Unlike OSC, SSC more directly assesses a person's perceived social-class rank relative to other persons in society. These comparisons, according to Social Comparison Theory (Festinger 1954), can affect a person's SWB. Upward social comparison has been found to be negatively associated with SWB (Wang et al. 2017). Consistent with this claim, adolescents with lower SSC, who were relatively disadvantaged compared to others, tended to report lower SWB. In addition, we found SSC was more strongly related to adolescents' SWB, compared to OSC, which is consistent with previous results that SSC is more important for predicting psychological outcomes than the OSC is (Adler et al. 2000; Goodman et al. 2003; Kraus et al. 2009). A reason for this pattern of results may be that the subjective measurement of social class more clearly brings into focus an individuals' understanding of his or her hierarchical position in society relative to others (Kraus et al. 2009), which makes the effect of social class more prominent.

Based on Need Theory (Kraus 2018), social class can enhance SWB only insofar as it helps people meet their basic needs. This idea has been used to explain the phenomenon that the relationship between income and well-being is weaker in developed countries relative to developing countries where basic needs, such as food, sanitation, and shelter, are likely to be met by one's income (Diener and Biswas-Diener 2002). Similarly, Diener and Oishi (2000) suggested that the reason why income correlates less strongly with SWB among college students than among adults may be that their lifestyle and elite status tend to protect them from the most severe effects of poverty. As the needs required for human

survival are basically met in Chinese society today, the basic needs that affect social class and SWB can be expanded beyond survival to include more psychosocial needs. In support of Hypothesis 1, we found SSC positively predicted adolescents' SWB when their sense of control was low but not when their sense of control was high. By revealing this moderating effect of sense of control, the present study lends credence to the Need Theory assumption and provides direct evidence that the effect of social class on well-being is decreased among persons who have their need for sense of control met. In addition, the present results support the view that sense of control may function to increase happiness and decrease stress (Baumeister 2005; Lachman and Weaver 1998; Langer and Rodin 1976; Rosenbaum et al. 2012; Whitson and Galinsky 2008). Thus, sense of control appears to serve as a buffer against the negative ramifications of low social class on well-being. Research has shown that perceived control can change throughout the lifespan, being higher in young adulthood, peaking in midlife, and declining in old age, on average (Robinson and Lachman 2016); therefore, efforts to help low-class adolescents develop and maintain a high sense of control are essential for their SWB.

The fact that needs to be recognized is that even though there is no class difference in SWB when sense of control is high, the opportunity for one to have realistic control over life outcomes is different between lower class and higher class adolescents. Compared with high-class individuals, low-class individuals living in an environment of less prosperity, freedom, and social opportunities are less likely to occupy positions of influence and experience an elevated sense of control (Kraus et al. 2009; 2012). This may potentially be harmful to low-class people who have a high sense of perceived control. According to the idea of the threshold of dysfunction (Mirowsky and Ross 1990; Wheaton 1985), the relationship between sense of control and distress is parabolic, and there is a diminishing subjective return for a greater sense of control. Generally, increasing one's sense of control should decrease distress. However, an excessive sense of control implies an unrealistic self-appraisal, which would, instead, produce unnecessary frustration and self-blame, and increase distress. As people who highly value academic achievement will be disappointed when they fall short of their high standards (Gruber et al. 2011), low-class individuals who have a high sense of perceived control may also feel disappointed or frustrated if they cannot have much realistic control over life events or outcomes due to scarce resources. Although this diminishing subjective return should occur among both low- and high-class individuals, the threshold for the diminishing process is higher for high-class individuals (Mirowsky and Ross 1990). In other words, under the same high level of control, the control that low-class individuals perceive is more likely to be unrealistic. In addition, researchers argue that realistic control should decrease distress without a threshold (Mirowsky and Ross 1990; Wheaton 1985). Therefore, government efforts to narrow the real gap between the rich and the poor is warranted, as these efforts may facilitate the chance for low-class adolescents to obtain real control over their lives.

The present study also expands on Need Theory (Diener and Biswas-Diener 2002; Kraus 2018) by revealing that the moderating effect of sense of control on the association between social class and SWB operates through self-esteem (supporting Hypothesis 2). When adolescents' need for control is not met, they have a low sense of control, and those in the lower class will experience lower self-esteem. However, when their need for control is satisfied, they will have a high sense of control and belonging to a lower social class will have no significant effect on their self-esteem. Therefore, a high sense of control can compensate for low self-esteem due to low social class. These class differences in self-esteem, in turn, are effective predictors of SWB, with those who have lower self-esteem being prone to experience lower SWB, which is consistent with previous findings (Chen

et al. 2016; Orth et al. 2012; Sowislo and Orth 2013). High self-esteem may be beneficial because it enhances initiative and positive feelings (Baumeister et al. 2003). Terror Management Theory also proposes that self-esteem promotes positive affect and psychological well-being as a buffer against anxiety (Greenberg et al. 1986; Pyszczynski et al. 2004).

In addition, we found a gender difference within the mediated moderation model, as expected. Specifically, we found a significant interaction effect of SSC and sense of control in predicting self-esteem among male adolescents, but not among female adolescents. The results demonstrated that male adolescents were more sensitive to social class information. Previous studies have found that social class has little effect on the self-rated health of females, but a significant effect on the self-rated health of males (Seubsman et al. 2011), and that financial hardship had a greater negative association with self-esteem in men relative to women (Waters and Moore 2002). Consequently, among people with a lower sense of control, lower social class may have a more negative impact on the self-esteem of males than females. A greater sense of control should, then, counteract the psychological effect of lower class. The society's gender-role expectations of adolescents may also help explain this result. For example, mothers encourage more autonomy in their sons than their daughters (Pomerantz and Ruble 1998), and adolescent boys often face the pressures of masculine socialization (Chu 2005). Thus, boys of adolescent age may have begun to pay more attention to these socioeconomic factors compared to adolescent girls. The self-esteem of boys is more likely to be influenced by their lower class when they do not feel enough sense of control.

This study has several limitations and our results should be interpreted with caution. First, a cross-sectional design was used, which limits the ability to make causal inferences. This limitation could be eliminated by longitudinal designs, or experimental designs, in which the SSC of study participants can be manipulated by temporarily changing their perception of their social class (Kraus et al. 2009; Piff et al. 2010). Second, we used mean substitution to deal with missing values, and this approach might reduce the variability in the data and cause biased estimates to some extent (Eekhout et al. 2014). There are more desirable procedures to deal with missing values than mean substitution that can be performed using computer programs, such as expectation maximization and multiple imputation (Tabachnick and Fidell 2012), which should be adopted in future research. Third, the students' data were collected using self-report measures, which may limit the internal validity of our findings. For example, empirical evidence indicates that explicit self-esteem has a significant positive correlation with positive affect, whereas this correlation is much weaker for implicit self-esteem (Schimmack and Diener 2003). Thus, future research should test whether the proposed model still holds using different measures of the key variables. Finally, participants in this study were early adolescents from one southwestern city in China, so the generalizability of our findings should be corroborated by collecting data from a larger sample across different regions and/or cultures.

## 5 Conclusions

In conclusion, the findings extend current theory and knowledge about the relationship itself and the mechanisms underlying the relationship between social class and SWB in adolescents. Although lower social class is associated with a lower SWB, the negative effect of lower social class on SWB is buffered by a high sense of control, and this moderating effect goes through self-esteem.

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## Compliance with Ethical Standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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