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## PERSONALITY & INDIVIDUALS DIFFERENCES | RESEARCH ARTICLE

# Conceptual structure of self-curiosity in Japan

Michio Ushiyama<sup>1\*</sup>, Michiru Kumamoto<sup>2</sup> and Filippo Aschieri<sup>3</sup>

**Abstract:** Recently, self-curiosity has attracted scholarly attention as a crucial factor in psychological tests and therapy processes. To measure individuals' degree of self-curiosity, researchers developed the self-curiosity attitude–interest (SCAI) scale; it originated in Italy and has been applied across cultures. This study investigates whether the original SCAI scale can be adapted in Japan and explores the characteristics of the structure of self-curiosity in Japan. Data from 257 undergraduate students were collected through a website, and exploratory factor analysis was conducted. The original 7-item version of the scale exhibited a poor fit. Therefore, nine new items were added to the statements included in the original scale, and the 16 resulting items were employed to investigate the structure of self-curiosity in Japan. Exploratory and confirmatory factor analyses demonstrated that the Japanese version of the SCAI scale (SCAI-J) comprises seven new items and follows the two-factor structure (i.e., *attitude* and *interest*) of the original SCAI scale. In terms of construct validity, the SCAI-J scale produced significant correlations

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### PUBLIC INTEREST STATEMENT

Self-curiosity is a crucial tool when conducting assessments and interventions, as it allows to understand the extent to which clients are open to increasing their self-understanding and awareness. This study aims to investigate whether the Self-Curiosity Attitude-Interest (SCAI) scale developed in Italy, and validated in Colombia, the Czech Republic and Mexico, could be adapted in Japan. Results suggest that the concept of self-curiosity exists in also Japan, and possesses the typical two-factor structure found elsewhere. Importantly, Japanese respondents did not respond well to “negatively keyed” items. On this basis, the negatively keyed items were substituted with positively keyed ones and the fit of the scale increased significantly while maintaining its two-factors structure.

with the Japanese versions of the Satisfaction with Life Scale and the Rumination-Reflection Questionnaire as well as the short form of the Japanese Big-Five scale. These results suggest that self-curiosity is a common concept despite the differences among European, Central American and Asian cultures.

**Subjects: Psychological Science; Factor Analysis, SEM, Multilevel & Longitudinal Modeling; Cross-Cultural/ Multicultural Testing and Assessment; Psychometrics/ Testing & Measurement Theory; Psychiatry & Clinical Psychology - Adult; Clinical Testing & Assessment**

**Keywords: self-curiosity; cross-culture; assessment; conceptual structure**

## 1. Introduction

Curiosity is a fundamental element of our cognition that influences various aspects of human life from a child's academic performance (Shah et al., 2018) to an adolescent's well-being (Jovanovic & Brdaric, 2012). Self-curiosity, which focuses on individuals' inner world, is currently attracting attention in the field of clinical psychology. Finn (2007) proposed that clients' curiosity about themselves that expressed as assessment questions plays a crucial role in brief assessment-based interventions termed as therapeutic assessment. Assessment question is formulated based on what individuals hope to learn from the assessment concerning their persistent problems, puzzles, or dilemmas (Finn, 1996). Many individuals seek answers from the outside world, whereas others search them within themselves, which drives psychotherapy and enables individuals to change. Hashimoto and Yasuoka (2012) highlighted that clients' questions about themselves and their emotions are essential to psychological assessment processes. Further, Kumamoto (2016) argued that supporting self-understanding and deepening self-acceptance in clients with developmental disorders through psychotherapy and intelligence tests is necessary to improve their quality of life and it is equally important as practical support. Therefore, self-curiosity enables individuals to explore their inner world and promotes self-knowledge, which allows them to change their lives for the better in terms of both psychological assessment and psychotherapy.

Aschieri and Durosini (2015) developed the original version of the self-curiosity attitude-interest (SCAI) scale, which is a psychometric tool for measuring the degree of individuals' self-curiosity and is applicable for use in Italy. The authors defined self-curiosity as the tendency of individuals to explore their inner world to understand themselves better. Further, they proposed the two-factor structure of self-curiosity, namely, (1) attitude toward self-curiosity and (2) interest in increasing knowledge about the self. Researchers have applied the SCAI scale in different countries to examine its international validity. For example, Durosini et al. (2018), Friedlova et al. (2018), and Aschieri et al. (2021) developed the Columbian, Czech, and Mexican versions of the SCAI scale, respectively. All three adaptations were found to have the same two-factor structure of self-curiosity as the original scale. However, there is a lack of discussion on the concept of self-curiosity worldwide, except in European and Latin American countries. Therefore, this study addresses this gap in the literature.

Thus, the current study aims to investigate whether the SCAI scale is applicable to the Japanese context. Although self-curiosity can be a crucial factor in psychological assessment and psychotherapy, the developed scale may not be representative of self-curiosity in Japanese culture. The Japanese version of the self-curiosity attitude-interest scale (SCAI-J) can help psychologists and clients in Japan who want to begin their career and suggest cultural differences in self-curiosity concepts.

## 2. Materials and methods

### 2.1. Participants

The study recruited 257 undergraduate students from four regions in Japan, namely, Kansai, Chubu, Kanto, and Tohoku. The participants were invited to fill out an online questionnaire after

classes. Data from participants without missing values were obtained (females = 159; males = 98; mean age and SD:  $18.92 \pm 1.11$  years; age range: 18–23 years). The participants were briefed that their personal information and responses will remain confidential and that they are free to refuse answering questions.

## **2.2. Ethics statement**

This study was approved by the research ethics committee of the second author's affiliation (approval no. 2018–46). The participants provided written informed consent and were aware that participation was voluntary and could be withdrawn at any time.

## **2.3. Contents of the questionnaire**

The questionnaire consisted of items aimed at collecting basic demographic information, such as age and gender.

## **2.4. The Japanese version of the self-curiosity attitude–interest scale**

The original SCAI scale was developed to measure individual differences in terms of curiosity about oneself (Aschieri et al., 2016; Aschieri & Durosini, 2015). Self-curiosity comprised two factors, namely, attitude toward self-curiosity (used to measure several aspects of cognitive traits and to explore one's psychological functioning) and interest in increasing knowledge about oneself (used to measure the emotional and motivational desire to understand one's inner world). The scale is composed of seven items rated using a 7-point Likert-type scale ranging from 1 = completely disagree to 7 = completely agree. Cronbach's  $\alpha$  was used to assess acceptable internal consistency of the total scale ( $\alpha = .65$ ) and the *attitude* ( $\alpha = .69$ ), and *interest* ( $\alpha = .66$ ) subscales.

We followed the steps proposed by Wild et al. (2005) in our efforts to introduce this scale in Japan. Bilingual translators converted seven original items from the original scale from Italian to Japanese, which were subsequently back-translated by a translation agency. The author of the original instrument, who is also the third author of this paper, confirmed the equivalence of the original and back-translated versions. We also referred to the published English version to contemplate the differences in nuance between the Italian and Japanese versions. We then conducted a cognitive debriefing. At this stage, some Japanese participants articulated concerns about their unfamiliarity with the phrasing of some items, especially negative statements. Therefore, we added nine items that were previously administered in Italy but were discarded during the validation of the original scale (2015). The authors reviewed and selected these surplus items based on the validity of their content. The 16 resulting items of the SCAI (seven original and nine additional statements) were administered to Japanese participants.

## **2.5. Japanese version of the satisfaction with life scale (SWLSJ)**

Introduced by Oishi (2009), this scale is composed of five items rated using a 7-point Likert-type scale ranging from 1 = strongly disagree to 7 = strongly agree. However, Oishi presented unclear evidence on the  $\alpha$  coefficient, which was speculated to lie between .61 and .76. In the current study, reliability reached .84.

## **2.6. Japanese version of the rumination–reflection questionnaire (RRQJ)**

Developed by Takano and Tanno (2008), the questionnaire is composed of 24 items rated using a 5-point Likert-type scale ranging from 1 = strongly disagree to 5 = strongly agree). Further, it is made up of two subscales. The first is *rumination*, which is defined as dispositional self-attentiveness evoked by negative events (12 items), and the second is *reflection*, which is dispositional self-attentiveness motivated by intellectual interests (12 items). This scale exhibited good internal consistency for the total scale ( $\alpha = .90$ ) and for *rumination* ( $\alpha = .89$ ) and *reflection* ( $\alpha = .89$ ). The current study reached reliability scores of .87 and .85 for *rumination* and *reflection*, respectively.

### 2.6.1. Short form of the Japanese big-five scale (big-five)

The Big-Five scale, which was developed by Namikawa et al. (2012), is composed of 29 items rated using a 7-point Likert-type scale ranging from 1 = strongly disagree to 7 = strongly agree. It comprises five domains with good internal consistency, namely, *openness to experience* ( $\alpha = .76$ ), *conscientiousness* ( $\alpha = .78$ ), *extraversion* ( $\alpha = .86$ ), *agreeableness* ( $\alpha = .78$ ), and *neuroticism* ( $\alpha = .82$ ). In this study, the  $\alpha$  values were  $.73$  (*openness to experience*),  $.74$  (*conscientiousness*),  $.81$  (*extraversion*),  $.75$  (*agreeableness*), and  $.83$  (*neuroticism*).

## 2.7. Statistical analysis

All analyses were conducted using R version 3.5.3 with psych, lavaan, and semTools packages.

**Step 1.** The Kaiser–Meyer–Olkin (KMO) and Bartlett tests were applied to the original seven items to assess their exploratory factor analysis (EFA) suitability. If they proved adequate (measure of sampling adequacy [MSA] of  $KMO \geq .70$  and Bartlett test  $p$  value  $< .05$ ), we used the EFA with minres method and oblimin rotation and the confirmatory factor analysis (CFA) with maximum likelihood method to evaluate the fit of the Japanese version of the SCAI (SCAI-J) scale with the original seven items.

**Step 2.** If proved inadequate for EFA in Step 1, we explored another valid self-curiosity structure for the SCAI-J scale using EFA for the new version with 16 items that included the original 7 items. The following steps were followed to select the items to comprise the final version of the scale. First, we tested whether the data set could be available for EFA using the KMO and Bartlett tests. We then ran parallel analyses to identify the number of factors to be extracted. Item reduction was performed through EFA, aiming at a simple factor structure and the following guidelines were employed for omission: (1) items with cross-loadings, (2) items with loadings on one factor below  $.35$ , (3) single items that define a factor, and (4) items that did not harmonize with the meaning of the other items. CFA with the maximum likelihood method was then applied to compare the fit of the SCAI-J simple structure model derived from the EFA solution. Indices of fit without significant  $\chi^2$  coefficient, a ratio of  $\chi^2/df$  less than  $3.0$ , SRMR coefficient close to  $.08$ , an RMSEA coefficient close to  $.06$ , and a CFI coefficient close to  $.95$  were considered acceptable, in accordance with the traditional guideline followed by Schermelleh-Engel et al. (2003) for  $\chi^2/df$ , and Hu and Bentler (1999) for SRMR, RMSEA and CFI. Cronbach's  $\alpha$  and  $\omega$  coefficient were calculated to determine the reliability of both the total and subscales scores of SCAI-J to assess the internal consistency based on the simple factor structure ascertained through EFA. Moreover, composite reliability was also calculated for factors using CFA models.

**Step 3.** Pearson's correlation coefficient of the SCAI-J scale with the SWLSJ, RRQJ, and Big-Five scales was used to evaluate the construct validity, including the convergent and discriminant soundness of these scales. Between-scales convergent validity was construed to confirm if SCAI-J evinced significant correlations with each instrument; otherwise, discriminant validity was established.

## 3. Results

### 3.1. Step 1: confirmation of EFA adequacy on the seven original items

The results of the KMO and Bartlett tests demonstrated that the original scale was inadequate for factor analysis (KMO test:  $MSA = .64$ ; Bartlett test:  $\chi^2(6) = 7.1484, p = .307$ ). Therefore, the planned EFA and CFA of the seven original items were canceled. Hence, considering the new structure of the SCAI-J scale using the 16 items amalgamated as described above is necessary.

### 3.2. Step 2: exploration of a more valid SCAI model in Japan

According to the abovementioned criteria, the following items were adopted in EFA using the minres method and oblimin rotation: Item 1 (I like to listen to music because it teaches me what I am like as a person); Item 2 (The best part of traveling is what it teaches us about ourselves); Item 3 (My favorite movies are those that taught me new things about myself); Item 4 (I select my best friends among those with whom I can grow as a person); Item 8 (I thought a lot about how I became who I am); Item 14 (I think it is important to analyze inner conflicts); and Item 16 (I am interested in knowing the

real reasons for my action). In summary, the MSA of the KMO test was .70, whereas the Bartlett test was significant ( $\chi^2(6) = 49.357, p = 6.325e-09$ ) among the seven items. Table 1 displays the result of the EFA, where a two-factor solution was obtained. Factor 1 comprised items 1 to 4, which completely overlapped with *attitude toward self-curiosity* of the original SCAI scale. Therefore, the same factor name was given. Factor 2 comprised items 8, 14, and 16, which were interpreted as counter items of *interest in increasing knowledge of oneself* of the original SCAI scale. Therefore, the same factor name was given. Internal consistency indices using Cronbach's  $\alpha$  coefficients for the *attitude* and *interest* subscales were calculated as .68 and .63, and totaled .68 for the total scale. Further, the  $\omega$  coefficients were computed as .69, .65, .74, respectively.

Table 2 indicates the mean, SD, and inter-item correlation between the seven items. All pairs displayed significant positive correlations, except for that between items 4 and 8 ( $r = -.022$ , non-significant [NS]).

Next, CFA was conducted using the maximum likelihood method to confirm the fit of the two-factor simple structure model obtained through EFA. Two types of models were set to be examined. One model produced a correlation between two factors [Model 1], whereas the other had none [Model 2]. Table 3 displays the fit indices for models 1 and 2 ([Model 1]  $\chi^2(13) = 21.996, p = .055, \chi^2/df = 1.692, GFI = .978, CFI = .968, RMSEA = .052$  [95% CI: .000–.088], SRMR = .043; [Model 2]  $\chi^2(14) = 40.125, p = .000, \chi^2/df = 2.866, GFI = .960, CFI = .908, RMSEA = .085$  [95% CI: .055–.117], SRMR = .106). Model 1 indicates better fit indices than Model 2. Moreover, Figure 1 depicts all path coefficients in Model 1, where all paths were significant. The correlation coefficient between *attitude* and *interest* factors was .380. The composite reliability coefficient  $\omega$  for *attitude* and *interest* was .69 and .63, respectively.

### 3.3. Step 3 evaluation of the construct validity of the SCAI-J scale

Table 4 presents the matrix for Pearson's correlation coefficients of the SCAI-J scale with the SWLSJ, RRQJ, and the Japanese version of the Big-Five scale to evaluate construct validity.

The SWLSJ only had a significant correlation with *attitude* ( $r = .226, p < .001$ ). The RRQJ comprises two subscales, namely, *ruminatio*n (significant correlations with *attitude*, *interest*, and total scales [ $r = .222, p < .001; r = .570, p < .001; r = .453, p < .001$ , respectively]) and reflection (significant correlations with all items of the SCAI scale [ $r = .242, p < .001; r = .504, p < .001; r = .434, p < .001$ , respectively]). Significant correlations between the Big-Five scale and the SCAI-J scale were observed for *openness to experience* (*attitude*:  $r = .172, p < .01$ ; total:  $r = .159, p < .01$ ), *conscientiousness* (*attitude*:  $r = .174, p < .01$ ), and *neuroticism* (*interest*:  $r = .360, p < .001$ ; total:  $r = .209, p < .001$ ). Lastly, the study noted non-significant correlations between *extraversion* and *agreeableness* to the SCAI-J scale.

## 4. Discussion

This study aimed to investigate whether the SCAI scale can be applied in the Japanese context and purposed to explore the characteristics of the structure of self-curiosity in Japan. Furthermore, we examined whether the seven original items from the SCAI scale could be utilized directly for the Japanese version. The KMO and Bartlett tests suggested that these item sets were insufficient for EFA. Therefore, it was necessary to explore a new item set to develop the SCAI-J scale using the 16 assembled items of the SCAI scale. The performed EFA revealed a two-factor solution, where four items of factor 1 perfectly overlapped with *attitude toward self-curiosity* of the original SCAI scale, whereas the new three items of factors 2 were to be interpreted as *interest in increasing knowledge of oneself*, and total scale and two subscales were accompanied with the partly acceptable internal consistency of Cronbach's  $\alpha$  and  $\omega$  coefficients. Moreover, the CFA of the two-factor simple structure model indicated acceptable fit indices if the two factors were significantly correlated [model 1].

This result suggests that the conceptual structure of self-curiosity in Japan may have similarity and reliability with Italy, Colombia, the Czech Republic, and Mexico versions (Aschieri & Durosini, 2015; Aschieri et al., 2021; Durosini et al., 2018; Friedlova et al., 2018). Especially, items for measuring *attitude*

**Table 1. Results of EFA for the SCAI-J scale**

<b>Total Cronbach' <math>\alpha = .68</math>, <math>\omega = .74</math></b>	<b>Attitude</b>	<b>Interest</b>
Factor 1: "Attitude toward Self-Curiosity"; Cronbach's $\alpha = .68$ , $\omega = .69$		
Item 2: The best part of traveling is what it teaches us about ourselves	<b>.763</b>	-.032
Item 3: My favorite movies are those that taught me new things about myself	<b>.643</b>	.038
Item 1: I like to listen to music because it teaches me what I am like as a person	<b>.503</b>	.077
Item 4: I select my best friends among those with whom I can grow as a person	<b>.455</b>	-.042
Factor 2: "Interest in Increasing Knowledge of Self"; Cronbach's $\alpha = .63$ , $\omega = .65$		
Item 8: I thought a lot about how I became who I am	-.049	<b>.676</b>
Item 14: I think it is important to analyze inner conflicts	.013	<b>.671</b>
Item 16: I am interested in knowing the real reasons for my action	.140	<b>.460</b>
SS loading	1.498	1.150
Proportion variance	.214	.164
Cumulative variance	.214	.378
Proportion Explained	.566	.434
Cumulative Proportion	.566	1.000
Inter-Factor Correlation		
Factor 1	1.000	.342
Factor 2	.342	1.000

Note: EFA, Exploratory Factor Analysis; SS, Sum of Squares.

toward *self-curiosity* completely coincided between the original and Japanese versions. Aschieri and Durosini (2015) mentioned that attitude toward self-curiosity appeared to be a component of general curiosity. Therefore, the attitude concept may share the common features among countries where the SCAI scale has been standardized. Moreover, the total scores of the original SCAI, Colombian, Mexican, and Japanese versions of the SCAI individually evinced positive significant correlations with *openness to experience* in the Big-Five scale. This result suggests that self-curiosity in Japan have convergent validity with *openness to experience* and similar construct concept with other countries' SCAI scales.

Next, the results also indicated that items for measuring *interest* in Japan differed from those in Italy and the other countries. A reason for the need to change the items may be due to the "negative expression" of the original items for *interest*, such as Item 5 (I am not interested in understanding how my past experiences impact my current life), Item 6 (I get bored when I have to talk about my feelings), and Item 7 (I am not interested in understanding what motivates my behaviors). Although we carefully considered nuances during translation, these may be deemed unnatural in Japanese, especially because negative auxiliary verbs are positioned at the end of sentences in Japanese.

**Table 2. Inter-item correlation between the seven items of the SCAI-J scale**

Items	Item 1	Item 2	Item 3	Item 4	Item 8	Item 14	Mean	SD
Item 1: I like to listen to music because it teaches me what I am as a person	-						4.88	1.72
Item 2: The best part of traveling is what it teaches us about ourselves	.442***	-					3.93	1.61
Item 3: My favorite movies are those that taught me new things about myself	.312***	.486***	-				3.74	1.70
Item 4: I select my best friends among those with whom I can grow as a person	.197**	.298***	.342***	-			5.44	1.49
Item 8: I thought a lot at how I became who I am	.149*	.129*	.181**	-.022	-		5.14	1.64
Item 14: I think it is important to analyze inner conflicts	.146*	.165**	.149*	.151*	.447***	-	5.77	1.17
Item 16: I am interested in knowing the real reasons of my action	.222***	.180**	.211***	.124*	.314***	.355***	5.56	1.44

\*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

Aschieri et al. (2020) suggested the influence of ages and levels of education on the SCAI scale, further consideration should be given to the extent to which cultural differences influences the scale.

From other viewpoints, *interest* in SCAI-J had no significant positive correlation with *openness to experience* in Big-Five scale, whereas the original SCAI had none. Conversely, *interest* and total scale of the SCAI-J had significant positive correlation with *neuroticism* in Big-Five scale. The SCAI scales including the two subscales developed in Italy and Colombia had no correlations with the *neuroticism*. This suggests that self-curiosity in Japan has convergent validity with *neuroticism*. Moreover, Aschieri and Durosini (2015) highlighted that self-curiosity of *interest* could be more influenced by contextual conditions, and might represent a motivational and situational aspect of self-curiosity. These findings suggest that it would be some possibility of risks and difficulties for Japanese clients to boost one's self-curiosity of interest in increasing knowledge of self by investigating their inner world. Therefore, self-curiosity of the Japanese could have different psychological functions from those of the European



or Latin countries, such as Italy and Colombia. However, a more recent report on Mexican self-curiosity (Aschieri et al., 2021) states that the only *interest* in the Mexican SCAI demonstrated a significant correlation with *neuroticism*. Such a report somewhat complicates the interpretation of the relationship between self-curiosity and neuroticism from the viewpoint of cross-cultural comparison. However, that the total score of SCAI-J was significantly correlated with *neuroticism* is deemed more important.

The next specific feature of SCAI-J was that it had no significant correlations with *extraversion* and *agreeableness* in the Big-Five scale even though the original and Colombian versions of SCAI possessed such correlations (Aschieri & Durosini, 2015; Durosini et al., 2018). Inversely, the SCAI-J had a significant correlation with *conscientiousness* in the attitude subscale although the original, Colombian, and Mexican SCAs had no significant correlation with *conscientiousness* in the total and the two subscales. These associations would illustrate convergent and discriminant validity as the conceptual structure of self-curiosity in Japan would be dissimilar to *extraversion* and *agreeableness*, and partly closer to *conscientiousness*.

The variations in psychological functioning between SCAI-J and other SCAs may be explained by these Big-Five domains, such as *neuroticism*, *conscientiousness*, *extraversion*, and *agreeableness*. With respect to SWLS, Durosini et al. (2018) reported that SWLS had no significant correlation with the Colombian version of SCAI. However, there was a significant correlation between the attitude subscale and SWLS-J in Japan. This finding suggests that the Japanese could discover the satisfaction of life by exploring the inner world of self. Increased self-awareness, alternatively, may not contribute to life satisfaction.

Moreover, this study revealed that it was self-curiosity consisting of attitude and interest components even in Japan. The CFA indicated that the model where these components were correlated had better fit indices than the no-correlated model. This means that it is valid to assume the upper structural concept on these two components, which is self-curiosity. However, there would be some difference in psychological functioning among SCAs.

Finally, the Cronbach's  $\alpha$  coefficient representing the internal consistency of SCAI-J was lower than .70. In particular, the coefficient of *interest* was .63. However, the coefficients for the total, *attitude*, and *interest* were respectively reported in previous studies as .65, .69, and .66 in the original SCAI (Aschieri & Durosini, 2015), and as .63, .60, and .64 in the Colombian SCAI (Durosini et al., 2018). It is generally believed that the more the number of items, the higher the Cronbach's  $\alpha$  coefficient, and vice versa. The lower  $\alpha$  coefficient could be influenced by the fewer number of items comprising the SCAs. The  $\omega$  coefficient was also calculated to assess the internal consistency of the SCAI-J, and the additional coefficient was computed at .74 for the total. These results of internal consistency allow the construal that the reliability of the SCAI-J is singularly acceptable for the study's feature of self-curiosity.

#### 4.1. Limitations

Initially, we must caution that cross-sectional studies based on self-reported scales pose certain disadvantages. We cannot know whether the participants who consented to their engagement in this study differed from those who did not, resulting in a sample that may not be representative of the population (Sedgwick, 2014). Further, the Japanese favor a mid-point response style in answering questionnaires in comparison to Americans (Tasaki & Shin, 2017) and tend toward a low acquiescence response style compared to the Southern European and Latin American people (Harzing, 2006). These different response patterns could cause systematic errors in international comparisons.

Second, the findings of the current study are limited to specific age groups. Particularly, the participants were in their early 20s, university students, and mostly female. To generalize the findings, further research with separate samples of other age groups, educational backgrounds, and income levels is required. Additionally, the study was unable to verify the stability of the conceptual structure of the SCAI-J using the conventional test-retest method because of difficulty in collecting paired data from participants using the anonymous online questionnaire.

**Table 3. Indices of CFA for the SCAI-J scale: comparison of two factors correlated model with no-correlated model**

	$\chi^2$	df	$\chi^2 / df$	p	GFI	CFI	RMSEA	95% CI	SRMR
Model 1 [Correlation model]	21.996	13.000	1.692	.055	.978	.968	.052	.000—.088	.043
Model 2 [No correlation model]	40.125	14.000	2.866	.000	.960	.908	.085	.055—.117	.106

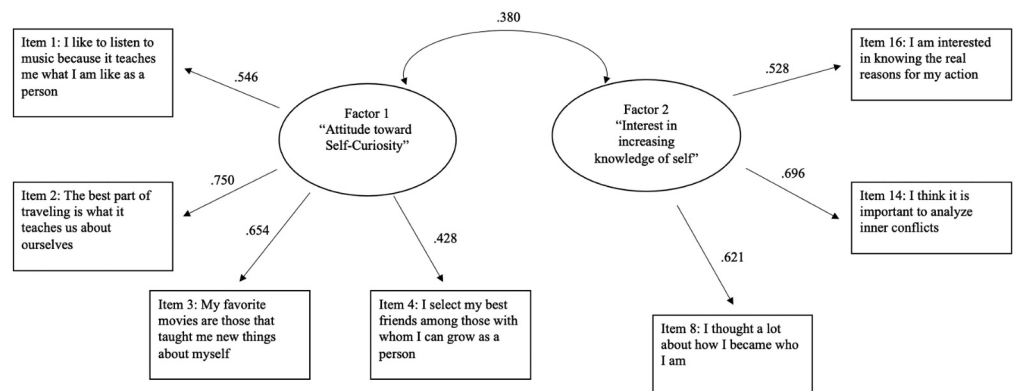
Note: CFA: confirmatory factor analysis; df: degrees of freedom; CI: confidence interval; GFI: goodness-of-fit index; CFI: comparative fit index; RMSEA: root mean square error of approximation; SRMR: standardized root mean square residual.

**Table 4. The matrix for Pearson's correlation of the SCAI-J scale with the SWLSJ, RRQJ, and the Japanese version of the big-five scale**

	Attitude Toward Self-Curiosity	Interest in Increasing Knowledge of Self	Total Scale
SWLSJ			
Total	.226***	-.089	.119
RRQJ			
Rumination	.222***	.570***	.453***
Reflection	.242***	.504***	.434***
Big-Five			
Openness to Experience	.172**	.065	.159*
Conscientiousness	.174**	-.042	.106
Extraversion	.001	-.037	-.017
Agreeable	.041	.022	.041
Neuroticism	.035	.360***	.209***

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 1. Correlated structural model of the SCAI-J scale.**



Third, we did not directly compare the conceptual structure of SCAI-J to the original Italian or to the SCAs adapted for other countries because the items of the *interest* subscale differed from the original. This drawback prevents the examination of the measurement invariance of self-curiosity using multiple-group structural equation modeling with step-by-step restrictions on the SCAI factor model.

Despite these challenges related to sampling and reliability, we believe that finding a similar structure for the self-curiosity scale across countries and cultures is important.

#### 4.2. Implications for future research

As previously mentioned, many factors may influence self-curiosity, such as age, education level, individual traits, and culture. However, we did not examine the correlations among these factors in different cultural contexts, such as the six dimensions described by Hofstede (2011). It would be the next logical step.

As an aside, self-curiosity is estimated to predict the promotion of beneficial changes to psychological functioning. Applying the SCAI-J for psychological assessment, psychotherapy, and intervention could validate unsolved scaling components such as predictive validity.

Thus, the SCAI-J scale is thought to be a well-balanced and effective tool, and further study should be conducted to validate this research.

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#### Disclosure statement

No potential conflict of interest was reported by the authors.

#### Data Available Statement

Due to the restrictions from the research ethics committee, data sharing is not permitted.

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