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# Self-experience consistency and life satisfaction: The mediating role of the need for relatedness and the moderating role of Zhong-yong thinking

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Self-experience consistency has an important effect on life satisfaction; however, the underlying mechanism of this relationship remains unclear. This study aims to examine why self-experience consistency is related to increased life satisfaction. To do so, we investigated the relationships between self-experience consistency, the need for relatedness, Zhong-yong thinking, and life satisfaction in a sample of 456 undergraduate students. We also tested a moderated mediation model examining Zhong-yong thinking as a moderator. The results suggest that self-experience consistency related to life satisfaction was due, in part, to an increased need for relatedness. However, interpretation of this finding is limited by the use of cross-sectional data. Furthermore, Zhong-yong thinking moderated the self-experience consistency—need for relatedness link, such that the link was stronger for individuals with high/moderate levels of Zhong-yong thinking. Overall, these findings address a major gap in the positive psychology literature. Finally, implications for research are discussed.

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## Introduction

**Self-experience consistency and life satisfaction.** Self-consistency, one of the most important concepts in Rogers's personality theory (1959), refers to coordination within and between the self and experience and reflects the degree to which the self reasonably expects experience. If an individual experiences a gap between themselves and their own experience, a state of disharmony results (Nye, 1996). Prior studies have demonstrated a close relationship between self-experience consistency and mental health (Liu et al., 2018). Self-experience consistency shows a negative association with non-suicidal self-injury and negative emotional reactions. Suicidal individuals with low self-concordance have higher self-disapproval, experience more negative emotions, and tend to exhibit non-suicidal self-injurious behaviors (Li et al., 2022). In college students, mental health is closely related to life satisfaction (Nogueira et al., 2021; Xie et al., 2022). Life satisfaction is an important part of psychological well-being, which refers to an overall and stable cognitive assessment of an individual's living conditions based on internal standards (Huebner, 2004). Studies have shown that self-harmony is closely related to cognitive development, healthy personality formation, and other important aspects of psychology and health (Chi and Xin, 2002; Chuanlei and Guomin, 2019; Zhang et al., 2021). Thus, a better understanding of the relationship between self-experience consistency and life satisfaction among college students can provide new ideas for promoting self-consistency in this population.

**Need for relatedness as a mediator.** Although self-determination theory (SDT) is widely used in happiness research (Ryan and Deci, 2001), few studies have linked it to self-concordance or examined the role of psychological needs in the relationship between self-concordance and happiness. According to SDT, autonomy, competence, and relatedness are basic psychological needs of human beings. Autonomy refers to a sense of control over one's actions and psychological freedom; competence is a sense of mastery, and relatedness refers to an individual's perceived good relationships with others, support from others, and the ability to connect with others (Deci and Ryan, 2000; Ryan and Deci, 2000). These three basic psychological needs are positively correlated with well-being in all domains (Lataster et al., 2022). Given the importance of relatedness for collectivist societies, such as in China (Oyserman et al., 2002; Wang, 2020), this survey focuses on exploring the role of the need for relatedness in the effect of self-experience consistency on life satisfaction. Studies have shown that self-experience consistency can boost relationships (Chen et al., 2011; Zhang, 2014), which in turn helps improve self-harmony (Ye and Ye, 2020). When people's relatedness needs are met, they generally have a better quality of life and well-being (Friedman and Martin, 2012; Hemmati and Chung, 2016; Chen et al., 2021; Datu and Fincham, 2022).

**Zhong-yong thinking as a moderator.** Zhong-yong thinking, originating from Confucianism, was initially regarded as a path of moral cultivation and the highest moral standard. Throughout history, it has been deeply embedded in the core culture and psychological characteristics of the Chinese people (Yang, 2009). "Zhong" means moderation and appropriateness and "Yong" means perseverance and principles (Wu et al., 2020). Gao (2021) defined three aspects of Zhong-yong thinking: first, to adhere to the cognition of Zhong-yong thinking, which means using a moderate approach to navigating between extremes, avoiding both excess and deficiency. Second, to adhere to the emotion of Zhong-yong thinking, which emphasizes respect for an individual's desires and consideration of others. Zhong-yong thinking not only enables individuals to maintain inner peace but also

fosters harmonious coexistence among groups. Third, to adhere to the personality of Zhong-yong thinking, which means that one should be both firm and flexible in character.

In Zhong-yong thinking, individuals think about how to integrate external conditions and internal needs in a specific situation and carefully consider the consequences of behavior through three dimensions: multi-angle thinking, integrity, and harmony (Wu and Lin, 2005). Individuals with a Zhong-yong thinking style tend to be adept at thinking from different perspectives, i.e., multi-angle thinking; skillful at integrating external environmental information and internal ideas, i.e., integrity; and fully able to consider the consequences of their behavior, i.e., achieving harmony. The higher an individual's degree of Zhong-yong thinking, the better they can examine internal feelings, understand the external environment and the feelings of others, and reconcile the gap between the internal and external to achieve a balanced and harmonious state. Sun et al. (2014) showed that Zhong-yong thinking could guide individuals to pursue a harmonious relationship between themselves and the environment, shape their self-regulating behavioral choices, and achieve self-experience consistency. In terms of interpersonal communication, Zhong-yong thinking means considering the same thing from multiple perspectives and, after examining different views in detail, choosing an action that accounts for the self and the overall situation (Wu and Lin, 2005; Gao, 2021). Individuals with a higher degree of Zhong-yong thinking can balance various opinions and adopt more effective ways to deal with interpersonal conflicts, thus potentially achieving better interpersonal relationships and emotional states. Zhong-yong thinking also has a positive effect on decreasing interpersonal relationship distress (Fan, 2020). Zhong-yong thinking is positively correlated with interpersonal relationships and can positively predict relationship satisfaction and happiness (Liao, 2012; Chou et al., 2014).

## Current study

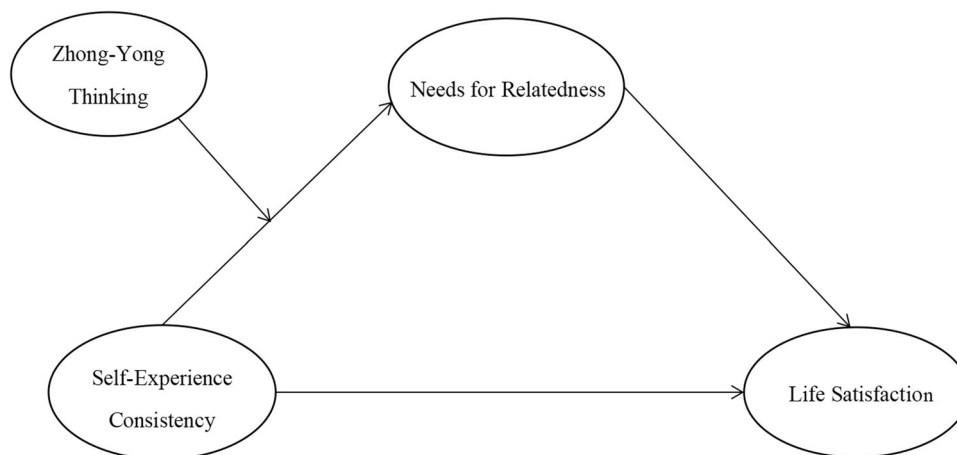
The current study investigated whether the need for relatedness facilitates the correlation between self-experience consistency and life satisfaction and whether Zhong-yong thinking moderates the associations between self-experience consistency and life satisfaction. Informed by prior research on self-experience consistency and related constructs, we tested three hypotheses: (1) self-experience consistency will be positively associated with life satisfaction; (2) the need for relatedness will partially mediate the effect of self-experience consistency on life satisfaction; and (3) the mediation effect of the need for relatedness will be moderated by Zhong-yong thinking. The proposed model is shown in Fig. 1.

## Method

**Participants.** A priori power analysis using G\*power 3.1 showed that at least 395 participants were needed to detect small-sized effects ( $f^2 = 0.02$ ) in a multiple linear regression model with a significance level of 0.05 and a power of 0.80 (Faul et al., 2009). Our sample consisted of 456 undergraduate students (202 male, 249 female, and 5 preferred not to say) from a Chinese university located in Fujian province. Students represented all undergraduate years (258 freshmen, 77 sophomores, 54 juniors, 64 seniors, 3 preferred not to say), included several majors (psychology, education, physics, and business), with 99.3% of the students' ages ranging between 18 and 23 years ( $M = 20.3$ ,  $SD = 1.22$ ).

## Measures

**Self-experience consistency.** The 16-item Self-Experience Consistency (SEC) subscale of the Self-Consistency and Congruence



**Fig. 1 Proposed moderated mediation model.** This figure depicts the conceptual framework proposed to investigate the moderating effect of Zhong-yong thinking on the mediation of self-experience consistency and life satisfaction by the need for relatedness. It emphasizes the potential moderating effect of Zhong-yong thinking on the mediation process.

Scale (Wang, 1994) was used to measure the degree to which participants are consistent between their self and experience. Items were rated on a five-point scale ranging from 1 (totally disagree) to 5 (totally agree). One item (“I can express myself freely.”) was excluded because of its low reliability and validity. In the current study, the estimated Cronbach’s  $\alpha$  for the 15-item scale was 0.84.

*Need for relatedness.* The need for relatedness was measured using the 8-item Needs for Relatedness subscale of the 21-item Basic Needs Satisfaction in General Scale (Deci and Ryan, 2000), which measures the satisfaction of relatedness in the general everyday life domain. The Chinese version of this scale was revised by Xie et al. (2012). Respondents rated statements such as “People are generally pretty friendly towards me” on a scale of 1 (not at all true) to 7 (very true). In the current study, the estimated Cronbach’s  $\alpha$  for the scale was 0.78.

*Life satisfaction.* Life satisfaction was measured using the Chinese version of the five-item Satisfaction with Life Scale (Diener et al., 1985), which was revised by Xiong and Xu (2009). Participants rated items such as “I am satisfied with my life” on a scale of 1 (strongly disagree) to 7 (strongly agree). In the instrument adaptation study, the authors found that the scale had strong internal consistency ( $\alpha = 0.78$ ). This scale has been widely used in studies of the Chinese population. In the current study, the estimated Cronbach’s  $\alpha$  for the scale was 0.80.

*Zhong-Yong thinking.* The Chinese version of the Zhong-yong Thinking Scale developed by Wu and Lin (2005) was used in this study. The scale has 13 items across three dimensions (multi-angle thinking, integrity, and harmony), with higher scores indicating stronger Zhong-yong thinking. Participants rated items such as “I am used to thinking about the same thing from multiple perspectives” on a scale of 1 (totally disagree) to 7 (totally agree). This scale has been previously shown to have good reliability and validity (Ding et al., 2019; Wei et al., 2021). In the current study, the estimated Cronbach’s  $\alpha$  values for the three subscales and overall scale were 0.75, 0.77, 0.82, and 0.88, respectively.

**Procedure and statistical analysis.** This survey study was administered by well-trained graduate students. Participants

provided informed consent and completed the survey voluntarily for extra credit in psychology classes. They were instructed to complete all survey items carefully, anonymously, and without discussion. This study was approved by the Research Ethics Committee of the School of Psychology and Education Research at Minnan Normal University. The analysis plan included three steps. In step 1, we examined the descriptive statistics and intercorrelations between variables. In step 2, we explored whether self-experience consistency mediated the relationship between self-experience consistency and life satisfaction. Finally, in step 3, we tested if the mediation found in step 2 was moderated by Zhong-yong thinking.

We used the Mplus code by Stride et al. (2015) and Hayes’ (2017) PROCESS Macro for Statistical Package for the Social Sciences (SPSS) to test the moderated mediating model. The mediation and moderation analyses were performed based on 5000 bootstrapped samples using bias-corrected and accelerated 95% confidence intervals (CIs). This analysis allowed us to calculate the direct paths between the variables as well as the significance of the indirect path. The indirect path is significant when the 95% CI does not include 0. Since PROCESS Macro does not provide standardized regression coefficients, all variables were  $z$ -transformed before analysis.

## Results

**Common method bias analysis.** Exploratory factor analysis showed that the amount of variance explained by the first principal component was 20.76%. This is less than the 40% benchmark, suggesting no serious issue with common method variance (Podsakoff et al., 2003).

**Results of correlation analysis.** Table 1 presents the descriptive statistics, correlations, and reliabilities. As predicted, self-experience consistency, need for relatedness, life satisfaction, and the three dimensions of Zhong-yong thinking (multi-angle thinking, integrity, and harmony) were all positively correlated.

**Results of mediation analysis.** Next, we tested whether the need for relatedness mediated the relationship between self-experience consistency and life satisfaction. The mediation model included self-experience consistency as an independent variable, the need for relatedness as a mediator, and life satisfaction as a dependent variable. The analysis also controlled for participants’ age and

**Table 1 Descriptive statistics and intercorrelations for study variables.**

Variable	M	SD	1	2	3	4	5
1. Self-experience consistency	50.74	8.89	-				
2. Need for relatedness	40.59	5.84	0.52***	-			
3. Life satisfaction	19.26	5.33	0.34***	0.28***	-		
4. Multi-angle thinking	20.26	3.51	0.25***	0.28***	0.11*	-	
5. Integrity	26.44	3.75	0.25***	0.34***	0.11*	0.61***	-
6. Harmony	20.78	3.43	0.20***	0.33***	0.13**	0.49***	0.60***

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Table 2 Results of the moderated mediation analysis for Zhong-yong thinking: the relationship between the need for relatedness, self-experience consistency, and life satisfaction.**

Predictor	Dependent variable model			
	$\beta$	SE	t	p
Needs for relatedness	0.415	0.061	6.790	0.000
Self-experience consistency	0.176	0.064	2.740	0.006
Predictor	Mediator variable model			
	$\beta$	SE	t	p
Self-experience consistency	0.348	0.054	6.486	0.000
the Zhong-yong thinking style	0.491	0.052	9.446	0.000
Self-experience consistency $\times$ the Zhong-yong thinking style	0.128	0.058	2.218	0.027
The Zhong-yong thinking style score	Conditional effects of the Zhong-yong thinking style $\pm 1$ SD			
	$(a_1 + a_3W) b_1$	SE	z	p
-1.00	0.214 (0.049, 0.380)	0.085	2.536	0.011
0	0.339 (0.182, 0.496)	0.080	4.228	0.000
+1.00	0.463 (0.237, 0.689)	0.115	4.020	0.000

The conditional indirect effect was calculated  $(a_1 + a_3W)b_1$  where  $a_1$  was the path from self-experience consistency to the need for relatedness,  $a_3$  was the path from the interaction of self-experience consistency and Zhong-yong thinking style to the need for relatedness,  $W$  is Zhong-yong thinking style, and  $b_1$  was the path from the need for relatedness to life satisfaction.

gender. Self-experience consistency showed significant, direct paths to the need for relatedness ( $\beta = 0.473$ ,  $SE = 0.072$ ,  $p < 0.001$ ) and life satisfaction ( $\beta = 0.369$ ,  $SE = 0.063$ ,  $p < 0.001$ ). The need for relatedness also had a significant direct path to life satisfaction ( $\beta = 0.407$ ,  $SE = 0.040$ ,  $p < 0.001$ ). When the variable need for relatedness was included in the model, self-experience consistency showed a reduced relationship with life satisfaction ( $\beta = 0.181$ ,  $SE = 0.033$ ,  $p < 0.001$ ). The indirect effect was 0.193, 95% CI = [0.126, 0.294]. Therefore, the need for relatedness partially mediated self-experience consistency and life satisfaction ( $\chi^2/df = 2.686$ ,  $RMSEA = 0.06$ ,  $CFI = 0.96$ ,  $TLI = 0.94$ ,  $SRMR = 0.04$ ). The overall model was significant and explained 26.8% of the variance in life satisfaction.

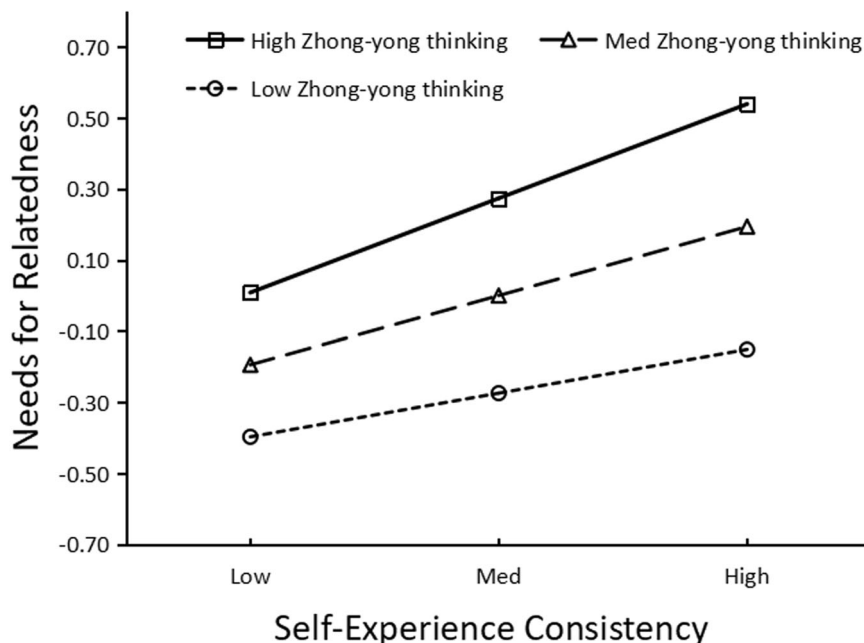
**Results of the moderated mediator model.** Step 3 in our analysis tested whether Zhong-yong thinking moderated the mediation found in Step 2. Table 2 shows the relevant parts of the MODMED output for Zhong-yong thinking. Two multiple regression models were tested: the mediator variable model predicting the need for relatedness and the dependent variable model predicting life satisfaction. The significant interaction between self-experience consistency and Zhong-yong thinking style in the mediator variable model suggests that the indirect effect of self-experience consistency on the need for relatedness is moderated by Zhong-yong thinking. We also probed the conditional indirect effects at the mean and one standard deviation (SD) above and below the mean. As shown in Fig. 2, at a high level of Zhong-yong thinking ( $M + 1SD$ ), self-experience consistency had a significant positive predictive effect on relatedness needs ( $\beta_{\text{simple slope}} = 0.570$ ,  $p < 0.001$ ), while at a low level ( $M - 1SD$ ) the positive predictive effect of self-experience consistency on relatedness needs was weaker ( $\beta_{\text{simple slope}} = 0.264$ ,  $p < 0.01$ ), i.e., the influence

of self-experience consistency on relatedness needs was weaker with decreased Zhong-yong thinking. Taken together, these findings provide empirical support for the moderated mediation model proposed in this study.

**Discussion**

The present study had three goals: (1) to test the link relating self-experience consistency to elevated levels of life satisfaction; (2) to examine the need for relatedness as a partial mediator of the relationship between self-experience consistency and life satisfaction; and (3) to investigate the degree to which Zhong-yong thinking serves as a moderator of the link between self-experience consistency and the need for relatedness and a link between the need for relatedness and life satisfaction. Although several prior studies have examined the correlation between self-experience consistency and life satisfaction, the present study is one of the first to reveal the nuances of this relation.

Regarding the first hypothesis, self-experience consistency was indeed associated with life satisfaction: measures of self-experience consistency and life satisfaction exhibited a positive correlation. This finding is consistent with past research demonstrating that self-experience consistency positively relates to life satisfaction (Yao, 2007). College students' self-evaluation may deviate from their experience and have unreasonable expectations between themselves and their experience, resulting in anxiety and a large gap between the "ideal me" and "real me", which produces inner tension and disturbance that appears as self-experience dissonance. According to Wang and Cui (2003), sound mental health refers to an individual's subjective well-being when they achieve self-consistency and harmony between themselves and their social environment based on a positive physiological state. Only by objectively evaluating and accepting



**Fig. 2 The interaction of self-experience consistency and Zhong-yong thinking on needs for relatedness.** This figure emphasizes the interaction effect between self-experience consistency and Zhong-yong thinking on the need for relatedness. It demonstrates that the influence of self-experience consistency on the need for relatedness is stronger at higher levels of Zhong-yong thinking and weaker at lower levels.

themselves can college students make the most of their various advantages, correctly understand negative events in their life, rationally adjust the conflict between desire and reality, respond in a positive and flexible way, and experience greater life satisfaction and happiness.

Regarding the second hypothesis, the initial mediation results provide support for the need for relatedness as a partial mediator of the relationship between self-experience consistency and life satisfaction. These findings mirror the results of a previous study finding that self-experience consistency has a strong, positive association with the need for relatedness (Chen et al., 2011). Our results also echo the well-established notion that satisfaction of relational needs is positively related to the quality of life and satisfaction (Bergland et al., 2016; Hemmati and Chung, 2016; Bartolini and Sarracino, 2014; Callea et al., 2019). A potential reason for this mediation is that self-experience consistency facilitates the development of intimate relationships with others and builds a good social network, which contributes to deeper emotional experiences and feeling respected, understood, and supported (Li et al., 2010). These findings help clarify the relationship between self-experience consistency and subjective feelings (i.e., life satisfaction), deepening our understanding of the underlying mechanisms from the perspective of relatedness needs fulfillment.

Another goal of this study was to explore Zhong-yong thinking as a moderator of the self-experience consistency—need for relatedness and need for relatedness—life satisfaction links. Our MODMED analysis revealed that Zhong-yong thinking moderated the first link, showing that it was stronger in individuals with higher levels of Zhong-yong thinking. This finding corroborates the results of a previous study that reported that individuals with high levels of Zhong-yong thinking experience higher satisfaction in relationships than individuals with a low Zhong-yong thinking style (Fan, 2017). A possible explanation for this moderation effect is that individuals with high Zhong-yong thinking are good at listening to various opinions and tend to seek social support to solve problems, which are helpful behaviors for building a better relationship network.

Through this process, an individual's experience is gradually enriched, self-evaluation is constantly revised, and self-experience consistency is ultimately achieved.

#### Limitations and future directions

This study is subject to several limitations. First, as mentioned earlier, SDT suggests three basic psychological needs. However, we focused only on the relationship between self-experience consistency and life satisfaction. Future research should explore whether autonomy and competence have similar mediating effects on the relationship between self-experience consistency and life satisfaction. Second, we did not include certain variables that may have influenced our results, and additional control variables could be considered for inclusion in future studies. Third, this study was conducted with a Chinese sample. In the future, cross-cultural studies are needed to compare the results across different backgrounds and deepen our understanding of the theoretical framework.

#### Conclusion

This study focused on the association between self-experience consistency, life satisfaction, the need for relatedness, and Zhong-yong thinking among Chinese young adults. The findings indicated that individuals who generally use a Zhong-yong thinking style experience greater levels of life satisfaction. Furthermore, this relationship is mediated by the need for relatedness, and the path between self-experience consistency and the need for relatedness is moderated by a Zhong-yong thinking style. These results make an important contribution to the literature on self-experience consistency. Notably, this is the first study to date to explore the role of the need for relatedness as a mediator and Zhong-yong thinking as a moderator in relation to self-experience consistency and life satisfaction. Although the correlational link between self-experience consistency and life satisfaction is well-established, this study addresses a major gap in the positive psychology literature by examining some of the intricacies of this relationship.

**Data availability**

The datasets generated and analyzed during the current study are available in the Harvard Dataverse repository, <https://doi.org/10.7910/DVN/HTTNP3>.

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## Author contributions

JZ: Conceptualization, methodology, formal analysis, writing-original draft, visualization. HD: Conceptualization, methodology, investigation, software, investigation. TL: Conceptualization, methodology, investigation, software, investigation. SM: Conceptualization, methodology, investigation, resources, data curation, writing-reviewing and editing, supervision, project administration, funding acquisition.

## Competing interests

The authors declare no competing interests.

## Ethical approval

This study was approved by the Research Ethics Committee of the School of Psychology and Education Research at Minnan Normal University (Study #2022-11-03) and in accordance with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

## Informed consent

All individuals invited to participate in the study were provided a statement of informed consent. The informed consent language clearly explained their rights as research subjects/participants. By entering the survey individuals affirmed their consent.

## Additional information

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