



Will Helping Others Also Benefit You? Chinese Adolescents' Altruistic Personality Traits and Life Satisfaction

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Abstract

The importance of improving adolescents' quality of life is widely known, especially with the proliferation of so-called “diseases of civilization” (e.g., stress, anxiety, depression, tension, panic). According to numerous previous studies, personality is a very important influencer of life satisfaction, and altruistic personality is considered an important and positive personality type. Altruism might, therefore, be an effective way to improve adolescents' life satisfaction. However, under a market economy, it is difficult to form widespread social customs of altruism. Will helping others also benefit you, representing a win–win situation? Against this background, we conduct the first exploration of the relationship between altruistic personality and life satisfaction. A sample of 428 adolescents completed measures of altruism, life satisfaction, and emotion. The main findings were as follows: (1) adolescents with higher levels of altruism have more positive emotions, fewer negative emotions, and higher life satisfaction; (2) emotions mediated the relationship between altruistic personality traits and life satisfaction; (3) empathy predicted life satisfaction not only directly but also indirectly through positive and negative emotions; (4) social responsibility predicted life satisfaction not only directly but also indirectly through positive emotions; (5) interpersonal trust predicted life satisfaction through negative emotions; (6) sociability predicted life satisfaction through positive emotions. In a word, helping others will benefit yourself as well. These findings are of great practical and theoretical significance for improving adolescents' quality of life, enriching their personality, and enhancing their positive psychological experience. This study's results can also contribute to instilling the positive social custom of “one for all, all for one”.

Keywords Altruistic personality · Life satisfaction · Emotion · Mediation model · Adolescents

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1 Introduction

Although life satisfaction has a long research history, it was not until the 1960s that sociologists began conducting empirical studies. They mainly examined the demographic factors affecting people's quality of life. With the emergence of subjective well-being studies, life satisfaction has increasingly been regarded by researchers as an important part of mental health and happiness, which has also become a hot topic in psychological research. Life satisfaction refers to an overall cognitive evaluation process, in which individuals assess the quality of their lives based on their unique criteria (Shin and Johnson 1978; Diener 1984, 1985, 1995). People compare their perceived life circumstances against self-imposed standards. When conditions match these standards, they report high life satisfaction. Therefore, life satisfaction is a conscious cognitive judgment of one's life in which the judgment criteria depend on the individual. The importance of improving adolescents' quality of life is widely known, especially with the proliferation of so-called "diseases of civilization" (e.g., stress, anxiety, depression, tension, and panic) through the rapid development of society, increasingly fierce market competition, and rapid growth of material wealth. These "diseases" are plaguing many people, seriously hampering their pursuit of a happy life (Loizzo 2012). According to previous studies, personality is a very important factor affecting life satisfaction (Wei et al. 2011), and altruistic personality is considered an important and positive personality type. So altruism might be an effective way to improve adolescents' life satisfaction. However, under a market economy, it is difficult to form widespread social customs of altruism. Do altruistic people benefit themselves when they bring benefits to others, representing a win-win situation? Do people with altruistic personality have a higher level of life satisfaction? Against this background, we conduct the first exploration of the relationship between altruistic personality and life satisfaction.

1.1 Personality, Life Satisfaction, and Emotion

According to numerous previous studies, personality traits are the most powerful predictors of long-term life satisfaction (Diener and Lucas 1999; Headey and Wearing 1989; McCrae and Costa 1991; Wei et al. 2011). Life satisfaction mainly depends on personality traits, and different personality traits lead to differences in life satisfaction, positive emotions, and negative emotions (McCrae and Costa 1991). For instance, extroverts are more sensitive to reward information, and so are happier and more satisfied with life, whereas neurotic individuals are more sensitive to negative emotions, and so experience more unhappiness and are more inclined to complain about life or even lose confidence in it.

Why do personality traits strongly predict life satisfaction? First, the concept and measurement of life satisfaction refer to a person's living conditions over a long time period, which may cover most of their life. Therefore, when measuring life satisfaction, an individual's transient mood is ignored. Personality has stability beyond time and situation, and is more likely to strongly influence life satisfaction. Second, situational variables, such as life events, only have a slight, short-term impact on life satisfaction. People usually react directly to life events and then return to a stable baseline level determined by personality (Headey and Wearing 1989). Third, personality affects life satisfaction by influencing other related factors. For example, social support is related to individual life satisfaction; the greater social support received by extroverts perhaps leads to them experiencing more positive emotions. Similarly, the relationship between life satisfaction and coping styles

reflects the influence of neuroticism: individuals with low neuroticism have better coping styles and therefore experience less negative emotions.

For adolescents, an additional reason for personality traits strongly predicting life satisfaction is that life satisfaction dynamically changes throughout adolescence. By contrast, personality is a unique mode of thinking, emotion, and behavior with characteristics of stability, unity, and functionality beyond time and situation. Therefore, personality is more likely to have a robust influence on life satisfaction. Studies have shown that adolescents' life satisfaction presents a gradual downward trend, which is consistent with the stage characteristics of adolescents' psychological development (Lu et al. 2018, in press). The main activity centers of primary school students are family and school, with parents and teachers the main objects of communication and emotional dependence. Moreover, at this stage, young people have complete trust in authority. However, as they grow older, the development and promotion of cognitive level, the enhancement of self-awareness, the confusion of role identity, the change in social expectations, the awakening of sexual consciousness, and other developments pose great challenges to individual adaptation. They gradually begin to form doubts and critical thoughts about the people and things around them. Emotional dependence on parents and teachers is gradually shed in the pursuit of greater independence. Furthermore, the scope of their activities gradually extends from family to society, confronting them with the various conflicts and contradictions in the wider world. The imbalance and contradiction in adolescents' physical and mental development can easily trigger emotional and psychological problems, which generally show an increasing trend with age (Zhang and Yu 2004). Such negative emotional experiences and psychological problems have been found to be negatively correlated with life satisfaction (Franke et al. 2017; Panova and Lleras 2016). How to improve the life satisfaction of adolescents is, thus, an urgent problem to be solved. Altruism is a positive personality trait advocated by society. Therefore, studying the relationship between altruistic personality and life satisfaction will positively contribute to improving the life satisfaction of adolescents.

1.2 Altruistic Personality, Life Satisfaction, and Emotion

The altruistic personality can explain why someone would help a stranger regardless of the cost to themselves or whether they can expect any material return. It can thus explain why people were willing to risk being killed by the Nazis to help the Jews (Oliner and Oliner 1988). As early as the 1830s, French philosopher, sociologist and mathematician Auguste Comte coined the term "altruism" while addressing the phenomenon of social egoism, inspired by the Latin "alteri huic". The term has since been used to refer to a person's selfless attitude and behavior towards others (Leontopoulou 2010). Altruism has attracted much attention in sociology, chemistry, economics, medicine, and psychology as an accepted and explicit concept (Einolf 2010). It is a persistent tendency to selflessly help others, such as through volunteering and charitable donations (Andreoni 1990); an altruistic individual has positive concern for others' well-being and exhibits the qualities of being caring and helpful. Altruism refers to caring for, understanding, sympathizing with, considering the well-being of, and actively thinking of the interests of others (Van Emmerik et al. 2005). In prior literature, Chinese and foreign scholars have identified three core ideas underlying the definition of altruism. First, altruistic people expect their behavior to increase others' welfare, in terms of their life, health, property, etc. Second, altruistic people do not expect their actions to increase their own welfare: that is, their behavioral motivation is selfless. Third, altruism includes such elements as empathy, social responsibility,

interpersonal trust, and sociality. Researchers have not only demonstrated the consistency of altruistic behavior across situations but also found that the Self-Report Altruism Scale can predict people's altruistic behavior effectively (Rushton et al. 1981; Bartczak 2015).

The first element of altruistic personality is empathy (Davis 2015), defined as the ability to put oneself in another's position to understand their thoughts and feelings. Empathy is a key and indispensable part of altruistic personality (Eisenberg 2000). Individuals with high empathic ability can not only correctly perceive and identify their own and others' emotions, as well as the atmosphere of the situation, but also objectively and accurately analyze the causes, characteristics, and possible changes therein. Therefore, we can scientifically and reasonably explain, evaluate, and make appropriate feedback for ourselves and others' emotions to promote a harmonious state between people. This harmonious state is undoubtedly beneficial for improving individuals' positive emotional experience and life satisfaction (Caro et al. 2017). Based on empathy theory and previous empirical studies, we expect to find positive relations among empathy, positive emotions, and life satisfaction. In other words, people with higher empathy should have more positive emotions, fewer negative emotions, and higher life satisfaction. Social responsibility is the second primary element of altruistic personality, and greatly encourages individuals to engage in altruistic behavior (Bierhoff et al. 1991). The value of life is realized in a variety of social responsibilities. The more deeply we recognize the needs of society and others, and our role in meeting these needs, the more fully we can realize self-worth and experience the sense of value and mission that social responsibility brings. According to prior studies, social responsibility is not only an effective predictor of positive psychological factors, such as positive self-evaluation, but also a core literacy of individual positive development and of a happy life (Chan et al. 2014; Ortman 1988; White 2009), especially in the context of Chinese collectivist cultures (Bernardo et al. 2017; Huang et al. 2016). Hence, social responsibility may positively relate to positive emotions and life satisfaction. The third element of altruistic personality is interpersonal trust (Evans et al. 2013), which is a core component of social capital. It is the generalized expectation that the individual's words and promises, whether in written or oral statements, are reliable when established in the process of interpersonal interaction. Previous studies have shown that interpersonal trust is related to life satisfaction (Habibov and Afandi 2015). Indeed, Jovanović (2016) found that it robustly predicts emotions and life satisfaction. The final element is sociality: integrating the self into larger social units by focusing on the welfare of, cooperating with, and expressing positive emotions to others. Sociality is the tendency to enjoy getting along with others, rather than being alone (Cheek and Buss 1981). Individuals enhance their sense of social value and satisfy their self-enhancing psychological needs in the process of interacting with others, resulting in altruistic behavior and making individuals experience more positive emotions, including happiness (Ryan and Deci 2000).

1.3 The Present Study

According to previous studies, personality is an important influencer of life satisfaction. Altruistic personality is recognized as an important and positive personality traits advocated by the society, and it may influence life satisfaction. But what is its role on improving life satisfaction? What is the mechanism of its effect? Few studies have explored the relationship between altruistic personality and life satisfaction. However, evolutionary studies have found that altruism can predict a series of emotional responses (Trivers 1971), while emotions are understood to affect life satisfaction (Veronese et al.

2017). Moreover, many empirical studies have shown that factors of altruistic personality—such as empathy, social responsibility, interpersonal trust, and sociability—are closely related to emotions. Emotions may, therefore, influence the relationship between altruistic personality and life satisfaction; but what roles do emotions play between the two variables? Schimmack et al. (2002a, b) proposed a mediator model of the relation between personality and life satisfaction, called the integrating process model of life satisfaction, in which personality indirectly affects life satisfaction through its influence on hedonic balance. This model assumes that individuals retrieve memories of pleasant and unpleasant past events when forming a judgment of their life satisfaction. Thus, the ratio of pleasant to unpleasant memories is a source of information in forming this judgment. The model also postulates that personality is more strongly related to emotions than to life satisfaction (Schimmack et al. 2002a, b). Hence, positive and negative emotions may mediate the relationship between altruistic personality and life satisfaction.

Based on previous theoretical and empirical studies, the present study aims to construct a hypothetical model of altruistic personality traits, emotions, and life satisfaction, as shown in Fig. 1. In addition to testing the rationality and applicability of Schimmack et al.'s (2002a, b) integrating process model of life satisfaction, this study's model can further explore the relationship between altruistic personality and life satisfaction. We aim to answer the following research questions:

1. Do altruistic people benefit themselves when they help others?

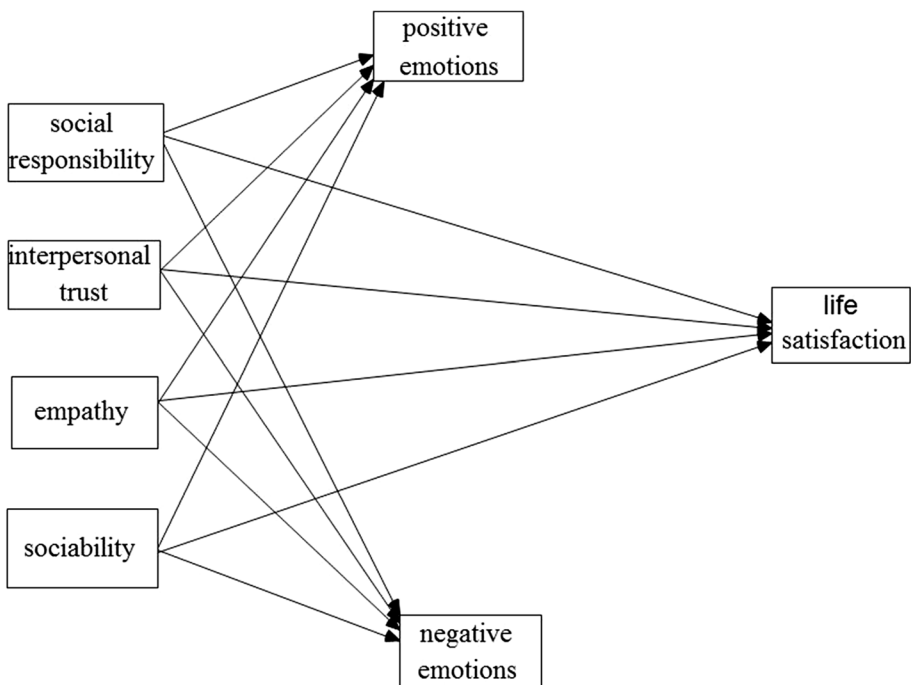


Fig. 1 Hypothetical model of altruistic personality traits, emotions, and life satisfaction

2. How do altruistic personality traits (social responsibility, interpersonal trust, empathy, and sociality) affect life satisfaction?
3. What is the role of emotions in the relationship between altruistic personality and life satisfaction?

Answering these questions is of great practical and theoretical significance for improving adolescents' quality of life, enriching their personality, and enhancing their positive psychological experience. This study's results can also contribute to instilling the positive social custom of "one for all, all for one".

2 Method

2.1 Participants and Procedures

The study's sample comprised 148 primary school students (81 boys, 67 girls; mean age 10.81, range 9–12 years), 139 junior high school students (66 boys, 73 girls; mean age 14.51, range 13–16 years), and 141 senior high school students (83 boys, 58 girls; mean age 16.19, range 14–19 years) from schools in East China ($N=428$). The area is the control variable, and participants were selected from public schools of a similar nature in the same city.

The participants were asked to complete surveys in classroom settings. It took about 15–20 min to complete all the questionnaires. Participants were volunteers, and could choose to withdraw from the study at any time without consequence. Data analysis was completed using SPSS18.0 and AMOS17.0.

2.2 Measures

2.2.1 Self-Report Altruism Scale

The Self-Report Altruism Scale (Rushton et al. 1981) comprises four subscales: social responsibility (nine items), empathy (five items), interpersonal trust (four items), and sociability (two items). Participants respond to each item on a 5-point Likert scale (1 = never to 5 = very often). Sample items included, for example: "I have given directions to a stranger", "I have donated goods or clothes to a charity", and "I have let a neighbor whom I didn't know too well borrow an item of some value to me". The scale is widely used throughout the world (Arnocky et al. 2017; Bartczak 2015; Chau et al. 2018; Patton et al. 2018; Sparrow and Spaniol 2018), and its Chinese version is the most widely and frequently used measure of altruistic personality in China that has been found to be reliable (Chou 1996; He and Jiang 2013; He et al. 2017). In this study, Cronbach's α was 0.78 for social responsibility, 0.73 for empathy, 0.66 for interpersonal trust, and 0.68 for sociability.

2.2.2 Multidimensional Students' Life Satisfaction Scale

The level of participants' life satisfaction was measured using the multidimensional students' life satisfaction scale (Huebner 1994), which contains five domains of life satisfaction: family, friends, school, living environment, and self. The scale has shown high reliability and validity in Western populations (Greenspoon and Saklofske 1997;

Huebner et al. 1998; Irmak and Kuruüzüm 2009). However, life satisfaction and its constructs may differ according to cultural characteristics. Considering cultural differences between the West and the East and the target population (e.g., adolescents rather than preadolescents), some items of the life satisfaction scale have been revised by Chinese scholars (e.g., Zhang et al. 2004). The revised scale comprises six subscales of satisfaction: friendship (seven items, e.g., “My friends are very kind to me”); family (five items, e.g., “I like being with my parents”); academic (five items, e.g., “I have a great sense of achievement in my studies”); freedom (four items, e.g., “Basically, I can act freely according to my own thoughts”); school (six items, e.g., “I like the school life here”); and social (six items, e.g., “I live in a place with good social order”). Participants respond to each item on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). In this study, Cronbach’s α was 0.83 for friendship, 0.86 for family, 0.84 for academic, 0.70 for freedom, 0.87 for school, and 0.76 for social.

2.2.3 Positive and Negative Affect Schedule-Expanded

The positive and negative emotion subscales are sourced from the positive and negative affect schedule-expanded (Watson and Clark 1994). The modified Chinese version of PANAS-X was used to assess participants’ emotions (Guo and Gan 2010). Participants rate the extent to which they have been experiencing items related to each emotion over the last 2 months, using a 5-point Likert scale (1 = not at all to 5 = all the time). In this study, Cronbach’s α was 0.91 for positive emotions and 0.80 for negative emotions.

As shown in Table 1, the models exhibited excellent fit to the data. The questionnaires were, therefore, valid for this study’s sample.

2.3 Ethics Statement

This study was carried out in accordance with the recommendations of the Research Ethics Committee of Capital Normal University, with written informed consent from all participants’ parents/legal guardians, in accordance with the Declaration of Helsinki. The protocol was ethically approved by the Research Ethics Committee of Capital Normal University.

Table 1 Results of confirmatory factor analyses of the altruism questionnaire, life satisfaction questionnaire, positive emotion questionnaire, and negative emotion questionnaire

| Questionnaire | χ^2/df | GFI | CFI | IFI | RMSEA |
|---------------------------------|-------------|------|------|------|-------|
| Altruism questionnaire | 1.72 | 0.94 | 0.94 | 0.94 | 0.04 |
| Life satisfaction questionnaire | 2.39 | 0.99 | 0.98 | 0.98 | 0.06 |
| Positive emotion questionnaire | 1.96 | 0.96 | 0.98 | 0.98 | 0.05 |
| Negative emotion questionnaire | 2.57 | 0.94 | 0.91 | 0.92 | 0.06 |

Table 2 Regression analysis of life satisfaction and emotions on age and sex

| | Estimates | SE | <i>p</i> |
|-------------------|-----------|-------|----------|
| Positive emotions | | | |
| Age | −0.07 | 0.18 | 0.10 |
| Negative emotions | | | |
| Age | 0.06 | 0.15 | 0.13 |
| Life satisfaction | | | |
| Age | −0.05 | −1.69 | 0.10 |
| Positive emotions | | | |
| Sex | −0.02 | −0.38 | 0.69 |
| Negative emotions | | | |
| Sex | −0.03 | −0.65 | 0.51 |
| Life satisfaction | | | |
| Sex | 0.04 | 1.34 | 0.17 |

3 Results

3.1 Common Method Biases Test

To avoid common method biases, control procedures were adopted in the study. During data processing, we used the Harman single factor method to test for any common method biases (Podsakoff et al. 2003; Zhou and Long 2004). The number of factors tested was 21, and no factor explained more than 20% of the total variance, indicating that common method biases contributed little to co-variation between variables in this study. We therefore proceeded to perform further data analysis.

Demographics Age and sex were added in the regression model and the results showed that age and sex had no significant effect on positive emotions, negative emotions and life satisfaction, as shown in Table 2. The area is the control variable, and participants were selected from public schools of a similar nature in the same city. Accordingly, all analyses are controlled for SEM.

3.2 Comparison of Life Satisfaction and Emotions Between High- and Low-Level Altruism Groups

Table 3 presents the results of an independent sample *t* test between high- and low-level altruism groups. Life satisfaction and positive emotions were significantly higher for participants with higher altruism compared to those with lower altruism. Moreover, negative emotions were significantly higher for participants with lower altruism compared to those with higher altruism. Altruism thus seems to contribute to improving life satisfaction and positive emotions, and reducing negative emotions. The effect size of altruistic personality is highest on academic satisfaction, followed by (in descending order) friendship satisfaction, positive emotions, school satisfaction, family satisfaction, freedom satisfaction, social satisfaction, and negative emotions. It thus seems that altruistic people benefit themselves when helping others.

Table 3 Results of independent sample *t* test between high- and low-level altruism groups

| Variables | Group | <i>M</i> | <i>SD</i> | <i>SE</i> | <i>t</i> | Cohen's <i>d</i> |
|---------------------------|-------|----------|-----------|-----------|----------|------------------|
| General life satisfaction | 1 | 175.19 | 21.14 | 1.86 | 15.19** | 1.89 |
| | 2 | 136.45 | 19.80 | 1.74 | | |
| Friendship satisfaction | 1 | 41.49 | 5.81 | 0.51 | 11.69** | 1.45 |
| | 2 | 31.76 | 7.46 | 0.66 | | |
| Family satisfaction | 1 | 30.88 | 5.31 | 0.47 | 7.36** | 0.92 |
| | 2 | 25.42 | 6.55 | 0.58 | | |
| Academic satisfaction | 1 | 24.78 | 5.88 | 0.52 | 18.81** | 2.34 |
| | 2 | 12.98 | 4.03 | 0.35 | | |
| Freedom satisfaction | 1 | 20.20 | 5.41 | 0.48 | 6.72** | 0.84 |
| | 2 | 15.88 | 4.91 | 0.43 | | |
| School satisfaction | 1 | 28.60 | 4.12 | 0.36 | 7.40** | 0.92 |
| | 2 | 24.67 | 4.40 | 0.39 | | |
| Social satisfaction | 1 | 29.23 | 4.35 | 0.38 | 6.24** | 0.78 |
| | 2 | 25.73 | 4.66 | 0.41 | | |
| Positive emotions | 1 | 45.64 | 9.80 | 0.86 | 9.26** | 1.15 |
| | 2 | 34.54 | 9.46 | 0.83 | | |
| Negative emotions | 1 | 27.36 | 7.99 | 0.70 | -4.08** | 0.51 |
| | 2 | 31.38 | 7.82 | 0.69 | | |

1, high-level altruism group; 2, low-level altruism group

* $p < .05$, ** $p < .01$

3.3 Descriptive Statistics

The means, standard deviations, and correlations among the variables are presented in Table 4. Positive (negative) emotions correlated positively (negatively) with social responsibility, interpersonal trust, empathy, and sociality. As expected, social responsibility, interpersonal trust, empathy, sociality, and positive emotions were all positively associated with life satisfaction, which was also negatively associated with negative emotions.

Table 4 Means, standard deviations, and correlations for the variables

| Variables | <i>M</i> ± <i>SD</i> | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------|----------------------|--------|---------|---------|---------|---------|---------|
| 1 | 30.27 ± 6.44 | | | | | | |
| 2 | 9.89 ± 3.72 | 0.43** | | | | | |
| 3 | 18.43 ± 6.86 | 0.27** | 0.27** | | | | |
| 4 | 5.05 ± 2.32 | 0.45** | 0.49** | 0.40** | | | |
| 5 | 39.66 ± 10.37 | 0.39** | 0.22** | 0.34** | 0.40** | | |
| 6 | 30.49 ± 7.97 | -0.12* | -0.19** | -0.26** | -0.15** | -0.20** | |
| 7 | 153.74 ± 25.89 | 0.37** | 0.29** | 0.72** | 0.38** | 0.48** | -0.38** |

1, social responsibility; 2, interpersonal trust; 3, empathy; 4, sociality; 5, positive emotions; 6, negative emotions; 7, life satisfaction

* $p < .05$, ** $p < .01$

Table 5 Regression analysis of life satisfaction on altruistic personality traits and emotions

| Variables | ΔR^2 | F | β | t |
|-----------------------|--------------|----------|---------|---------|
| First step | | | | |
| Social responsibility | 0.56 | 134.44** | 0.17 | 4.55** |
| Interpersonal trust | | | 0.03 | 0.83 |
| Empathy | | | 0.66 | 18.61** |
| Sociality | | | 0.02 | 0.51 |
| Second step | | | | |
| Social responsibility | 0.63 | 176.76** | 0.12 | 3.56** |
| Empathy | | | 0.58 | 17.58** |
| Positive emotions | | | 0.21 | 6.15** |
| Negative emotions | | | -0.17 | -5.51** |

* $p < .05$, ** $p < .01$

3.4 Mediation Analysis

3.4.1 Regression Analysis

Regression analysis revealed a significant effect of positive emotions on altruistic personality traits ($\Delta R^2 = .22$, $F = 118.52$, $p < .01$). The regression coefficients of positive emotions on social responsibility, empathy, and sociality were tested for significance ($t_1 = 8.68$, $p < .01$; $t_2 = 5.63$, $p < .01$; $t_3 = 4.45$, $p < .01$). The effect of negative emotions on altruistic personality traits was then analyzed, and found to be significant ($\Delta R^2 = .07$, $F = 29.38$, $p < .01$). The regression coefficients of negative emotions on interpersonal trust and empathy were also significant ($t_1 = -2.30$, $p < .05$; $t_2 = -4.51$, $p < .01$). As shown in Table 5, two steps were used to analyze the regression effect of life satisfaction on altruistic personality traits, and on the positive and negative emotions. When positive and negative emotions were added to the regression equation, the predictive effect of social responsibility and empathy on life satisfaction decreased. Therefore, the relationship between altruistic personality traits and life satisfaction was partially mediated by positive and negative emotions.

3.4.2 Statistical Significance of Mediating Variables

We performed structural equation modeling to verify our hypotheses that social responsibility, empathy, interpersonal trust, and sociability predict life satisfaction through emotions, as depicted in Fig. 1. The fit indices for the hypothesized model were not good enough (see Table 6). Therefore, the hypothesized model was modified according to modification indices. Two paths were deleted to the model: from interpersonal trust to life satisfaction, and from sociability to life satisfaction. In addition, the paths from interpersonal trust to positive emotions, from sociability to negative emotions, and from social responsibility to negative emotions were deleted. As shown in Table 6, the fit indices for the modified model were satisfactory; therefore, we adopted this as the final model. All the standardized coefficients in the modified model were significant. To further test the mediating effect of positive and negative emotions, we calculated the 95% confidence interval through bias-corrected bootstrapping using 1000 random samples. An effect is significant when the confidence interval excludes zero. From social responsibility to life satisfaction, the direct effect was 0.12 ($p < 0.01$), while the indirect effect was 0.04, and the 95% CI

Table 6 Results of path analyses for altruistic personality traits, positive emotions, negative emotions, and life satisfaction

| Model | χ^2/df | GFI | NFI | CFI | IFI | RMSEA |
|--------------------|-------------|------|------|------|------|-------|
| Hypothesized model | 52.48 | 0.88 | 0.71 | 0.71 | 0.72 | 0.35 |
| Modified model | 1.18 | 0.99 | 0.99 | 0.99 | 0.99 | 0.02 |

excluded zero (0.03–0.08). From empathy to life satisfaction, the direct effect was 0.58 ($p < 0.01$), while the indirect effect was 0.08, and the 95% CI excluded zero (0.05–0.12). Furthermore, the indirect effect from interpersonal trust to life satisfaction was 0.02, and the 95% CI excluded zero (0.01–0.04). Finally, the indirect effect from sociability to life satisfaction was 0.05, and the 95% CI excluded zero (0.02–0.08).

3.5 Findings and Implications

In accordance with our hypotheses, the modified model (see Fig. 2) indicates that social responsibility, empathy, and sociability positively predicted positive emotions, while interpersonal trust and empathy negatively predicted negative emotions. Furthermore, positive emotions positively predicted life satisfaction, while negative emotions negatively predicted life satisfaction. Therefore, social responsibility, empathy, and sociability positively predicted life satisfaction through the mediators of positive emotions, while interpersonal trust and empathy negatively predicted life satisfaction through the mediator of negative emotions. In addition, the model indicates that social responsibility and empathy directly predicted life satisfaction. Furthermore, the relationships among social responsibility, empathy, interpersonal trust, and sociability were significant.

Ranked in descending order of effect size, life satisfaction was influenced by empathy, positive emotions, negative emotions, social responsibility, sociality, and interpersonal

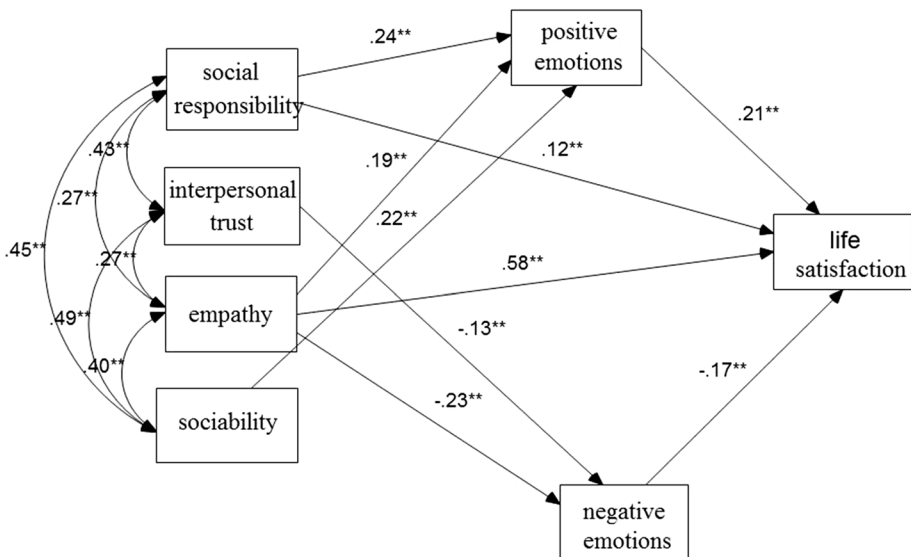


Fig. 2 Modified model of altruistic personality traits, emotions, and life satisfaction

trust. Also ranked in descending order of effect size, positive emotions were influenced by social responsibility, sociality and empathy, while negative emotions were influenced by empathy and interpersonal trust.

Empathy predicted life satisfaction not only directly (0.58) but also indirectly through positive emotions (0.04) and negative emotions (0.04). Social responsibility affects life satisfaction both directly (0.12) and indirectly through positive emotions (0.05). Sociability influenced life satisfaction indirectly through positive emotions (0.05). Interpersonal trust indirectly predicted life satisfaction through negative emotions (0.02).

4 Discussion

The study of altruistic personality traits was highly significant for improving adolescents' life satisfaction. Based on Schimmack et al.'s (2002a, b) integrating process model of life satisfaction, the present study constructed a model of altruistic personality traits, emotions, and life satisfaction for the first time. We also found several important insights.

First, altruistic adolescents themselves benefited when helping others. According to previous studies, personality was an important influence factor of life satisfaction and altruistic personality was recognized as an important and positive personality traits. But the role of altruistic personality on improving life satisfaction was unclear. The results of the present study showed that adolescents with higher levels of altruism had more positive emotions, fewer negative emotions, and higher life satisfaction. They were more willing to participate in volunteering, more active in helping students and teachers, and more willing to take responsibility for problems. When facing difficulties, they were able to respond positively, and were more satisfied with their friendships, family, school, and society. In 1960s, the American psychologist Staller studied a group of celebrities interested in philanthropy. He found that although altruistic people did not obtain money or other material returns from philanthropic acts, they could derive spiritual pleasure of equal material value. Andreoni (1990) pointed out that altruistic people did not expect their actions to earn material rewards; instead, they could benefit from the invisible "warm glow", also known as the "warmth effect". Altruistic people are more inclined to spiritual experiences (Leary et al. 2008). Analyses of data from the World Value Survey showed that nations scoring high on volunteerism tended to be high in life satisfaction (Tov and Diener 2008). In addition, the opposite of "altruism" is "egoism", which is negatively related to life satisfaction and positive emotions, and positively related to negative emotions (Krekels and Pandelaere 2015). The present study extended previous studies of the relationship between altruism and happiness in adults and further clarified that adolescents' altruistic personality traits contributed to their life satisfaction. In a word, helping others will also benefit you.

Second, positive and negative emotions mediated the relationship between altruistic personality traits and life satisfaction. Positive emotions were beneficial to improving life satisfaction, while negative emotions contributed to reducing life satisfaction (Franke et al. 2017; Mutz et al. 2013; Panova and Lleras 2016). Bastian et al. (2014) used data from more than 9000 students across 47 countries to examine whether individuals' life satisfaction was related to the social value of positive emotions. They found that people report higher life satisfaction in countries where positive emotions were highly valued. Veronese et al. (2012) investigated positive and negative emotions along with life satisfaction in a group of Palestinian children exposed to political violence. They found that the children displayed good functioning in positive affect and life satisfaction, despite their negative

life conditions. Positive emotions played a key role in improving life satisfaction, acting as a means of protection against the stresses of daily violence. In a further study of children affected by traumatic events, Veronese et al. (2017) showed that the ability to activate positive emotions was a crucial resource for dealing with traumatic reactions. Therefore, positive emotions are positively associated with life satisfaction, while negative emotions are inversely associated with life satisfaction. Moreover, altruism elicits positive emotions (Brase 2017) and produces a decrease in negative emotions (Yang and Chen 2011). Finally, emotions mediated the relationship between altruistic personality traits and life satisfaction. This study not only enriches the existing researches, but also further clarifies the role of emotions in the relationship between altruistic personality and life satisfaction.

Third, empathy predicted life satisfaction not only directly but also indirectly through positive and negative emotions. That is, the higher an adolescent's level of empathy, the more positive emotions, fewer negative emotions, and higher life satisfaction they have. Empathy will evoke gratitude in the other, leading to both sides experiencing happiness and positive interaction (Wei et al. 2011; Yumi and Kazuyo 2014). People are more likely to be close to those with high empathy, who are perceived as more understanding, more caring, and more concerned about how they feel and what they may think. Moreover, empathy may help people to feel connected with others and experience positive emotions and happiness. At the same time, people able to empathize may feel they are doing something good and bringing happiness and positive emotions to others. In turn, those others shown empathy may feel grateful. Therefore, empathy to others is likely to be related to one's life satisfaction and positive emotions. Empirically, Grünh et al. (2008) found empathy to be significantly associated with people's positive development, especially positive emotions and life satisfaction. They found that empathy is a key factor in the positive development of individuals. People with higher empathy were more satisfied with their lives and reported more positive emotions and less negative emotions than those with lower empathy. Furthermore, people able to empathize with others believed that their interaction partners also experienced more positive emotions. High empathy individuals tend to focus on maintaining positive relationships with others and their own growth. Although empathic individuals care about and understand others, they are more concerned about the importance of social interaction for their own development. The results also showed that empathy had the greatest overall and direct influence on life satisfaction among the various factors of altruistic personality, which confirmed that empathy was the core factor of altruistic personality. Therefore, empathy training for adolescents can maximize their life satisfaction through direct and indirect paths.

Fourth, social responsibility predicted life satisfaction not only directly but also indirectly through positive emotions. On the one hand, the higher adolescents' level of social responsibility, the higher their life satisfaction. On the other hand, social responsibility enhanced adolescents' life satisfaction by increasing positive emotional experience. Ortmann (1988) and White (2009) both found a significant correlation between adolescents' social responsibility and life satisfaction directly. Civic engagement in adolescence is related to higher life satisfaction even in adulthood, and to lower rates of arrest in emerging adulthood (Chan et al. 2014). In the context of Chinese culture, individuals embracing social responsibility and collectivism are recognized, encouraged, and rewarded by society. The educational wisdom imparted to Chinese children from childhood is that "a drop of water will never dry up in the sea and a man can be most powerful only when he combines himself with collective business". Previous studies have shown a positive association between collectivist cultures and life satisfaction (Janoff-Bulman and Leggatt 2002; Bernardo et al. 2017). Under this cultural setting and educational system, commitment to

social responsibility is the path to gain energy, motivation, and self-fulfillment, accompanied by higher positive emotions and life satisfaction. Therefore, social responsibility predicted life satisfaction not only directly, but also indirectly through positive emotional experience. Lu et al. (2018) conducted an educational intervention on the impact of social responsibility on adolescents in an experimental group for 16 weeks through pretest and posttest experimental designs with peer groups. They contacted social institutions and provided more opportunities for adolescents to carry out services for the public's welfare, such as removing small advertisements from street walls, cleaning garbage cans, giving publicity to environmental protection, assisting students with learning difficulties, and donating essential and education supplies to orphans. The results showed that through these interventions, the positive emotions and life satisfaction levels of the experimental group were significantly improved overall, however the effect of the intervention in terms of reducing negative emotions was limited. To summarize, in China's socio-cultural environment, social responsibility has brought greater levels of emotional positivity and higher level of life satisfaction to adolescents. Therefore, in educational and other day-to-day environments, we need to strengthen the cultivation of adolescents' social responsibility. It will not only directly contribute to improving adolescents' life satisfaction, but will also indirectly improve their life satisfaction through increasing their positive emotional experiences.

Fifth, interpersonal trust predicted life satisfaction through negative emotions. This finding may be due to the relation between interpersonal trust and life satisfaction being influenced by such factors as age and individual experience (Brehm and Rahn 1997). Adolescence is a stage of imbalanced physiological and psychological development; this stage is associated with tendencies toward contradiction, conflict, and rebellion. Adolescents not only deny the role of fine examples without good reasons but also passively resist ideological education and regulations. They also doubt interpersonal trust. There are several objective reasons for some adolescents experiencing a crisis of interpersonal trust, such as the common existence of unhealthy phenomena in the period of social transformation in China, as well as Chinese parents' blind pursuit of test scores. These factors cause young people's psychological growth to be neglected, while also causing adolescents to face interpersonal trust crises, easily leading to many negative emotions, such as hostility, sadness, depression, anxiety, and insecurity that adversely affect their life satisfaction (Barefoot et al. 1998; Jovanović 2016; Yamaoka 2008). In Hong Kong and Taiwan, although students reported trusting one another, when experiencing emotional problems (feeling depressed, dispirited, or angry), more students chose to tackle them alone rather than with "trusted companions" (Wang and Chen 2012). The implication of this finding is that interventions to increase interpersonal trust may also help to minimize unnecessary negative emotions and improve life satisfaction.

Finally, the present study also found that sociability indirectly predicted life satisfaction through positive emotions. Sociability is an indispensable part of people's social life, and fulfills the need for inter-personal communication. It is beneficial in terms of maintaining good mental health, the sharing of information and the regulating of emotions and behaviors in our daily life. After entering adolescence, people within this age group exhibit a high level of psychological restlessness and agitation. They require friends with whom they can work through issues, exchange ideas and share confidences. They also have a new understanding of the significance of making friends. They believe that friends should be able to share both happy and unhappy experiences, and receive support and help from each other. Therefore, they have particular requirements in terms of the qualities of their friends. Those qualities include frank, reasonable, caring, keeping secrets and so on. In daily communications between teenagers, good friends often disclose what they view as their most

important and confidential information to each other. This kind of communication is of positive significance in terms of the psychological development of adolescents. It enables them to better understand their inner world and themselves through others (Berk 2004). It enables them to be more passionate, positive, confident and courageous, and also provides the basis for building close relationships with others and achieving a satisfying life in the future (Connolly and Goldberg 1999; Kafetsios et al. 2017). This finding informs us that we should provide a platform for the healthy development of adolescents' sociability, and make greater efforts in terms of enabling them to experience more positive emotions and higher life satisfaction through interaction with friends.

5 Conclusion

This study adds to existing literature by identifying the important role of altruistic personality traits in improving adolescents' life satisfaction. It also identifies positive and negative emotions as possible mechanisms through which altruistic personality traits predict life satisfaction.

Moreover, empathy predicted life satisfaction not only directly but also indirectly through emotions. Empathy played a bigger role in improving adolescents' life satisfaction than any other components of altruistic personality traits. Social responsibility predicted life satisfaction not only directly but also indirectly through positive emotions. Interpersonal trust indirectly affected life satisfaction through negative emotions, while sociability indirectly affected life satisfaction through positive emotions.

The study's findings not only enrich the theoretical research of personality and life satisfaction but also provide insights and suggestions for educating adolescents. First, empathy training can enhance adolescents' life satisfaction not only directly but also indirectly through increasing positive and reducing negative emotions. Adolescents can develop empathy by working with animals through the modalities of humane education, restorative justice, and animal-assisted programs (Komorosky and O'Neal 2015), by mindfulness practices (Dupper 2017), or by solution-focused dramatic empathy training (Hicks et al. 2016). Second, the cultivation of social responsibility can improve adolescents' life satisfaction not only directly but also indirectly through increasing positive emotions. There are many ways to cultivate adolescents' sense of social responsibility, e.g., social practice and school community gardens (Ouden and Wee 2012). Moreover, education on interpersonal trust and sociability plays an important role in promoting life satisfaction and their development of correct perception, judgments, decision making, and mental health.

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