**EMPIRICAL RESEARCH**

# Relationship between Personality Traits and Subjective Well-Being in Emerging Adulthood: Moderating Role of Independent and Interdependent Self-Construal

Kai Hatano [1] · Tetsuya Kawamoto[2] · Shogo Hihara[3] · Kazumi Sugimura[4] · Megumi Ikeda[5] · Satoshi Tanaka[6] · Jun Nakahara[6]

**Abstract**
During emerging adulthood, individuals' subjective well-being declines owing to challenges regarding identity, work, and romantic relationships. Although the relationships among personality traits, self-construal, and well-being have been examined, studies have focused on personal rather than relational subjective well-being. Furthermore, self-construal's moderating effect on the relationship between personality traits and subjective well-being remains unclear. Therefore, this study examined the relationships among the Big-five personality traits and subjective well-being (life satisfaction, happiness, and interdependent happiness) and the moderating effect of self-construal among 1548 Japanese emerging adults ($M_{age} = 22.24$, $SD = 1.01$). Regression analysis indicated that all aspects of subjective well-being were negatively associated with neuroticism and positively associated with extraversion, independent and interdependent self-construal. Further, agreeableness was positively associated with personal and relational well-being. Independent or interdependent self-construal can moderate the relationships between neuroticism, extraversion, and agreeableness and subjective well-being. Overall, these findings provide valuable insights for improving Japanese emerging adults' well-being.

**Keywords** Personality traits · Independent and interdependent self-construal · Life satisfaction · Subjective happiness · Interdependent happiness · Emerging adulthood

## Introduction

Emerging adulthood, from ages 18 to 29, is a period of transition from adolescence to adulthood (Arnett et al., 2014). Emerging adults often move away from their families and established circle of friends to attend college or find a good job (Wood et al., 2018). In a new environmental setting, emerging adults may need to make new friends, form new romantic relationships, and manage competition, jealousy, and other emotions related to their peers' performance in college and the workplace (Arnett & Mitra, 2020). Balancing all of these new demands is difficult for emerging adults. Consequently, subjective well-being (SWB), as represented by life satisfaction and subjective happiness (Diener et al., 1985), is lower in emerging adults than in adolescents (Blanchflower & Oswald, 2019). In critical periods when SWB is declining, the Big Five personality traits (neuroticism, extraversion, openness, agreeableness, and conscientiousness; Goldberg, 1993) and self-construal (independent or interdependent self-construal; Germani et al., 2021) are critical individual differences that play an important role in SWB. Although SWB has well-established links with both personality traits (e.g., Anglim et al., 2020) and self-construal (e.g., Kwan et al., 1997), in the context of emerging adulthood, two critical issues are yet to be addressed regarding these linkages. First, previous research has focused on well-being based on personal satisfaction.

✉ Kai Hatano
  kai.hatano@omu.ac.jp

1 Graduate School of Sustainable System Science, Osaka Metropolitan University, Osaka, Japan

2 Faculty of Letters, Keio University, Tokyo, Japan

3 Faculty of Business Administration, Matsuyama University, Matsuyama, Japan

4 Department of Psychology, Hiroshima University, Higashihiroshima, Japan

5 Institute of Social Science, The University of Tokyo, Tokyo, Japan

6 College of Business, Rikkyo University, Tokyo, Japan

SWB includes two dimensions: eudemonic well-being, which is based on personal satisfaction (Waterman, 1993), and relational well-being, which is based on harmonious relationships with others (Uchida & Kitayama, 2009). However, few studies have focused on the relational well-being's relationship with emerging adults' personality traits and self-construal. Second, previous studies have not focused on the role of self-construal in the relationship between personality traits and SWB. Emerging adulthood involves a transition into society, wherein they internalize the social norms expected by their country and form a self-construal, such as whether they should assert or suppress their own traits (Markus & Kitayama, 1991). Therefore, the complex relationship between personality traits and self-construal is expected to be relevant to SWB in emerging adulthood. However, no studies have examined the combined effects of personality traits and self-construal on SWB. To address these research gaps, this study aims to examine the relationship between personality traits and SWB in terms of both personal satisfaction and relational well-being among Japanese emerging adults, focusing on the moderating effect of self-construal.

## Association between Personality Traits and SWB

The Big Five personality traits influence SWB through social interactions and life events (Cheng et al., 2014). For example, individuals with high extraversion tendencies are more sociable and are, thus, more likely to have favorable relationships with others (e.g., friends or romantic partners) than those with high neuroticism (Anderson et al., 2001). Consequently, individuals with high extraversion tend to feel a stronger sense of life satisfaction and happiness through social interactions, while those with high neuroticism tend to feel less well-being. Studies that examined the relationship between personality traits and SWB reported that life satisfaction and subjective happiness across one's lifespan are negatively associated with neuroticism and positively associated with extraversion (for a meta-analysis, see Anglim et al., 2020). Thus, emerging adults with higher neuroticism typically experience lower life satisfaction and happiness, whereas emerging adults with higher extraversion and a tendency to plan and achieve goals are associated with higher life satisfaction and happiness (Joshanloo, 2022).

While life satisfaction and happiness have been used as SWB indicators worldwide, these measures have only focused on personal satisfaction and well-being (Markus, 2010). However, individuals derive happiness not only from personal satisfaction but also from harmony, group norms, and interpersonal relationships (Uchida & Ogihara, 2012). Interdependent happiness is a global, subjective assessment of whether one is in harmony with others, and at peace and is well-connected with others in terms of relational well-being (Hitokoto & Uchida, 2015). One study examined the relationships between neuroticism and extraversion and interdependent happiness in emerging adults and adults (ages 19 and 55) from Hong Kong and the United States (Lun & Yeung, 2019). This study found that neuroticism was negatively associated with interdependent happiness and positively associated with extraversion in samples from both countries, with no significant differences between them. Thus, higher neuroticism is associated with lower interdependent happiness, and higher extraversion is associated with higher interdependent happiness. However, this study included a mix of emerging adults and adults, and the association of SWB with personality traits in emerging adults is unclear. Furthermore, the relationships between interdependent happiness and the other three personality traits (i.e., openness, agreeableness, and conscientiousness) remain unclear. Specifically, emerging adults with high agreeableness tendencies experience interdependent happiness because it leads to better and maintained relationships with others (Tov et al., 2016). Hence, a study focusing on the relationship between the Big Five personality traits and both personal and relational well-being is warranted.

## Association between Self-Construal and SWB

While personality traits influence SWB through interactions with others and life events, not all individuals are able to exhibit their traits and build favorable social relations with others. When individuals interact with others, they consider the social norms that make them desirable members of the group to which they belong (Sugimura et al., 2016). Cultural self-construal is representative of such social norms (Markus & Kitayama, 1991). Independent self-construal posits that one's sense of self is separate from others, while interdependent self-construal holds that the self is defined by social relationships (Singelis, 1994). Individuals often hold both views simultaneously, and the interplay between independence and interdependence occurs at both cultural (i.e., differences by country) and individual levels (Levinson et al., 2011). Specifically, when the predominant characteristic of a country's self-construal is unclear, it would be useful to examine them at an individual level (Germani et al., 2021). For example, Japan, where this study has been conducted, is considered representative of a country with a strong interdependent self-construal (Markus & Kitayama, 1991). However, studies have reported that independent self-construal in Japan is not significantly lower than that of other countries, nor is its interdependent self-construal significantly higher (Oyserman et al., 2002; for a review, see Sugimura, 2020). In such countries, cultural self-construal is expected to function as social norms held by individuals; hence, this study focuses on the independent

and interdependent self-construal at the level of individual perception, not at the level of country-specific cultural differences. To distinguish between the cultural and individual-level self-construal, henceforth, the individual-level self-construal is described simply as the "self-construal" (i.e., not *cultural* self-construal).

People with a high independent self-construal have a high sense of life satisfaction and happiness as they value personal achievement and success (Oyserman et al., 2002). In emerging adulthood, independent self-construal (Kwan et al., 1997) and interdependent self-construal (Yetim, 2003) have been positively and negatively associated with life satisfaction, respectively. However, no studies have examined the relationship between self-construal and interdependent happiness. People with a high interdependent self-construal have a high sense of interdependent happiness because they value relationships and harmony with others (Hitokoto & Uchida, 2015). Therefore, the same is expected in the context of emerging adults.

## Interaction between Personality Traits and Self-Construal in Japanese Emerging Adults

Emerging adults socially demonstrate their traits and incorporate the expected cultural norms of their country into their self-construal (Arnett et al., 2014). Japanese emerging adults are expected to assert their individuality while at the same time being in harmony with others (Sugimura, 2020). Specifically, the transition of Japanese university students into the workplace is unique. Japanese companies generally use a system of periodic recruiting of new graduates, hiring emerging adults who have just graduated from university (Hatano et al., 2022). As a result, university students search for jobs and receive job offers while still in university. In this process, students are required to assert their traits over other students in order to receive a job offer but, at the same time, to be in harmony with others (Hatano et al., 2022). Thus, Japanese university students who are in the process of seeking a job are a mixture of a strong awareness of their own traits and the norms demanded by society. Therefore, independent and interdependent self-construal may moderate the relationships between personality traits (i.e., neuroticism, extraversion, and agreeableness) and SWB in these emerging adults. For example, emerging adults who exhibit a high level of neuroticism tend to be overly sensitive and anxious in their interactions with others (Soto & John, 2017), making it difficult to build beneficial interpersonal relationships; consequently, as the independent self-construal increases, they tend to have lower SWB. Meanwhile, emerging adults with high neurotic tendencies and interdependent self-construal may have lower SWB owing to their need to build favorable interpersonal relationships despite their difficulties. Emerging adults who are more

extraverted are likely to have increased SWB due to independent self-construal. Extraversion, which pertains to positive attitudes and feelings toward others (Soto & John, 2017), is further enhanced by an independent self-construal that emphasizes individual characteristics (Levinson et al., 2011). Conversely, extraversion (which represents individual assertiveness) is thought to be suppressed by interdependent self-construal, resulting in lower SWB. Furthermore, in a group with strong independent self-construal, emerging adults with high agreeableness may be judged as lacking initiative. Thus, they may not be able to build favorable relationships with others and may not feel happy. Meanwhile, in a group with a strong interdependent self-construal, emerging adults with high agreeableness will receive positive feedback from group members for exhibiting that trait (Tov et al., 2016) and will likely feel interdependent happiness. However, the relationships among personality, independent and interdependent self-construal, and SWB have not been examined. This investigation provides detailed evidence of high and low SWB in emerging adults and may also provide insight on how to support SWB in emerging adults.

## Current Study

The relationships among emerging adults' personality traits, self-construal, and personal well-being have been examined; however, the relationships among emerging adults' personality traits, self-construal, and relational well-being have not been examined. Furthermore, independent and interdependent self-construal's moderating effects on the relationship between personality traits and SWB have not been examined. Therefore, this study aims to examine the relationships between personality traits and both personal and relational SWB and independent and interdependent self-construal's moderating effects on this relationship. All aspects of SWB are hypothesized to be negatively related to neuroticism (Hypothesis 1), but positively related to extraversion (Hypothesis 2). Agreeableness is posited to be related to interdependent happiness (Hypothesis 3). Independent self-construal is positively related to life satisfaction and happiness (Hypothesis 4). Interdependent self-construal is positively related to interdependent happiness (Hypothesis 5).

Regarding the moderating effects, all aspects of SWB are expected to be lower for emerging adults who have higher neuroticism and independent or interdependent self-construal than those who do not (Hypotheses 6 and 7, respectively). All aspects of SWB are expected to be high for emerging adults who have high extraversion and independent self-construal than those who do not (Hypothesis 8). Conversely, all aspects of SWB are expected to be low

for emerging adults who have high extraversion and interdependent self-construal than those who do not (Hypothesis 9). Emerging adults who have high agreeableness and independent self-construal are expected to have low interdependent happiness compared with those who do not (Hypothesis 10). Conversely, emerging adults who have high agreeableness and interdependent self-construal are expected to have high interdependent happiness compared to those who do not (Hypothesis 11). Although no hypotheses have been established regarding openness and conscientiousness, they are explored in this study.

## Methods

### Participants and Procedure

This study used data from the University to Work Transitions Research Project (UWTRP), which collected information through three waves of surveys administered every six months from March 2022 to March 2023. Specifically, this study used data from the first wave, which included 1548 Japanese university students (76.1% female; $M_{age} = 22.24$, $SD = 1.01$). Supplementary Table S1 presents the participants' demographic information. All students had job offers and were supposed to start working immediately in April after their graduation in March 2022.

To calculate the necessary sample size for the main analysis, GPower (Erdfelder et al., 1996) was employed. Regarding the multiple regression analyses conducted for the relationships among personality traits, cultural self-construal, and SWB, this study estimated the sample size required by assumptions of power = 0.80, alpha level of 0.05, and the ability to detect a small effect size (Cohen's $f^2 = 0.02$) with 19 explanatory variables (i.e., 5 personality traits, 2 cultural self-construal, 10 interaction effects, and 2 covariates). The results yielded an estimate of 1043. Thus, the sample size was sufficient to detect statistical effects in the main analysis.

An online research company (MACROMILL Inc., https://group.macromill.com) was used to collect data for the UWTRP. The company periodically recruits people to participate in surveys and they are required to provide information on their age, gender, family member status, household income status, and residential area. The company contacted the registrants with an outline of the survey and requested for their informed consent. Registrants were informed of the study's purpose and their rights regarding withdrawal of their responses, along with the commitment to maintain the anonymity and confidentiality regarding their information. Registrants who agreed to participate in the survey were sent the survey form's URL. Of the 276,264 registrants (those who fit the criteria) requested to participate in the survey, 2516 consented, and 1548 responded. There were no missing values because respondents were required to answer all items. Participants who completed the survey were compensated with 50 JPY (approximately 0.4 USD in January 2022). This study was approved by the formal Institutional Ethical Review Board of Osaka Prefecture University.

### Measures

#### Personality traits

Personality traits were assessed using the Big Five Inventory-2's short version (Soto & John, 2017; for the Japanese version, visit https://situationslab.squarespace.com/big-five-inventory-2). The Big Five personality traits, neuroticism (e.g., "Worries a lot"), extraversion (e.g., "Is full of energy"), openness (e.g., "Is fascinated by art, music, or literature"), agreeableness (e.g., "Assumes the best about people"), and conscientiousness (e.g., "Is reliable, can always be counted on"), were evaluated using 30 items for each subscale on a five-point Likert scale ranging from 1 (completely untrue) to 5 (completely true). Five items were assessed for each trait. Cronbach's alpha for neuroticism, extraversion, openness, agreeableness, and conscientiousness were 0.78, 0.72, 0.65, 0.73, and 0.65, respectively.

#### Independent and interdependent self-construal

The Independence and Interdependence Scale (Uchida & Kitayama, 2004) was used to assess independent and interdependent self-construal. This scale comprises of 20 items with responses ranging from 1 (does not describe me at all) to 5 (describes me very much). Independence (e.g., "I always try to have my own opinions") and interdependence (e.g., "I think it is important to keep good relations among one's acquaintances") were assessed using 10 items each. Emerging adults with high independent self-construal have a clear sense of identity that represents individual independence, whereas those with high interdependent self-construal have a confused sense of identity in Japan (Sugimura et al., 2016). The validity of this scale is confirmed by the fact that independent self-construal is positively associated with identity and interdependent self-construal is negatively associated with identity (Sugimura et al., 2016). Additionally, a confirmatory factor analysis was conducted to confirm the validity of the factor structure of this scale, and the item parceling approach was used to construct the latent factor. Parceling is recommended in situations in which the scale has more than five items for each construct and the sample size is large (Bagozzi & Heatherton, 1994). Using a large number of indicators in a confirmatory factor analysis often results in numerous

correlated residuals, which decreases both the fit of the model and the utility of the latent variable in capturing the construct of interest (Marsh et al., 1998). Thus, parcels of items were constructed in a random fashion and used as indicators of the latent variables. Specifically, four parcels (i.e., combining three or two items) were loaded on each self-construal factor. For optimal model fit, comparative fit index (CFI) values higher than 0.90 were considered acceptable; root mean square error of approximation (RMSEA) values less than 0.08 indicated a reasonable fit (Kline, 2015). The CFA results met the criteria (S-B$\chi^2$ = 182.198; CFI = 0.926. RMSEA = 0.074 [90% confidence interval was 0.065–0.085]) and confirmed the validity of the factor structure of this scale. Cronbach's alphas for independence and interdependent self-construal were 0.72 and 0.78, respectively.

### Life satisfaction

Life satisfaction was evaluated using the Satisfaction with Life Scale (Diener et al., 1985; for the Japanese version, visit https://eddiener.com/scales/7). The scale comprises of five items scored on a five-point Likert scale ranging from 1 (*completely untrue*) to 5 (*completely* true). A sample item is, "In most ways, my life is close to my ideal." The value of Cronbach's alpha was 0.82.

### Subjective happiness

Subjective happiness was assessed using the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999; for the Japanese version, see Shimai et al., 2004). The scale includes four items rated on a five-point Likert scale ranging from 1 (*completely untrue*) to 5 (*completely true*). A sample item is, "Compared with most of my peers, I consider myself happy" and the value of Cronbach's alpha was 0.71.

### Interdependent happiness

Interdependent happiness was assessed using the Interdependent Happiness Scale (Hitokoto & Uchida, 2015). This scale comprises of four items rated on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A sample item is, "I believe that I and those around me are happy." The Cronbach's alpha value was 0.87.

### Analytic Plan

This study calculated each subscale score by averaging the item scores included in a specific subscale. To check the descriptive statistics of all the variables, the means and SDs were calculated. Furthermore, to examine the simple associations, the correlation coefficients among the variables were calculated. This study standardized the three aspects of SWB (dependent variables), Big Five (independent variables), and two cultural self-construal scores (moderating variables) into $z$-scores (*Mean* = 0, *SD* = 1) using their means and SDs. To verify the hypotheses, a series of hierarchical multiple regression analyses were conducted, in which each aspect of the SWB score was predicted by the control variables (Model 1), the Big Five and cultural self-construal (Model 2), and their interaction terms (Model 3). If the interaction terms were statistically significant in Model 3, a simple slope analysis (at ±1 SD and ±2 SD) and the Johnson–Neyman test for regions of significance to probe the significant interaction were conducted. The interaction terms were calculated as the product of each Big Five and cultural self-construal score. In these multiple regression analyses, age and gender were adjusted. To minimize the likelihood of Type I error resulting from multiple tests of a single-study hypothesis, the significance level was set to 1%. All statistical analyses were conducted using R ver. 4.2.1 and the interactions package (Long, 2019).

## Results

### Descriptive Statistics

Table 1 presents the descriptive statistics and correlations among the variables. Neuroticism was significantly and negatively related to life satisfaction, happiness, and interdependent happiness (*rs* ranged from −0.48 to −0.47; $p < 0.001$). The other four personality traits were positively and significantly associated with life satisfaction, happiness, and interdependent happiness (*rs* ranged from 0.10 to 0.33; $p < 0.001$).

### Relations between Personality Traits and SWB

In the series of hierarchical multiple regression analyses, Model 2 shows the associations between the Big Five and SWB after controlling for the participants' age, gender, and cultural self-construal (Tables 2–4). Consistent with Hypotheses 1 and 2, neuroticism and extraversion were significantly related to the three SWB indicators (life satisfaction, happiness, and interdependent happiness) in a negative and positive direction, respectively. Agreeableness was positively and significantly related to interdependent happiness, which is consistent with Hypothesis 3. Additionally, agreeableness was also positively and significantly related to happiness. Consistent with Hypotheses 4 and 5, both independent and interdependent self-construal were positively and significantly related to the three SWBs. The detailed partial regression coefficients are presented in Tables 2–4.

**Table 1** Descriptive statistics

| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Neuroticism | $-0.30^{***}$ [$-0.20$–$-0.14$] | $-0.08^{**}$ [$-0.07$–$-0.02$] | $-0.36^{***}$ [$-0.21$–$-0.17$] | $-0.40^{***}$ [$-0.23$–$-0.16$] | $-0.47^{***}$ [$-0.48$–$-0.38$] | $-0.48^{***}$ [$-0.48$–$-0.38$] | $-0.48^{***}$ [$-0.44$–$-0.35$] | $-0.27^{***}$ [$-0.15$–$-0.10$] | $-0.04$ [$-0.04$–$0.00$] | 2.91 | 0.80 |
| 2. Extraversion | — | $0.20^{***}$ [0.07–0.12] | $0.18^{***}$ [0.06–0.11] | $0.25^{***}$ [0.09–0.14] | $0.30^{***}$ [0.21–0.30] | $0.28^{***}$ [0.19–0.27] | $0.24^{***}$ [0.14–0.22] | $0.27^{***}$ [0.09–0.14] | $-0.08^{**}$ [$-0.06$–$-0.01$] | 2.83 | 0.73 |
| 3. Openness | | — | $0.19^{***}$ [0.06–0.11] | $0.14^{***}$ [0.04–0.08] | $0.10^{***}$ [0.04–0.12] | $0.16^{***}$ [0.04–0.12] | $0.11^{***}$ [0.05–0.12] | $0.29^{***}$ [0.10–0.14] | $-0.02$ [$-0.03$–0.07] | 3.07 | 0.69 |
| 4. Agreeableness | | | — | $0.48^{***}$ [0.17–0.22] | $0.21^{***}$ [0.04–0.12] | $0.33^{***}$ [0.20–0.28] | $0.25^{***}$ [0.21–0.29] | $0.17^{***}$ [0.05–0.09] | $0.31^{***}$ [0.10–0.14] | 3.62 | 0.65 |
| 5. Conscientiousness | | | | — | $0.28^{***}$ [0.17–0.25] | $0.27^{***}$ [0.15–0.22] | $0.30^{***}$ [0.16–0.23] | $0.23^{***}$ [0.07–0.10] | $0.09^{**}$ [0.01–0.05] | 3.27 | 0.63 |
| 6. Life satisfaction | | | | | — | $0.71^{***}$ [0.86–1.02] | $0.76^{***}$ [0.86–1.01] | $0.42^{***}$ [0.37–0.46] | $0.23^{***}$ [0.13–0.20] | 4.16 | 1.18 |
| 7. Happiness | | | | | | — | $0.77^{***}$ [0.82–0.97] | $0.42^{***}$ [0.24–0.31] | $0.30^{***}$ [0.17–0.24] | 3.97 | 1.12 |
| 8. Interdependent happiness | | | | | | | — | $0.45^{***}$ [0.24–0.31] | $0.41^{***}$ [0.22–0.29] | 4.50 | 1.04 |
| 9. Independent self-construal | | | | | | | | — | $0.20^{***}$ [0.05–0.09] | 3.27 | 0.58 |
| 10. Interdependent self-construal | | | | | | | | | — | 3.50 | 0.60 |

$^{**}p < 0.01$; $^{***}p < 0.001$

**Table 2** Results of hierarchical multiple regression analysis predicting life satisfaction

| Independent variables | Model 1 | | | | Model 2 | | | | Model 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | B SE | 99% CI | p | B | B SE | 99%CI | p | B | B SE | 99% CI | p |
| Intercept | 0.014 | 0.052 | [−0.121, 0.149] | 0.788 | 0.014 | 0.043 | [−0.097, 0.125] | 0.746 | 0.035 | 0.044 | [−0.078, 0.149] | 0.423 |
| Controls | | | | | | | | | | | | |
| Age | −0.002 | 0.026 | [−0.067, 0.064] | 0.951 | −0.018 | 0.021 | [−0.072, 0.035] | 0.380 | −0.020 | 0.021 | [−0.073, 0.033] | 0.322 |
| Gender | −0.018 | 0.060 | [−0.174, 0.137] | 0.759 | −0.018 | 0.050 | [−0.147, 0.110] | 0.712 | −0.024 | 0.050 | [−0.152, 0.104] | 0.634 |
| Big Five personality | | | | | | | | | | | | |
| NEU | | | | | −0.316 | 0.024 | [−0.378, −0.254] | <0.001 | −0.302 | 0.024 | [−0.364, −0.240] | <0.001 |
| EXT | | | | | 0.142 | 0.023 | [0.083, 0.200] | <0.001 | 0.142 | 0.023 | [0.083, 0.200] | <0.001 |
| OPE | | | | | −0.043 | 0.022 | [−0.100, 0.014] | 0.052 | −0.029 | 0.022 | [−0.086, 0.028] | 0.194 |
| AGR | | | | | 0.038 | 0.026 | [−0.028, 0.104] | 0.141 | 0.038 | 0.026 | [−0.029, 0.104] | 0.146 |
| CON | | | | | 0.028 | 0.025 | [−0.036, 0.092] | 0.254 | 0.029 | 0.025 | [−0.035, 0.092] | 0.248 |
| Cultural self–construal | | | | | | | | | | | | |
| IND | | | | | 0.259 | 0.023 | [0.199, 0.319] | <0.001 | 0.243 | 0.024 | [0.182, 0.304] | <0.001 |
| INT | | | | | 0.167 | 0.023 | [0.109, 0.225] | <0.001 | 0.171 | 0.023 | [0.112, 0.231] | <0.001 |
| Interaction terms | | | | | | | | | | | | |
| NEU×IND | | | | | | | | | −0.005 | 0.022 | [−0.062, 0.052] | 0.827 |
| NEU×INT | | | | | | | | | −0.120 | 0.022 | [−0.177, −0.063] | <0.001 |
| EXT×IND | | | | | | | | | 0.025 | 0.022 | [−0.032, 0.083] | 0.254 |
| EXT×INT | | | | | | | | | 0.016 | 0.022 | [−0.042, 0.074] | 0.474 |
| OPE×IND | | | | | | | | | −0.033 | 0.020 | [−0.085, 0.018] | 0.096 |
| OPE×INT | | | | | | | | | −0.016 | 0.022 | [−0.073, 0.041] | 0.463 |
| AGR×IND | | | | | | | | | −0.033 | 0.022 | [−0.091, 0.024] | 0.139 |
| AGR×INT | | | | | | | | | −0.028 | 0.022 | [−0.084, 0.029] | 0.205 |
| CON×IND | | | | | | | | | −0.021 | 0.023 | [−0.079, 0.037] | 0.360 |
| CON×INT | | | | | | | | | −0.004 | 0.023 | [−0.064, 0.056] | 0.853 |
| $R^2$ | 0.0001 | 0.0004 | [−0.001, 0.001] | 0.953 | 0.347 | 0.019 | [0.297, 0.397] | <0.001 | 0.366 | 0.019 | [0.316, 0.415] | <0.001 |

Gender is coded: Men = 0; Women = 1

*NEU* Neuroticism, *EXT* Extraversion, *OPE* Openness, *AGR* Agreeableness, *CON* Conscientiousness, *IND* Independence, *INT* Interdependence

**Table 3** Results of hierarchical multiple regression analysis predicting happiness

| Independent variables | Model 1 | | | | Model 2 | | | | Model 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | B SE | 99% CI | p | B | B SE | 99% CI | p | B | B SE | 99% CI | p |
| Intercept | -0.122 | 0.052 | [-0.257, 0.013] | 0.020 | -0.101 | 0.041 | [-0.208, 0.006] | 0.015 | -0.118 | 0.042 | [-0.227, -0.010] | 0.005 |
| Controls | | | | | | | | | | | | |
| Age | -0.010 | 0.026 | [-0.075, 0.056] | 0.703 | -0.027 | 0.020 | [-0.079, 0.024] | 0.170 | -0.028 | 0.020 | [-0.078, 0.023] | 0.159 |
| Gender | 0.160 | 0.060 | [0.005, 0.315] | 0.008 | 0.133 | 0.048 | [0.009, 0.256] | 0.006 | 0.140 | 0.048 | [0.017, 0.262] | 0.003 |
| Big Five personality | | | | | | | | | | | | |
| NEU | | | | | -0.360 | 0.023 | [-0.420, -0.301] | <0.001 | -0.342 | 0.023 | [-0.402, -0.283] | <0.001 |
| EXT | | | | | 0.119 | 0.022 | [0.063, 0.175] | <0.001 | 0.118 | 0.022 | [0.061, 0.174] | <0.001 |
| OPE | | | | | 0.020 | 0.021 | [-0.035, 0.074] | 0.347 | 0.027 | 0.021 | [-0.028, 0.082] | 0.205 |
| AGR | | | | | 0.070 | 0.025 | [0.006, 0.134] | 0.005 | 0.075 | 0.025 | [0.011, 0.139] | 0.002 |
| CON | | | | | -0.021 | 0.024 | [-0.083, 0.040] | 0.371 | -0.027 | 0.024 | [-0.088, 0.034] | 0.249 |
| Cultural self–construal | | | | | | | | | | | | |
| IND | | | | | 0.235 | 0.022 | [0.178, 0.293] | <0.001 | 0.220 | 0.023 | [0.161, 0.278] | <0.001 |
| INT | | | | | 0.223 | 0.022 | [0.168, 0.279] | <0.001 | 0.236 | 0.022 | [0.180, 0.293] | <0.001 |
| Interaction terms | | | | | | | | | | | | |
| NEU×IND | | | | | | | | | -0.021 | 0.021 | [-0.076, 0.033] | 0.316 |
| NEU×INT | | | | | | | | | -0.072 | 0.021 | [-0.127, -0.017] | <0.001 |
| EXT×IND | | | | | | | | | -0.007 | 0.021 | [-0.062, 0.048] | 0.737 |
| EXT×INT | | | | | | | | | 0.062 | 0.021 | [0.007, 0.118] | 0.004 |
| OPE×IND | | | | | | | | | -0.001 | 0.019 | [-0.051, 0.048] | 0.940 |
| OPE×INT | | | | | | | | | -0.023 | 0.021 | [-0.077, 0.031] | 0.274 |
| AGR×IND | | | | | | | | | -0.030 | 0.021 | [-0.085, 0.025] | 0.164 |
| AGR×INT | | | | | | | | | 0.040 | 0.021 | [-0.014, 0.094] | 0.057 |
| CON×IND | | | | | | | | | 0.008 | 0.022 | [-0.048, 0.063] | 0.722 |
| CON×INT | | | | | | | | | 0.027 | 0.022 | [-0.031, 0.084] | 0.233 |
| $R^2$ | 0.005 | 0.004 | [-0.004, 0.014] | 0.021 | 0.399 | 0.019 | [0.350, 0.449] | <0.001 | 0.420 | 0.019 | [0.371, 0.468] | <0.001 |

Gender is coded: Men = 0; Women = 1

NEU Neuroticism, EXT Extraversion, OPE Openness, AGR Agreeableness, CON Conscientiousness, IND Independence, INT Interdependence

**Table 4** Results of hierarchical multiple regression analysis predicting interdependent happiness

| Independent variables | Model 1 | | | | Model 2 | | | | Model 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | B SE | 99% CI | $p$ | B | B SE | 99% CI | $p$ | B | B SE | 99% CI | $p$ |
| Intercept | −0.046 | 0.052 | [−0.100, 0.102] | 0.378 | 0.001 | 0.039 | [−0.100, 0.102] | 0.981 | 0.009 | 0.040 | [−0.093, 0.111] | 0.816 |
| Controls | | | | | | | | | | | | |
| Age | −0.030 | 0.026 | [−0.092, 0.005] | 0.246 | −0.044 | 0.019 | [−0.092, 0.005] | 0.020 | −0.046 | 0.019 | [−0.093, 0.002] | 0.014 |
| Gender | 0.061 | 0.060 | [−0.117, 0.115] | 0.314 | −0.001 | 0.045 | [−0.117, 0.115] | 0.978 | −0.006 | 0.045 | [−0.121, 0.110] | 0.902 |
| Big Five personality | | | | | | | | | | | | |
| NEU | | | | | −0.332 | 0.022 | [−0.388, −0.276] | <0.001 | −0.322 | 0.022 | [−0.378, −0.266] | <0.001 |
| EXT | | | | | 0.078 | 0.020 | [0.025, 0.131] | <0.001 | 0.080 | 0.021 | [0.027, 0.132] | <0.001 |
| OPE | | | | | −0.032 | 0.020 | [−0.083, 0.020] | 0.111 | −0.020 | 0.020 | [−0.072, 0.031] | 0.314 |
| AGR | | | | | 0.087 | 0.023 | [0.028, 0.147] | <0.001 | 0.096 | 0.023 | [0.035, 0.156] | <0.001 |
| CON | | | | | 0.019 | 0.022 | [−0.039, 0.076] | 0.402 | 0.013 | 0.022 | [−0.044, 0.071] | 0.553 |
| Cultural self–construal | | | | | | | | | | | | |
| IND | | | | | 0.272 | 0.021 | [0.217, 0.326] | <0.001 | 0.258 | 0.021 | [0.203, 0.313] | <0.001 |
| INT | | | | | 0.321 | 0.020 | [0.268, 0.373] | <0.001 | 0.323 | 0.021 | [0.270, 0.377] | <0.001 |
| Interaction terms | | | | | | | | | | | | |
| NEU × IND | | | | | | | | | 0.010 | 0.020 | [−0.041, 0.062] | 0.602 |
| NEU × INT | | | | | | | | | −0.080 | 0.020 | [−0.131, −0.028] | <0.001 |
| EXT × IND | | | | | | | | | 0.025 | 0.020 | [−0.026, 0.077] | 0.210 |
| EXT × INT | | | | | | | | | 0.032 | 0.020 | [−0.020, 0.084] | 0.111 |
| OPE × IND | | | | | | | | | −0.014 | 0.018 | [−0.061, 0.032] | 0.427 |
| OPE × INT | | | | | | | | | −0.031 | 0.020 | [−0.082, 0.021] | 0.124 |
| AGR × IND | | | | | | | | | −0.058 | 0.020 | [−0.110, −0.006] | 0.004 |
| AGR × INT | | | | | | | | | 0.015 | 0.020 | [−0.036, 0.065] | 0.463 |
| CON × IND | | | | | | | | | −0.006 | 0.020 | [−0.058, 0.047] | 0.786 |
| CON × INT | | | | | | | | | 0.020 | 0.021 | [−0.034, 0.074] | 0.350 |
| $R^2$ | 0.002 | 0.002 | [−0.004, 0.007] | 0.254 | 0.468 | 0.018 | [0.421, 0.515] | <0.001 | 0.485 | 0.018 | [0.438, 0.531] | <0.001 |

Gender is coded: Men = 0; Women = 1

*NEU* Neuroticism, *EXT* Extraversion, *OPE* Openness, *AGR* Agreeableness, *CON* Conscientiousness, *IND* Independence, *INT* Interdependence

**Table 5** Results of simple slope analysis in the interaction between neuroticism and interdependence predicting life satisfaction

| Levels of interdependence | B | B SE | 95% CI | p |
|---|---|---|---|---|
| Lowest (−2SD) | −0.062 | 0.053 | [−0.198, 0.074] | 0.242 |
| Low (−1SD) | −0.182 | 0.035 | [−0.271, −0.093] | <0.001 |
| Mean | −0.302 | 0.024 | [−0.364, −0.240] | <0.001 |
| High (+1SD) | −0.422 | 0.031 | [−0.502, −0.342] | <0.001 |
| Highest (+2SD) | −0.542 | 0.048 | [−0.666, −0.418] | <0.001 |
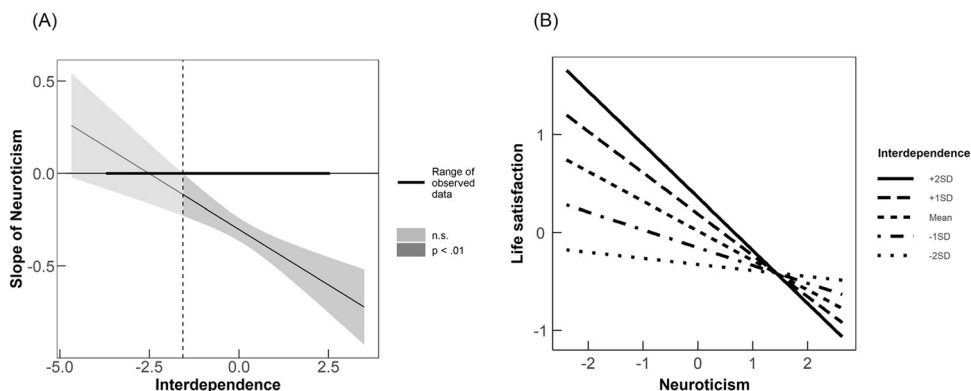


Fig. 1 Region of significance and confidence band for the two-way interaction between neuroticism and interdependent self-construal predicting life satisfaction (**A**) and the plot of the simple slope analysis for interdependent selfconstrual (**B**). Notes for (**A**). Bold line on the horizontal axis denotes the range of the observed interdependence score. The downward-sloping line illustrates the estimates of the neuroticism simple slope. The gray area represents 95% confidence intervals for the estimates. Dashed line represents the threshold of the region of significancee

**Table 6** Results of simple slope analysis in the interaction between neuroticism and interdependence predicting happiness

| Levels of interdependence | B | B SE | 95% CI | p |
|---|---|---|---|---|
| Lowest (−2SD) | −0.199 | 0.051 | [−0.329, −0.069] | <0.001 |
| Low (−1SD) | −0.271 | 0.033 | [−0.356, −0.186] | <0.001 |
| Mean | −0.343 | 0.023 | [−0.402, −0.283] | <0.001 |
| High (+1SD) | −0.414 | 0.030 | [−0.491, −0.338] | <0.001 |
| Highest (+2SD) | −0.486 | 0.046 | [−0.605, −0.367] | <0.001 |

**Table 7** Results of simple slope analysis in the interaction between neuroticism and interdependence predicting interdependent happiness

| Levels of interdependence | B | B SE | 95% CI | p |
|---|---|---|---|---|
| Lowest (−2SD) | −0.163 | 0.048 | [−0.285, −0.040] | 0.001 |
| Low (−1SD) | −0.243 | 0.031 | [−0.323, −0.162] | <0.001 |
| Mean | −0.322 | 0.022 | [−0.378, −0.266] | <0.001 |
| High (+1SD) | −0.402 | 0.028 | [−0.474, −0.330] | <0.001 |
| Highest (+2SD) | −0.482 | 0.044 | [−0.594, −0.370] | <0.001 |

## Interaction Effects between the Big Five and Independent and Interdependent Self-Construal

The interaction term between neuroticism and interdependence was negatively and significantly related to all three aspects of SWB in the moderated multiple regression model (Model 3). A simple slope analysis showed that neuroticism was more strongly associated with life satisfaction in people with high interdependence self-construal ($B = -0.542$ at $+2$ SD from the mean; $B = -0.4221$ at $+1$ SD from the mean, see Table 5 and Fig. 1B). Similar interaction patterns of neuroticism with happiness and interdependent happiness in simple slope analyses were observed (see Tables 6 and 7 and Figs. 2B and 3B). Then, the Johnson–Neyman test for regions of significance revealed that the simple slopes of neuroticism's effect on the three SWBs were statistically
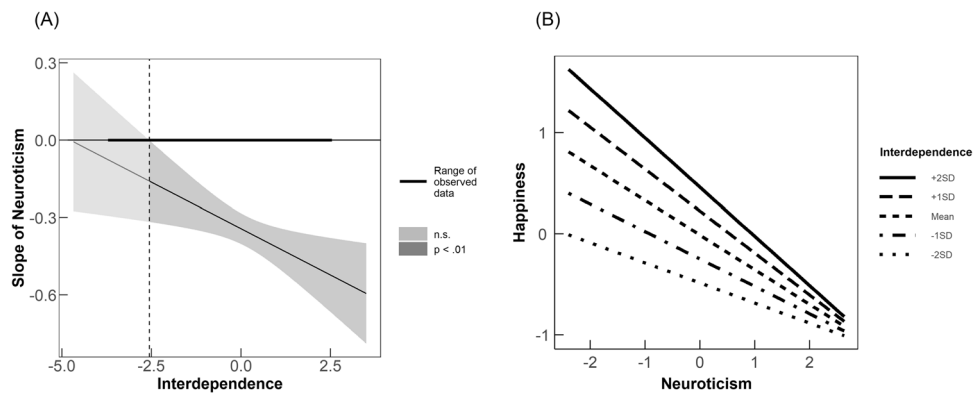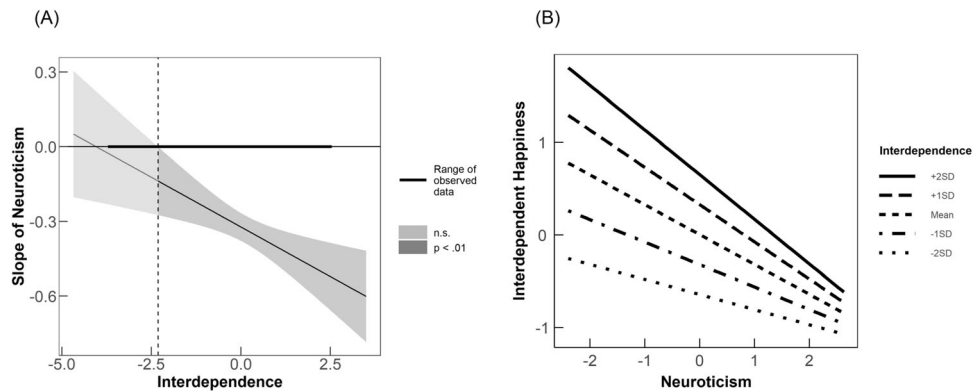
(A)



(B)



**Fig. 2** Region of significance and confidence band for the two-way interaction between neuroticism and interdependent self-construal predicting subjective happiness (**A**) and the plot of the simple slope analysis for interdependent self-construal (**B**). Notes for (**A**). Bold line on the horizontal axis denotes the range of the observed interdependence score. The downward-sloping line illustrates the estimates of the neuroticism simple slope. The gray area represents 95% confidence intervals for the estimates. Dashed line represents the threshold of the region of significance.

(A)



(B)



**Fig. 3** Region of significance and confidence band for the two-way interaction between neuroticism and interdependent self-construal predicting interdependent happiness (**A**) and the plot of the simple slope analysis for interdependent self-construal (**B**). Notes for (**A**). Bold line on the horizontal axis denotes the range of the observed interdependence score. The downward-sloping line illustrates the estimates of the neuroticism simple slope. The gray area represents 95% confidence intervals for the estimates. Dashed line represents the threshold of the region of significance

significant in individuals with interdependent self-construal scores that were over −1.56, −2.56, and −2.32 for life satisfaction, subjective happiness, and interdependent happiness, respectively (see Figs. 1A, 2A, and 3A). The negative associations between neuroticism and all three aspects of SWB seem to be enhanced by higher interdependent self-construal levels. Thus, Hypothesis 6 was not supported but Hypothesis 7 was supported.

The interaction term between extraversion and interdependence was positively and significantly related to subjective happiness. A simple slope analysis revealed that extraversion was more strongly associated with happiness in people with high interdependence self-construal ($B = 0.243$ at +2SD from the mean; $B = 0.180$ at +1SD from the mean, see Table 8 and Fig. 4B). The Johnson–Neyman test revealed that the simple slope of extraversion on subjective happiness was statistically

**Table 8** Results of simple slope analysis in the interaction between extraversion and interdependence predicting happiness

| Levels of interdependence | B | B SE | 95% CI | p |
|---|---|---|---|---|
| Lowest (−2SD) | −0.007 | 0.050 | [−0.137, 0.123] | 0.885 |
| Low (−1SD) | 0.055 | 0.032 | [−0.028, 0.139] | 0.089 |
| Mean | 0.118 | 0.022 | [0.062, 0.174] | <0.001 |
| High (+1SD) | 0.180 | 0.029 | [0.107, 0.254] | <0.001 |
| Highest (+2SD) | 0.243 | 0.046 | [0.125, 0.360] | <0.001 |

significant in individuals with interdependent self-construal scores over −0.72. This indicates that the positive association between extraversion and subjective happiness may be strengthened by a higher interdependent self-construal level. These results did not support Hypotheses 8 and 9.
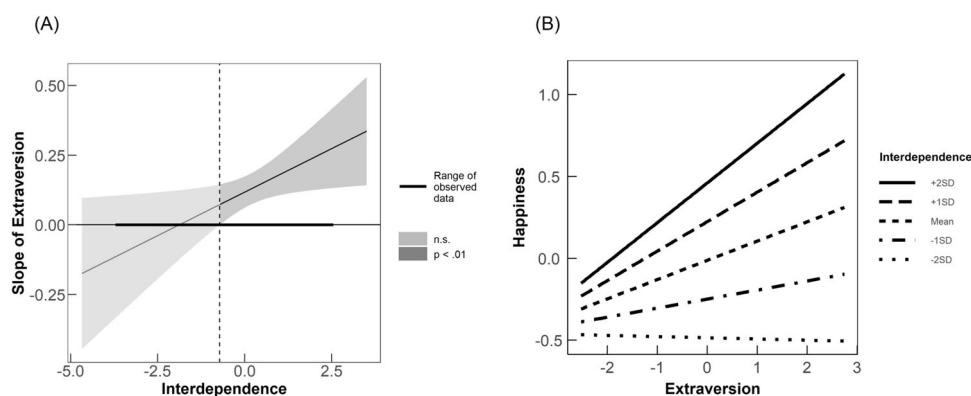
(A)



(B)



**Fig. 4** Region of significance and confidence band for the two-way interaction between extraversion and interdependent self-construal predicting subjective happiness (**A**) and the plot of the simple slope analysis for interdependent selfconstrual (**B**). Notes for (**A**). Bold line on the horizontal axis denotes the range of the observed

interdependence score. The downward-sloping line illustrates the estimates of the extraversion simple slope. The gray area represents 95% confidence intervals for the estimates. Dashed line represents the threshold of the region of significance

**Table 9** Results of simple slope analysis in the interaction between agreeableness and independence predicting interdependent happiness

| Levels of independence | B | B SE | 95% CI | p |
|---|---|---|---|---|
| Lowest (−2SD) | 0.212 | 0.049 | [0.087, 0.337] | <0.001 |
| Low (−1SD) | 0.154 | 0.032 | [0.071, 0.237] | <0.001 |
| Mean | 0.096 | 0.023 | [0.036, 0.156] | <0.001 |
| High (+1SD) | 0.037 | 0.029 | [−0.038, 0.112] | 0.201 |
| Highest (+2SD) | −0.021 | 0.044 | [−0.135, 0.093] | 0.636 |

Regarding independent self-construal, the interaction with agreeableness was negatively and significantly related to interdependent happiness. A simple slope analysis showed that agreeableness was more strongly associated with interdependent happiness in people with low independence self-construal ($B = 0.212$ at $-2SD$ from the mean; $B = 0.154$ at $-1SD$ from the mean, see Table 9 and Fig. 5B). The Johnson–Neyman test showed that the simple slope of agreeableness on interdependent happiness was statistically significant in individuals with independent self-construal score less than 0.55. This indicates that a positive association between agreeableness and interdependent happiness can be weakened by a higher independent self-construal level. These results supported Hypothesis 10, but not 11.

## Discussion

Emerging adults experience SWB by exhibiting their personality traits and through their self-construal. In addition, they experience SWB by balancing their traits with their self-construal. Specifically, university students who have received job offers in Japan are at the beginning of the

school-to-work transition. While several studies have examined the relationships among personality traits and self-construal and SWB in emerging adulthood, few studies have focused on relational well-being (i.e., interdependent happiness). Furthermore, the complex associations of personality traits and self-construal with SWB have not been examined. Therefore, this study clarified the relationships between emerging adults' five personality traits and three SWBs based on the moderating effects of independent and interdependent self-construal.

## Personality Traits, Self-construal, and SWB in Japanese Emerging Adults

As expected, neuroticism among emerging adults was negatively associated with all aspects of SWB, supporting Hypothesis 1. Extraversion was positively associated with all aspects of SWB, supporting Hypothesis 2. These findings supported previous studies conducted in Hong Kong and the United States (Lun & Yeung, 2019), suggesting that neurotic emerging adults are at risk for low SWB; conversely, extraverted emerging adults are psychologically healthy with high SWB in Japan. Furthermore, this study provides the evidence that agreeableness is positively associated with subjective and interdependent happiness, thus supporting Hypothesis 3. This finding suggests that neuroticism and extraversion, as well as agreeableness, are crucial traits contributing to emerging adults' SWB. Openness and conscientiousness were not associated with any aspects of SWB. These results support previous findings (for a meta-analysis, see Anglim et al., 2020), suggesting that attitudes of openness to experience and diligence in dealing with challenges may not be related to a sense of personal and relational well-being.
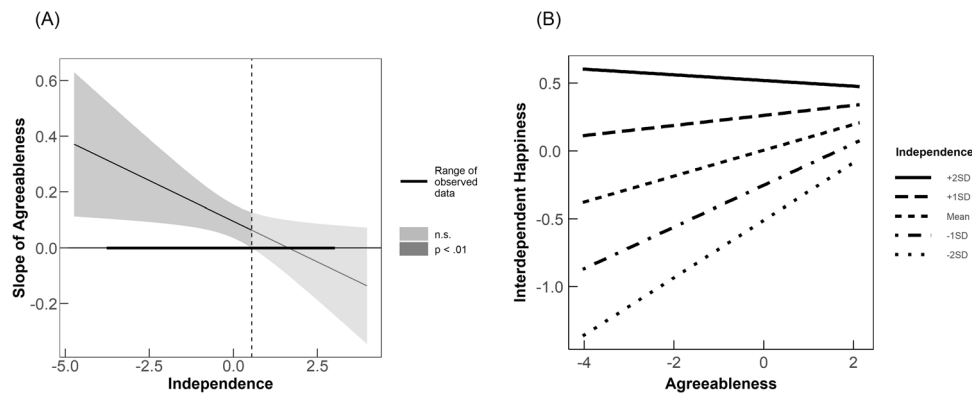
Fig. 5 Region of significance and confidence band for the two-way interaction between agreeableness and independent self-construal predicting interdependent happiness (**A**) and the plot of the simple slope analysis for independent self-construal (**B**). Notes for (**A**). Bold line on the horizontal axis denotes the range of the observed

independence score. The downward-sloping line illustrates the estimates of the agreeableness simple slope. The gray area represents 95% confidence intervals for the estimates. Dashed line represents the threshold of the region of significance

Both independent and interdependent self-construal were positively associated with all SWBs, supporting Hypotheses 4 and 5. These findings suggest that a self-construal that emphasizes emerging adults' assertiveness is associated with personal happiness (Germani et al., 2021), and a self-construal that emphasizes cooperation with others is associated with relational happiness (Hitokoto & Uchida, 2015). Interestingly, an independent self-construal was positively associated with interdependent well-being, and an interdependent self-construal was positively associated with life satisfaction and well-being. In Japan, where both independent and interdependent self-construal are emphasized (Sugimura, 2020), both types of self-construal may be salient individual differences leading to SWB. These findings suggest that the relationship between self-construal and SWB may not necessarily correspond to independent self-construal and personal well-being, and interdependent self-construal and relational well-being.

## Moderating Role of Independent and Interdependent Self-Construal

The interaction between neuroticism and independent self-construal was not associated with SWB; however, the interaction between neuroticism and interdependent self-construal was negatively associated with all aspects of SWB. These results do not support Hypothesis 6, but support Hypothesis 7. Neuroticism represents hypersensitivity to one's environment and emotional instability (Soto & John, 2017). Interdependent self-construal may further enhance this tendency, thereby inhibiting the development of favorable relationships with others. Consequently, all aspects of SWB decreased. These findings suggest that adding interdependent self-construal to neuroticism may decrease both self-satisfaction and relational well-being.

Regarding extraversion's moderating effects, the high level of interaction with interdependent self-construal leads to high subjective happiness. This finding did not support Hypotheses 8 and 9. It was hypothesized that extraversion's effect on SWB would be enhanced by independent self-construal and suppressed by interdependent self-construal. Extraversion comprises several aspects, such as activity and positive effect on others and one's environment and sociability (Saucier, 1998). The results pertaining to opposite tendencies, albeit partial, may indicate that in the relationship with SWB, extraversion may be more strongly characterized by an attempt to establish socially desirable relationships than by the individual assertiveness trait. Consequently, the interaction between extraversion and an interdependent view of the self may have been linked to the positive emotional aspects of SWB (i.e., happiness).

Regarding agreeableness' moderating effects, only the independent self-construal interaction was associated with its lower interdependent well-being, thus supporting Hypothesis 10 but not Hypothesis 11. The agreeableness reflects concern for one's surroundings and an emphasis on relationships; however, adding independent self-construal may lead to a tendency to emphasize individual assertiveness. These differences lead individuals to experience conflicts in their relationships with others, which decrease their sense of interdependent happiness. Meanwhile, agreeableness and interdependent self-construal did not show additive effects on interdependent happiness. These findings suggest that a tendency to be overly concerned about cooperating with one's environment may suppress relational well-being.

Overall, this study demonstrated that SWB is high or low when an emerging adult's personality traits (i.e., neuroticism, extraversion, and agreeableness) are combined with independent and interdependent self-construal. These

findings contribute to the understanding of low SWB in emerging adulthood. That is, some emerging adults may believe that they need to be cooperative in their relationships with friends and colleagues (i.e., interdependent self-construal) despite being emotionally unstable (i.e., neuroticism), and this conflict may play a role in their low SWB. Cooperative emerging adults may also have a conflict between having to be cooperative with friends (i.e., agreeableness) and needing to emphasize their personal uniqueness (i.e., independent self-construal), which may lead to poor relationships with friends and colleagues and lower relational well-being. On the other hand, emerging adults who enjoy socializing with friends and have a strong sense of well-being are more likely to have a strong idea of the importance of personal assertiveness (i.e., independent self-construal). These findings suggest that the relationship between individual differences and SWB is not solely a function of personality traits affecting relationships with others and consequently leading to SWB, but that individual norms (self-construal) pertaining to the exhibited traits may play an important role in the group in emerging adulthood.

Specifically, these findings may reflect a feature that is unique to Japan, a country once considered to have strong interdependent self-construal. However, in recent years, it has been suggested that Japan may be a country where individual assertiveness and relationships with others are emphasized, and the two may be mixed (Sugimura, 2020). Specifically, Japanese emerging adults experience more identity confusion and less life satisfaction than adolescents do (Hatano et al., 2022). In this period of struggle, emphasizing relationships with others may conflict with emerging adults' assertiveness or cooperativeness and lead to higher or lower SWB. These findings may indicate unique associations among personality traits, individual-level self-construal, and SWB, including a mixture of independent and interdependent self-construal in Japanese emerging adults.

### Limitations and Future Research

This study has some limitations. First, it uses cross-sectional data. In the future, longitudinal studies will be essential to determine how personality traits combine with and are related to SWB as emerging adults obtain jobs, internalize social norms in the workplace, and change their self-construal. Second, as only Japanese emerging adults were included in this study, its findings may be reflective of unique Japanese characteristics rather than general personality traits, cultural self-construal, and SWB associations. In future research, data must be collected from countries with different cultures (e.g., USA) to examine this study's replicability regarding independent and interdependent self-construal's moderating effects on the relationship between

personality traits and SWB. Third, this study included only university students. However, including individuals at different developmental stages (e.g., adolescence) will be necessary to clarify whether independent and interdependent self-construal's moderating effects identified in this study are specific to emerging adulthood only. Fourth, the study measures all variables using self-reported instruments. Therefore, future studies should examine whether this study's findings can be replicated using other rating methods, to avoid social desirability and false reporting. Fifth, internal consistencies were low (below 0.07) for openness and industriousness. Future studies should examine whether this study's results can be reproduced using different scales (e.g., NEO Five-Factor Inventory; Costa & McCrae, 1992).

## Conclusion

Emerging adulthood is a critical period when their SWB is in crisis. While there is evidence for the association of emerging adult personality traits and self-construal with personal SWB, their association with relational SWB has been overlooked. Furthermore, how emerging adults' personality in combination with self-construal influences their SWB is unclear. Specifically, Japanese university students are in the early stages of their transition to the workplace, a critical time to identify the process by which emerging adults internalize workplace social norms. To address these research gaps, this study examined the relationships between personality traits and self-construal and personal and relational well-being among Japanese emerging adults, focusing on the moderating roles of independent and interdependent self-construal. Regression analysis indicated that neuroticism was negatively associated with all SWB, extraversion was positively associated with all SWB, and agreeableness was positively associated with happiness and interdependent happiness. Both independent and interdependent self-construal were positively related to all SWB. Furthermore, neuroticism, extraversion, and agreeableness can be moderated by independent or interdependent self-construal. These findings suggest that the addition of interdependent self-construal to neuroticism lowers all SWB, the addition of interdependent self-construal to extraversion heightens happiness, and the addition of independent self-construal to agreeableness lowers interdependent happiness. From these findings, this study expanded the range of personality traits and self-construal of emerging adults related to SWB by focusing on their relational well-being. Furthermore, in the Japanese culture, which emphasizes both independent and interdependent self-construal, this study provided evidence for the complex relationships among personality

traits, self-construal, and SWB during the early stages of an emerging adult's transition from university to society. Overall, these findings may provide valuable insights regarding emerging adults' personality, self-construal, and SWB characteristics in a complex society of independence and interdependence and have implications for supporting their healthy development.

**Authors' Contributions** K.H. conceived of the study, participated in its design and coordination and drafted the manuscript; T.K. conceived of the study, and participated in its design and coordination and helped to draft the manuscript; S.H. conceived of the study, and participated in its design and coordination and helped to draft the manuscript; K.S. conceived of the study, and participated in its design and coordination and helped to draft the manuscript; M.I. conceived of the study, and participated in its design and coordination and helped to draft the manuscript; S.T. conceived of the study, and participated in its design and coordination and helped to draft the manuscript; J.N. conceived of the study, and participated in its design and coordination and helped to draft the manuscript. All authors read and approved the final manuscript.

**Data sharing declaration** This manuscript's data will not be deposited. The datasets generated and analyzed during the current study are not publicly available, but are available from the corresponding author upon a reasonable request.

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare no competing interests.

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

## References

Anderson, C., John, O. P., Keltner, D., & Kring, A. M. (2001). Who attains social status? Effects of personality and physical attractiveness in social groups. *Journal of Personality and Social Psychology*, 81(1), 116–132. https://doi.org/10.1037/0022-3514.81.1.116.

Anglim, J., Horwood, S., Smillie, L. D., Marrero, R. J., & Wood, J. K. (2020). Predicting psychological and subjective well-being from personality: a meta-analysis. *Psychological Bulletin*, 146(4), 279–323. https://doi.org/10.1037/bul0000226.

Arnett, J. J., & Mitra, D. (2020). Are the features of emerging adulthood developmentally distinctive? A comparison of ages 18–60 in the United States. *Emerging Adulthood*, 8(5), 412–419. https://doi.org/10.1177/2167696818810073.

Arnett, J. J., Žukauskienė, R., & Sugimura, K. (2014). The new life stage of emerging adulthood at ages 18–29 years: implications for mental health. *Lancet Psychiatry*, 1, 569–576. https://doi.org/10.1016/S2215-0366(14)00080-7.

Bagozzi, R. P., & Heatherton, T. F. (1994). Structural equation modeling: a general approach to representing multifaceted personality

constructs: Application to state self-esteem. *Structural Equation Modeling*, 1, 35–67. https://doi.org/10.1080/10705519409539961.

Blanchflower, D. G., & Oswald, A. J. (2019). Do humans suffer a psychological low in midlife? Two approaches (with and without controls) in seven data sets. In M. Rojas (Ed.), The economics of happiness (pp. 439–453). Springer. https://doi.org/10.1007/978-3-030-15835-4_19.

Cheng, C., Lau, H. P., & Chan, M. P. (2014). Coping flexibility and psychological adjustment to stressful life changes: a meta-analytic review. *Psychological Bulletin*, 140(6), 1582–1607. https://doi.org/10.1037/a0037913.

Costa, Jr, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory and five factor inventory professional manual*. Odessa, FL: Psychological Assessment Resources.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13.

Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: a general power analysis program. *Behavior Research Methods, Instruments, & Computers*, 28, 1–11. https://doi.org/10.3758/BF03203630.

Germani, A., Delvecchio, E., Li, J. B., Lis, A., Nartova-Bochaver, S. K., Vazsonyi, A. T., & Mazzeschi, C. (2021). The link between individualism-collectivism and life satisfaction among emerging adults from four countries. *Applied Psychology: Health and Well-Being*, 13, 437–453. https://doi.org/10.1111/aphw.12259.

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, 48(1), 26–34. https://doi.org/10.1037//0003-066x.48.1.26.

Hatano, K., Hihara, S., Ikeda, M., Nakahara, J., Tanaka, S., & Sugimura, K. (2022). Workplace identity profiles: associations with personality traits and work adaptation of young Japanese adults. *Journal of Adult Development*. https://doi.org/10.1007/s10804-022-09435-2.

Hatano, K., Hihara, S., Nakama, R., Tsuzuki, M., Mizokami, S., & Sugimura, K. (2022). Trajectories in sense of identity and relationship with life satisfaction during adolescence and young adulthood. *Developmental Psychology*, 58(5), 977–989. https://doi.org/10.1037/dev0001326.

Hitokoto, H., & Uchida, Y. (2015). Interdependent happiness: theoretical importance and measurement validity. *Journal of Happiness Studies*, 16, 211–239. https://doi.org/10.1007/s10902-014-9505-8.

Joshanloo, M. (2022). Longitudinal relationships between personality traits and social well-being: a two-decade study. *Journal of Happiness Studies*, 23(6), 2969–2983. https://doi.org/10.1007/s10902-022-00534-1.

Kline, R. B. (2015). *Principles and practice of structural equation modeling*. 4th ed. New York: Guilford Press.

Kwan, V. S. Y., Bond, M. H., & Singelis, T. M. (1997). Pancultural explanations for life satisfaction: adding relationship harmony to self-esteem. *Journal of Personality and Social Psychology*, 73(5), 1038–1051. https://doi.org/10.1037/0022-3514.73.5.1038.

Levinson, C. A., Langer, J. K., & Rodebaugh, T. L. (2011). Self-construal and social anxiety: considering personality. *Personality and Individual Differences*, 51(3), 355–359. https://doi.org/10.1016/j.paid.2011.04.006.

Long, J. (2019). *Interactions: Comprehensive userfriendly toolkit for probing interactions* (Version 1.0). https://cran.r-project.org/web/packages/interactions/index.html.

Lun, V. M. C., & Yeung, J. C. (2019). Elaborating on the effect of culture on the relations of extraversion and neuroticism to life satisfaction. *Personality and Individual Differences*, 142, 79–84. https://doi.org/10.1016/j.paid.2019.01.039.

Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: preliminary reliability and construct validation. *Social*

*Indicators Research*, *46*, 137–155. https://doi.org/10.1023/A:1006824100041.

Markus, H. R. (2010). *Does choice mean more freedom and well-being?*. Melbourne, Australia: 20th International Association for Cross-cultural Psychology Congress.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*(2), 224–253. https://doi.org/10.1037/0033-295X.98.2.224.

Marsh, H. W., Hau, K. T., Balla, J. R., & Grayson, D. (1998). Is more ever too much? The number of indicators per factor in confirmatory factor analysis. *Multivariate Behavioral Research*, *33*(2), 181–220. https://doi.org/10.1207/s15327906mbr3302_1.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin*, *128*(1), 3–72. https://doi.org/10.1037/0033-2909.128.1.3.

Saucier, G. (1998). Replicable item-cluster subcomponents in the NEO Five-Factor Inventory. *Journal of Personality Assessment*, *70*(2), 263–276. https://doi.org/10.1207/s15327752jpa7002_6.

Shimai, S., Otake, K., Utsuki, N., Ikemi, A., & Lyubomirsky, S. (2004). Development of a Japanese version of the Subjective Happiness Scale (SHS), and examination of its validity and reliability. *Nihon Koshu Eisei Zassh [Japanese Journal of Public Health]*, *51*(10), 845–853.

Singelis, T. M. (1994). The measurement of independent and interdependent self–construals. *Personality and Social Psychology Bulletin*, *20*(5), 580–591. https://doi.org/10.1177/0146167294205014.

Soto, C. J., & John, O. P. (2017). The next Big Five Inventory (BFI-2): developing and assessing a hierarchical model with 15 facets to enhance bandwidth, fidelity, and predictive power. *Journal of Personality and Social Psychology*, *113*(1), 117–143. https://doi.org/10.1037/pspp0000096.

Sugimura, K. (2020). Adolescent identity development in Japan. *Child Development Perspectives*, *14*(2), 71–77. https://doi.org/10.1111/cdep.12359.

Sugimura, K., Nakama, R., Mizokami, S., Hatano, K., Tsuzuki, M., & Schwartz, S. J. (2016). Working together or separately? The role of identity and cultural self-construal in well-being among Japanese youth. *Asian Journal of Social Psychology*, *19*(4), 362–373. https://doi.org/10.1111/ajsp.12154.

Tov, W., Nai, Z. L., & Lee, H. W. (2016). Extraversion and agreeableness: divergent routes to daily satisfaction with social relationships. *Journal of Personality*, *84*(1), 121–134. https://doi.org/10.1111/jopy.12146.

Uchida, Y., & Kitayama, S. (2004). Culture and implicit self-construals. Poster presented at 5th Annual meeting of the Society for Personality and Social Psychology.

Uchida, Y., & Kitayama, S. (2009). Happiness and unhappiness in East and West: themes and variations. *Emotion*, *9*(4), 441–456. https://doi.org/10.1037/a0015634.

Uchida, Y., & Ogihara, Y. (2012). Cultural construal of happiness: cultural psychological perspectives and future direction of happiness research. *Japanese Psychological Review*, *55*, 26–42.

Waterman, A. S. (1993). Two conceptions of happiness: contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of Personality and Social Psychology*, *64*(4), 678–691. https://doi.org/10.1037/0022-3514.64.4.678.

Wood, D., Crapnell, T., & Lau, L., et al. (2018). Emerging adulthood as a critical stage in the life course. In N. Halfon, C. Forrest, R. Lerner & E. Faustman eds., *Handbook of Life Course Health Development* (pp. 123–143). Cham, Switzerland: Springer.

Yetim, U. (2003). The impacts of individualism/collectivism, self-esteem, and feeling of mastery on life satisfaction among the Turkish university students and academicians. *Social Indicators Research*, *61*, 297–317. https://doi.org/10.1023/A:1021911504113.

**Kai Hatano** is an Associate Professor at the Institute of Sustainable System Science, Osaka Metropolitan University, Japan. His research interests include identity, personality traits, psychosocial problems, and well-being.

**Tetsuya Kawamoto** is an assistant professor at the Faculty of Letters, Keio University. His research interests include personality development across the lifespan and the evolution of personality traits.

**Shogo Hihara** is an Associate Professor at the Faculty of Business Administration, Matsuyama University, Japan. His research interests include identity development in cultural context and psychopathology.

**Kazumi Sugimura** is a Professor at the Department of Psychology, Hiroshima University, Japan. Her research interests include identity development in adolescence and young adulthood and cross-cultural differences in identity development.

**Megumi Ikeda** is a Research Associate at the Institute of Social Science, the University of Tokyo. Her research interests include organizational behavior and workplace learning.

**Satoshi Tanaka** is an Associate Professor at the College of Business, Rikkyo University. His research interests include human resource management and organizational behavior.

**Jun Nakahara** is a Professor at the College of Business, Rikkyo University. His research interests include human resource development and organization development.