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Validating the Korean version of the Thinking About Life Experiences Scale

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Abstract

The Thinking about Life Experiences (TALE) Scale is well-used in the autobiographical memory literature. Through rigorous examination of its psychometric properties, this study aimed to validate a Korean version of the Thinking About Life Experiences Scale (TALE-K) with Korean adults. Data were collected through an online survey. The TALE-K, and for convergent validity purposes the Korean-Reminiscence Functions Scale for the Elderly (K-RFS-E), were administered to participants aged 19 years to 77. Data from 440 community participants were analyzed. Structural validity and convergent validity were confirmed. Measurement invariance was confirmed across gender but it was partially confirmed across age group. Overall, Cronbach's αs for the three subscales and intra-class correlation coefficients were good to excellent. The TALE-K seems to be a reliable, valid self-report instrument for measuring three autobiographical memory functions (i.e., self-continuity, social-bonding, and directing-behavior functions) in Korean adults. Further studies to better understand autobiographical memory functions in different age groups are recommended.

KEYWORDS
autobiographical memory, functional approach, reminiscence, scale validation

1 | INTRODUCTION

Autobiographical memory refers to the retrieval of past events, specifically personal episodic memories that are related to one's self (Sheldon et al., 2018). Why individuals recall autobiographical memories in daily life is the focus of the functional approach to autobiographical memory (Bluck & Alea, 2002). This approach focuses on the psychosocial uses, or functions, of remembering personal experiences (Caci et al., 2020; Harris et al., 2014). Although most of the work has focused on ways that people use autobiographical memory adaptively, or functionally, in daily life, researchers have also examined use of autobiographical memory in relation to mental health (e.g., Waters, 2014) and psychological disorders (e.g., Grace et al., 2016).

Relevant to the current study, researchers have also been interested in autobiographical memory functions across cultures (Alea et al., 2015; Liao et al., 2016 and Maki et al., 2015). The findings from these studies consistently indicated three funtional uses of autobiographical memory across various cultures: self, social, and directive functions. The self-function refers to the use of autobiographical memory to preserve a continuous sense of self over time. The social function refers to using autobiographical memory to form new or develop existing relationships. The directive function means using

autobiographical memory to guide or direct one's present or future thinking and behavior (Bluck, 2003; Bluck & Alea, 2011). These same three functions of autobiographical memory have also been studied and found for different groups within the same culture (Alea & Ali, 2018; Bluck & Alea, 2011; Caci et al., 2020; Harris et al., 2014; Vranić et al., 2018), even though there are variations in frequency of use depending on life phase, gender, and ethnicity within people who share the same culture (Alea & Ali, 2018; Vranić et al., 2018). For example, younger adults and women tend to use autobiographical memory more often for self-reported functional reasons compared with older adults and men, respectively in American (Bluck & Alea, 2011) and Croatian (Vranić et al., 2018) cultures.

The Thinking About Life Experiences (TALE) Scale is an often-used measure for assessing autobiographical memory functions in English-speaking countries (Bluck & Alea, 2011). The original TALE has been validated, and translated versions are currently being used in diverse cultures, including Italy (Caci et al., 2020), Taiwan (Liao et al., 2016), and Japan (Ochiai & Oguchi, 2013). The TALE is a self-report questionnaire that measures the frequency of using the three autobiographical memory functions in daily life, specifically: self-continuity, social-bonding, and directing-behavior functions.

Previously examined psychometric properties of the original and translated versions of 15-item TALE show structural validity (Alea & Ali, 2018; Bluck & Alea, 2011; Caci et al., 2020; Ochiai & Oguchi, 2013; Vranić et al., 2018), convergent validity (Bluck & Alea, 2011; Vranić et al., 2018), discriminant validity (Bluck & Alea, 2011; Vranić et al., 2018), internal consistency (Alea & Ali, 2018; Bluck & Alea, 2011; Caci et al., 2020; Ochiai & Oguchi, 2013; Vranić et al., 2018), and measurement invariance (Alea & Ali, 2018; Bluck & Alea, 2011; Caci et al., 2020). Test–retest reliability of the Japanese version of TALE, which consists of eight items, has also been demonstrated (Ochiai & Oguchi, 2013).

Though the TALE has been translated into many languages, a valid instrument for assessing autobiographical memory function in a Korean population does not currently exist. As such, the current research aims to fill this gap in the literature so that further studies linking the functional uses of autobiographical memory to mental health and psychological outcomes, for example, can be conducted and researchers can be confident in the validity of findings. A Korean version of the TALE (TALE-K) has been previously used in a community-dwelling sample of older adults in one preliminary study (Park et al., 2021). We recognize the importance, however, of demonstrating robust psychometric properties for self-report measures; this was not done in the Park et al. (2021) study for the TALE-K, with the exception of reporting internal consistency of the subscales assessing the three functions (Cronbach's αs = 0.83–0.94).

The current study thus aimed to examine the factor structure and psychometric properties of the TALE-K in a sample of Korean younger and older men and women. It also aimed to validate the three functions of autobiographical memory from the TALE-K by looking at convergent validity with a measure of reminiscence functions. Autobiographical memory and reminiscence are similar in that they both refer to recollecting personal events in one's life. However, autobiographical memory and reminiscence come from different disciplinary traditions (Webster, 2003). Grounded more in gerontology, some functions of reminiscence (Hong, 2000; Nam, 2012) such as death preparation (Hong, 2000) or coping with life stress and transmission (Nam, 2012) may be more appropriate for older than younger people. Thus, although measures of reminiscence, like specific subscales (e.g., identity, conversation, and problem-solving) from the Reminiscence Function Scale (Webster, 1993), are an appropriate way to assess convergent validity for the TALE-K, some divergent validity might be expected for those subscales that are clearly psychodynamic in nature (e.g., bitterness revival; Bluck et al., 2005; Harris et al., 2014).

2 | METHODS

2.1 | Data collection

The protocol of this study was approved by the Institutional Review Board of Yonsei University Mirae Campus (Approval number: 1041849-202201-SB-017-02). The study was conducted by an online survey company. Participants who met the inclusion criteria were invited to voluntarily participate in the survey. Participants were asked to provide responses to the TALE-K, Patient Health Questionnaire-9 items (a measure of depressive symptoms), Korean-Reminiscence Functions Scale for the Elderly (K-RFS-E), and a questionnaire for general characteristics of participants. After 4 weeks, to recruit the participants for the test–retest reliability session, invitations were sent to all participants who completed the first survey, with a target $N = 30$. According to the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) risk of bias checklist (Mokkink et al., 2018), there is not a specific sample size recommended for test–retest reliability testing. It was reported that the sample size between one and four-fold of number of items was most common for test–retest reliability test of self-reported outcome measures (Park et al., 2018). The sample size for test–retest reliability test in this study was set by two-fold of number of items. About 20% of target number observations were additionally collected to ensure using at least 30 observations for final analysis for test–retest reliability. This target sample was asked to do the TALE-K again, for the test–retest reliability.

2.2 | Participants

Convenience stratified sampling was used to recruit participants. To examine measurement invariance across age groups, we sampled both younger adults and older adults. Inclusion criteria for the survey were (1) aged between 18 and 40 years or 60 years or older, (2) cognitively, emotionally, and physically healthy enough to complete all questionnaires via online survey, and (3) voluntarily consented to participate.

TABLE 1 Characteristics of the study sample ($N = 440$).

	Mean ± SD
Age (years)	43.26 ± 16.34
Female, *n* (%)	273 (62.05)
Years of education	15.53 ± 2.20
PHQ-9	5.07 ± 4.42
TALE-K (number of items)	
General levels of thinking about autobiographical memories (1)	2.99 ± 0.90
General levels of talking about autobiographical memories (1)	2.54 ± 0.93
Total (15)	2.39 ± 0.74
K-RFS-E (number of items)	
Identity exploration function (3)	6.01 ± 1.84
Conversation function (3)	6.19 ± 1.91
Problem solving function (3)	6.04 ± 1.66
Total (9)	18.24 ± 4.25

Note: Number of items is in parentheses; sample size of subgroup: younger adults ($n = 281$), older adults ($n = 159$), male ($n = 167$), and female ($n = 273$); subgroup age (Mean ± SD): younger adults (31.54 ± 5.52, range: 19–40) and older adults (63.97 ± 3.54, range: 60–77); subgroup education (Mean ± SD): younger adults (15.66 ± 1.75) and older adults (15.30 ± 2.82); and Subgroup depression: younger adults (5.90 ± 4.49) and older adults (3.59 ± 3.92).
Abbreviations: K-RFS-E, Korean-Reminiscence Functions Scale for the Elderly; PHQ-9, Patient Health Questionnaire-9 items; TALE-K, Korean version of the Thinking About Life Experiences Scale.

The aim of this study was to validate the TALE-K, which was developed for use with the general population, and not clinical subsamples. However, based on the negative association between depression and generating specific autobiographical memories (Gamble et al., 2019; Kuyken & Dalgleish, 1995), screening for serious depression seemed necessary. To screen out individuals suffering from severe depression, the Korean version of the Patient Health Questionnaire-9 items (PHQ-9; Han et al., 2008) was included as part of the online survey. Sociodemographic characteristics of the participants and descriptive statistics related to the PHQ-9, TALE-K, and K-RFS-E are presented in Table 1.

2.3 | Measures

2.3.1 | Korean version of the PHQ-9

The PHQ-9 (Han et al., 2008) contains nine items rated on a 4-point Likert-scale that asks the frequency of difficulties in daily life because of depressive symptoms within the two most recent weeks. The total score for the PHQ-9 ranges from 0 to 27. A higher score means a higher level of depression. Total scores of 4 or lower indicate an absence of depression. Total scores of 5–9, and 10–19, respectively, indicate mild depression and moderate depression. Total scores of 20 or higher indicate severe depression (Park et al., 2010). The PHQ-9 has been validated with Korean older adults from 60 to 84 years old (Han et al., 2008) and Korean adults 19 and older (Park, 2017).

2.3.2 | Korean version of the Thinking About Life Experiences Scale

The TALE-K (Park et al., 2021) was used to measure the functions of autobiographical memory. The TALE-K was developed in a previous study (Park et al., 2021) by translating the original TALE into Korean and back-translating it into English according to standard guidelines (Beaton et al., 2000). Based on the original TALE, it contains 15 items rated on 5-point Likert scales that ask the frequency of retrieving or talking about autobiographical memory for several purposes or functions. There are also two initial items for measuring general levels of thinking and talking about autobiographical memories in daily life. There are five items for each of the three autobiographical memory functions (i.e., self-continuity, social-bonding, and directing-behavior functions). The 15 items, excepting for two initial items, are used to assess the three functional uses of autobiographical memory. The possible score for each function ranges from 1 (*almost never*) to 5 (*very often*). A higher score indicates more frequent use of autobiographical memory to serve that specific function in one's daily life.

2.3.3 | Korean-Reminiscence Functions Scale for the Elderly

Based on the convergence between the original TALE and Reminiscence Functions Scale (Bluck et al., 2005; Webster, 1993), some of the subscales of the K-RFS-E (Hong, 2000) were used to examine convergent validity of the TALE-K. The K-RFS-E is an instrument in which items were developed and validated with Korean older adults (Hong, 2000). The original Reminiscence Function Scale, developed with a Canadian sample, consists of 43 items, which measure eight functions: identity, conversation, problem-solving, intimacy maintenance, death preparation, boredom reduction, teach/inform, and bitterness revival (Webster, 1993). The K-RFS-E consists of 27 items, which measure nine functions: identity exploration, conversation, problem-solving, intimacy maintenance, death preparation, boredom reduction, transmission, contrition, and escapism (Hong, 2000). The items of K-RFS-E are rated on 4-point Likert scales (1 = *not at all*, 2 = *occasionally*, 3 = *frequently*, and 4 = *very frequently*). Each subscale of the K-RFS-E consists of three items, so that the total possible score for each function ranges from 3 to 12. A higher score indicates more frequent reminiscence in relation to that specific reminiscence function subscale. In this study, to examine convergent validity with the TALE-K, nine items from three subscales were used, as they provide a conceptual fit with the three subscales of the TALE, including thinking about one's past for: identity exploration (i.e., to learn meaning of life, to compare who I was with who I am, to understand who I am), conversation (i.e., because the past stories help me to begin conversation easily with persons of my age, because it makes me feel closer to the

persons who I am talking with, because I can talk comfortably with persons of my age), and problem-solving (i.e., to solve my current problems, to review the past and plan the future, because remembering my experience with overcoming difficulties encourages me). Cronbach's alpha for each subscale in the K-RFS-E development study was .63 (identity exploration), .76 (conversation), and .58 (problem solving; Hong, 2000). Cronbach's alpha for each subscale in the current study was .75 (identity exploration), .82 (conversation), and .65 (problem solving).

Other subscales included in the K-RFS-E are boredom reduction (e.g., to make time less boring), transmission (e.g., I talk about the past to children about how I lived my life), contrition (e.g., to review difficult hardships I've faced in life), intimacy maintenance (e.g., when I miss my deceased parents), escapism (e.g., because it makes me feel comfort), and death preparation (e.g., to get used to the idea that I have to face with death someday). These subscales are not expected to show convergent validity with the subscales of the TALE-K, and may even demonstrate discriminant validity.

2.4 | Statistical analysis

Five types of psychometric properties were examined. First, structural validity was examined using confirmatory factor analysis (CFA). Model comparisons for a one, two and three-factor model were compared using fit indices to select the best structure. The criteria for fit indices to select the better model were root mean square error of approximation (RMSEA) <.08 (Browne & Cudeck, 1993), Tucker–Lewis index (TLI) ≥.90 (Bentler, 1990), comparative fit index (CFI) ≥.90 (Bentler, 1990), and standard root mean square residual (SRMR) ≤.08 (Hu & Bentler, 1999). Second, convergent validity was examined by analyzing Pearson correlation coefficients between matched scores of each of the three TALE-K functions (i.e., self, social, and directive) and the three subscales of the K-RFS-E (i.e., identity exploration, conversation, and problem-solving function). The correlation coefficient between the subscales of the two measures was calculated separately for older adults, younger adults, and total sample to avoid biased results because of the application of using an older-adult specific instrument (i.e., K-RFS-E).

Third, measurement invariance was examined using a multigroup CFA models across gender (coded as male: 1, female: 2) and age (coded as younger adults: 1, older adults: 2; Piefke & Fink, 2005). The three-factor model was used as a base model (Figure 1) because of its theoretical relevance, because three factors was the structure for the original TALE, and because this model has been validated in other cultures. In addition, the three-factor model was the best among the three models, which were tested for structural validity examination. The MLR (robust maximum likelihood) estimator was applied to analyze the CFA models. The chi-square change statistic (i.e. statistically not significant ΔX^2; Brown, 2015), and the change of CFI and RMSEA (i.e., ΔCFI ≤ .005 and ΔRMSEA ≤ .010; Chen, 2007) was used to examine measurement invariance. Fourth, internal consistency was examined by calculating Cronbach's α for all 15-items totaled and each of the three function subscales separately. Fifth, test–retest reliability was examined by calculating the intra-class correlation coefficients (ICC) for each of the three function subscales. All analyses except for CFA were conducted using SAS 9.4 (SAS Institute, Cary, NC, USA). For analyzing the CFA model and measurement invariance, Mplus 8.5 (Muthén & Muthén, Los Angeles, CA, USA) was used.

3 | RESULTS

The survey was administered between February 17 and 21, 2022. A total of 450 individuals met the inclusion criteria and participated in the survey. The sample was 162 older adults (male: 84, female: 78) and 288 younger adults (male: 85, female: 203). Among the 450 individuals who participated in the survey, data from 440 individuals were used for analysis. Data from 10 individuals with 20 or higher scores on the PHQ-9, indicating people with severe depression (Park et al., 2010), were excluded. The additional survey for the test–retest reliability was conducted between March 18 and 21, 2022. Thirty-eight individuals participated in that survey. Data from all 38 individuals were used to examine test–retest reliability. There was no missing data.

3.1 | Factor structure of the TALE-K

Model fit comparisons are presented in Table 2. The fit indices of the one-factor model were poor. The two-factor model that comprised a social factor and a combining factor of self-function and directive function was also tested. The Combined factor was set based on the very strong correlation between the two latent variables, which were self-function and directive function ($r = .930$), from the three-factor model. The fit indices of the two-factor model were marginal. The three-factor model showed slightly better fit indices than those of the two-factor model. Although the fit indices of the three-factor model were marginal because of the mediocre level of RMSEA ($X^2 = 385.993$, degree of freedom (df) = 87, $p < .001$, RMSEA = .088, TLI = .903, CFI = .920, and SRMR = .050; Fabrigar et al., 1999; Kline, 2015; MacCallum et al., 1996), the three-factor model was concluded as the best model among three model comparisons. Therefore, the TALE-K structure matches the original version of the TALE. All factor loadings excepting item 1 (λ = .463) regressed on three factors were acceptable (λ > .5; see Figure 1; Brown, 2015; Kline, 2015). Table 3 presents the mean scores on the subscales for the three functions in the study sample, which were measured using the TALE-K.

3.2 | Convergent validity

The correlations among TALE-K subscales and all the subscales on the K-RFS-E are presented in Table 4. The moderate to strong associations observed between scores on conceptually similar subscales

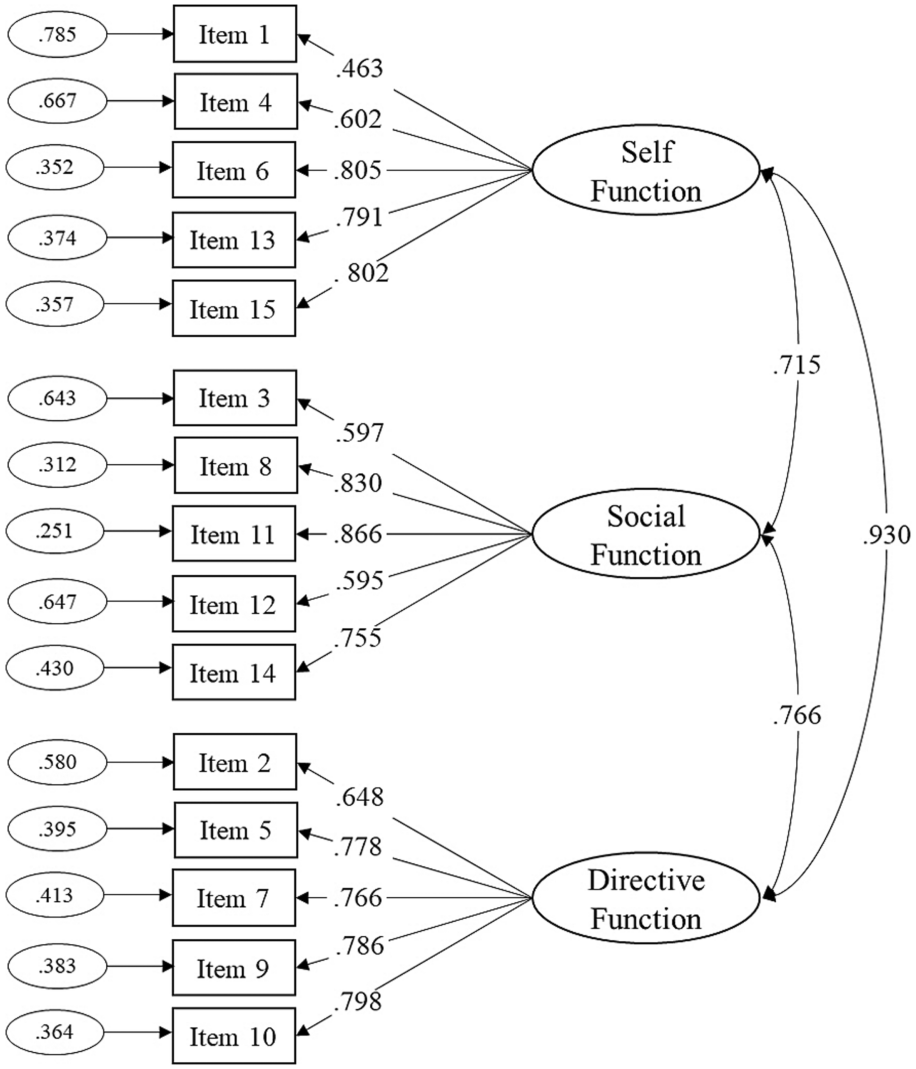

FIGURE 1 Standardized factor loadings from the three-factor model of the Korean version of the Thinking About Life Experiences Scale.

TABLE 2 Model fit comparisons.

	X^2 (df)	*p*	RMSEA (90% CI)	TLI	CFI	SRMR
One-factor model	691.030 (90)	<.001	.123 (.115, .132)	.812	.839	.061
Two-factor model	417.295 (89)	<.001	.092 (.083, .101)	.896	.912	.050
Three-factor model	385.993 (87)	<.001	.088 (.079, .097)	.903	.920	.050

Note: Two-factor model comprises a social factor and a factor for which the self-function and directive function were combined. Three-factor model comprises three factors of the original TALE.
Abbreviations: X^2, chi-square; CFI, comparative fit index; CI, confidence interval; df, degree of freedom; RMSEA, root mean square error of approximation; SRMR, standard root mean square residual; TLI, Tucker–Lewis index.

TABLE 3 Autobiographical memory function of Korean adults measured using the Korean version of the Thinking About Life Experiences Scale.

	All participants ($n = 440$)	Gender		Age	
		Male ($n = 167$)	Female ($n = 273$)	Younger ($n = 281$)	Older ($n = 159$)
Self-function	2.32 ± 0.79	2.23 ± 0.72	2.37 ± 0.82	2.47 ± 0.79	2.04 ± 0.69
Social function	2.31 ± 0.82	2.31 ± 0.82	2.32 ± 0.83	2.46 ± 0.85	2.06 ± 0.71
Directive function	2.54 ± 0.87	2.45 ± 0.80	2.60 ± 0.91	2.72 ± 0.91	2.23 ± 0.71
Total	2.39 ± 0.74	2.33 ± 0.72	2.43 ± 0.76	2.55 ± 0.74	2.11 ± 0.66

Note: Mean scores are presented. Mean ± Standard Deviation, Gender groups = male or female. Age groups = younger and older adults.

TABLE 4 Pearson's correlation coefficients between subscales of the TALE-K and K-RFS-E.

		Reminiscence functions									
		Identity	**Convers**	**Problem**	**Boredom**	**Trans**	**Cont**	**Intimacy**	**Escapism**	**Death**	**PHQ-9**
Autobiographical memory functions	Self	**0.699**‡ a	0.259‡ a	0.626‡ a	0.276‡ a	0.264‡ a	0.424‡ a	0.254‡ a	0.372‡ a	0.309‡ a	0.243‡ a
		0.634‡ b	0.392‡ b	0.548‡ b	0.234‡ b	0.395‡ b	0.475‡ b	0.278‡ b	0.369‡ b	0.408‡ b	0.336‡ b
		0.687‡ c	0.304‡ c	0.605‡ c	0.277‡ c	0.179‡ c	0.454‡ c	0.184‡ c	0.368‡ c	0.268‡ c	0.320‡ c
	Social	0.427‡ a	**0.487**‡ a	0.468‡ a	0.325‡ a	0.283‡ a	0.328‡ a	0.290‡ a	0.457‡ a	0.265‡ a	0.102 a
		0.533‡ b	**0.511**‡ b	0.467‡ b	0.281‡ b	0.458‡ b	0.389‡ b	0.302‡ b	0.441‡ b	0.360‡ b	0.246† b
		0.472‡ c	**0.497**‡ c	0.476‡ c	0.324‡ c	0.223‡ c	0.363‡ c	0.225‡ c	0.450‡ c	0.234‡ c	0.193‡ c
	Directive	0.699‡ a	0.337‡ a	**0.726**‡ a	0.185‡ a	0.240‡ a	0.343‡ a	0.229‡ a	0.322‡ a	0.182‡ a	0.146* a
		0.640‡ b	0.405‡ b	**0.532**‡ b	0.196‡ b	0.412‡ b	0.453‡ b	0.307‡ b	0.350‡ b	0.387‡ b	0.299‡ b
		0.689‡ c	0.362‡ c	**0.671**‡ c	0.204‡ c	0.164‡ c	0.391‡ c	0.174‡ c	0.329‡ c	0.178‡ c	0.243‡ c
Autobiographical memory functions	PHQ-9	0.290‡ a	0.170† a	0.283‡ a	0.153* a	0.214‡ a	0.455‡ a	0.225‡ a	0.298‡ a	0.402‡ a	1.00
		0.436‡ b	0.229† b	0.377‡ b	0.186* b	0.138 b	0.425‡ b	0.319‡ b	0.313‡ b	0.392‡ b	1.00
		0.323‡ c	0.201‡ c	0.325‡ c	0.178‡ c	0.083 c	0.460‡ c	0.183‡ c	0.303‡ c	0.324‡ c	1.00

Note: Number of items is in parentheses. For the predicted correlations in the gray section of the table, all correlations remain significant at the Bonferroni-corrected *p*-value. Bold indicates highlighted correlation coefficients between corresponding scores of TALE-K functions and K-RFS-E subscales.

Abbreviations: Boredom = boredom reduction; Cont = contrition; Convers = conversation; Death = death preparation; Esca = escapism; Identity = identity exploration; Intimacy = intimacy maintenance; K-RFS-E, Korean-Reminiscence Functions Scale for the Elderly; PHQ-9, Patient Health Questionnaire-9 items; Problem = problem-solving; TALE-K, Korean version of the Thinking About Life Experiences Scale; Trans = transmission.

*$p < .05$; †$p < .01$;

‡$p < .001$.

[a]Younger adults.

[b]Older adults.

[c]Total sample.

across the two measures (i.e., TALE-K self-continuity and K-RFS-E identity; TALE-K social-bonding and K-RFS-E conversation; and TALE-K directive and K-RFS-E problem solving) demonstrate convergent validity (Akoglu, 2018). This was true for the total sample, as well as for the age groups.

Weak correlations between three functions of the TALE-K and K-RFS-E subscales that are more psychodynamic in nature demonstrated discriminant validity (e.g., intimacy maintenance, meaning maintaining intimacy with loved ones who have passed away). Except for the social function on the TALE-K in younger adults, and the transmission function of the K-RFS-E in older adults, depressive symptoms (i.e., PHQ-9 score) demonstrated statistically significant positive moderately-sized associations with all autobiographical memory functions and reminiscence functions.

3.3 | Measurement invariance

Table 5 presents the results of the multigroup CFA. The configural invariance across gender was marginally supported ($X^2 = 541.925$, df = 174, $p < .001$, RMSEA = .098, TLI = .884, CFI = .904, and SRMR = .059). The significance of the chi-square change statistic in the metric model against the configural model was not statistically significant. The significance of the chi-square change test in the scalar model against the metric model was not statistically significant. In addition, the change of CFI was less than .005 and change of RMSEA was less than .010 in each step. Therefore, measurement invariance across gender was confirmed in the configural model (i.e., equal form), metric model (i.e., equal factor loading), and scalar model (i.e., equal indicator intercept).

The configural invariance across age was marginally supported ($X^2 = 492.176$, df = 174, $p < .001$, RMSEA = .091, TLI = .895, CFI = .913, and SRMR = .053). The significance of the chi-square change test for the metric model against the configural model was not statistically significant. In addition, the change of CFI was less than .005 and change of RMSEA was less than .010 in this step. However, the significance of chi-square change test in the scalar model against the metric model was statistically significant. In this step, the change of CFI was not less than .005 although the change of RMSEA was less than .010. Therefore, measurement invariance across age group was confirmed in configural model and metric model, but not confirmed in scalar model.

3.4 | Internal consistency

The internal consistency coefficients of the total 15 items (Cronbach's $\alpha = .928$) and each of the function subscales was strong: self-continuity function = .819, social-bonding function = .845, and directing-behavior function = .868 (Cortina, 1993).

3.5 | Test–retest reliability

The 4 week test–retest reliability for the TALE-K total score (ICC = .81, $p < .001$) and all three function subscales were good to excellent: self-continuity (ICC = .71, $p < .001$) social-bonding (ICC = .79, $p < .001$), directive function (ICC = .77, $p < .001$) (Cicchetti, 1994).

4 | DISCUSSION

The Korean language version of the TALE (Park et al., 2021), the TALE-K, was validated with a Korean sample of adults. The results support the use of the TALE-K to measure the three functions of autobiographical memory. These results indicate that the TALE-K captures the construct of autobiographical memory function as intended by the original English and the other language versions of the TALE. Findings showed that the three factors structure is best for the TALE-K and it showed good convergent validity, as expected, with the K-RFS-E. Internal consistency of the three function subscales and the total score was good. Test–retest reliability was also good for all three of the function subscales. The results of multigroup CFA

TABLE 5 Differences in the fit indices of multigroup confirmatory factor analysis.

	X^2 (df)	*p*	RMSEA (90% CI)	TLI	CFI	SRMR	X^2	Δdf	*p* (ΔX^2)	ΔRMSEA	ΔCFI
Gender (Reference Group: Male)											
Configural model	541.925 (174)	<.001	.098 (.089, .107)	.884	.904	.059					
Metric model	561.333 (186)	<.001	.096 (.087, .105)	.889	.902	.067	19.408	12	.079	.002	.002
Scalar model	573.616 (198)	<.001	.093 (.084, .102)	.896	.902	.066	12.283	12	.423	.003	0
Age (Reference Group: Younger adults)											
Configural model	492.176 (174)	<.001	.091 (.082, .101)	.895	.913	.053					
Metric model	512.304 (186)	<.001	.089 (.080, .099)	.899	.911	.062	20.129	12	.064	.002	.002
Scalar model	546.053 (198)	<.001	.089 (.081, .098)	.899	.905	.066	33.748	12	<.001	0	.006

Note: Three-factor model was tested. Gender groups = male or female. Age groups = younger and older adults.
Abbreviations: X^2, chi-square; CFI, comparative fit index; CI, confidence interval; df, degree of freedom; RMSEA, root mean square error of approximation; SRMR, standard root mean square residual; TLI, Tucker–Lewis index.

indicated that structural, metric, and scalar invariance of the TALE-K was demonstrated across gender. Measurement invariance across age groups (younger, older) was confirmed in structural and metric models but not in scalar model. The TALE-K is the first validated instrument, which can be applied and used to measure Korean functional use of autobiographical memory.

Given that robust psychometric properties are necessary for self-reported outcome measures, the results of structural validity, convergent validity, internal consistency and test–retest reliability support that the TALE-K is a reliable self-report questionnaire that can be used in Korean adult samples. Regarding the structural validity, a three-factor structure of the construct was confirmed, like the previous studies conducted in diverse cultures (Alea & Ali, 2018; Bluck & Alea, 2011; Caci et al., 2020; Ochiai & Oguchi, 2013). The mean levels of autobiographical memory function of young adults and older adults in this study were lower than those of young adults and older adults measured in Western US culture (Bluck & Alea, 2011; Vranić et al., 2018). This low level of functional use of autobiographical memory detected in both young and older adults in this Korean sample may be associated with values held in a collectivist Eastern culture, in which remembering personal experiences may be less of a focus in daily life compared with a Western individualistic culture (Liao et al., 2016). This is in line with other research showing that the functional use of autobiographical memory of Chinse and Japanese adults was also less frequent than that of American adults (Kulkofsky et al., 2010; Maki et al., 2015).

Regarding the convergent validity, the results indicated moderate to strong correlations between autobiographical memory functions on the TALE-K and three matched subscales of specific reminiscence functions. The correlation coefficients for the social function from the TALE-K and the conversation function from the K-RFS-E were relatively weak compared with the other two functions (i.e., correlations between self-function and identity exploration function, correlations between directive function and problem-solving function). This may be because of the limited extent of the conversation function in K-RFS-E, compared with the social function in TALE-K, which captures both making conversation with others and retrieving personal past days with others as a means for maintaining social ties. In addition, the relatively weak correlation may be because of the subdivided functions in the K-RFS-E. The pattern of results may also be affected by the Korean sample: the K-RFS-E includes a conversation function and a transmission function, which is about sharing personal stories with others to transmit knowledge from one generation to the next. Both of these uses of autobiographical memory in conversations—not just the conversation function—may play a role in maintaining social relationships in a culture in which familial and societal ties have great importance (e.g., relations with children or grandchildren).

According to the results of multigroup CFA in this study with a Korean sample, measurement invariance by age group was partially confirmed. Mixed results on age invariance were found in previous studies. Measurement invariance across three age groups was not found in a study that investigated autobiographical memory function with a Trinidadian sample (Alea & Ali, 2018). Multigroup CFA was applied in the Trinidad study and the authors figured out the specific item, which lead to measurement invariance. The original English-language TALE as well as the Italian (Caci et al., 2020) have found age invariance. The German version of the TALE found partial age invariance (Wolf & Zimprich, 2015). Measurement invariance across age was confirmed in the study with Croatian sample in which the younger adult group and older adult group were separated by 45 years (Vranić et al., 2018). In the study with Italian sample, the younger adult group and middle-aged adult group were separated by 30 years (Caci et al., 2020). The two samples average ages apart in the current study was also about 30 years. Given the lack of measurement invariance across age with the scalar model in this Korean sample, modifying the instrument or developing an age-specific measurement for autobiographical memory functions among Koreans may be needed. Additional functions, besides the three TALE subscales, based on the differential item functioning analysis should perhaps be considered, in future research exploring age differences and similarities in the functions of autobiographical memory. These item analyses are beyond the scope of the current paper. The TALE and TALE-K focus on three functions but other untapped functions of autobiographical memory might surely exist (e.g., using autobiographical memories for emotion regulation; Pasupathi, 2003; Pillemer, 2009).

Regarding the internal consistency of the function subscales, self-continuity, social-bonding, and directing-behavior, the Cronbach's αs in this study were similar to or slightly higher than those in previous studies in different countries or cultures (Bluck & Alea, 2011; Liao et al., 2016; Vranić et al., 2018). Regarding the test–retest reliability, it is limited to compare the test–retest reliability of the Japanese version to that of the Korean version directly because of the inconsistency of reported coefficients. However, the ICCs found in the current study were higher in all subscales than those of the Japanese version of TALE, in which test–retest reliability was examined using Pearson's r (total items: $r = .53$, self-continuity: $r = .47$, social function $r = .47$, and directive function $r = .54$; Ochiai & Oguchi, 2013). The difference in the two versions may be attributed to cultural characteristics. However, test–retest reliability needs to be examined with larger and more various samples in more studies to confirm the test–retest reliability of the translated versions of TALE.

The average score of the PHQ-9 of the total sample in this validation study indicated mild levels of depressive symptoms. Although about 15.9% of the sample reported moderate levels of depression, individuals with severe depression were screened out. For this reason, the TALE-K can probably only be reliably and validly used in a population without severe depression to measure individuals' autobiographical memory functions. Making these links between mental health and the use of autobiographical memories for specific functions, however, seems warranted. For example, in previous studies, researchers have related specific autobiographical memory functions to trait personality (Caci et al., 2019), self-perception (Berna et al., 2016), depressive symptoms (Grace et al., 2016), and psychological wellbeing (Waters, 2014). Considering that retrieving autobiographical memories is an adaptive response prompted by cues in one's environment (Johannessen & Berntsen, 2010; Liao et al., 2016), inability to

functionally use one's memory can be maladaptive (Vanaken et al., 2021). For example, patients with neuropsychiatric disorders such as schizophrenia, bipolar disorder, and major depressive disorder, as well as neurological disorders such as Alzheimer's disease or other dementias, have difficulties with the functional uses of autobiographical memory (Sheldon et al., 2018).

Another potential limitation that could caution the use of the TALE-K is that the number of younger females was more than two times to the number of younger males and older males and females in the current study. This sample composition may have affected the results and future work should aim to capture samples with the characteristics of participants that are more equal in terms of gender and age groups.

5 | CONCLUSION

Findings demonstrated that the TALE-K seems to be a reliable, valid self-reported instrument for measuring three autobiographical memory functions (i.e., self-continuity, social-bonding, and directing-behavior functions). It thus seems that the TALE-K can be used with a Korean sample of adults, if the sample is not severely depressed. Further studies are recommended for understanding how different Korean age groups conceptualize functional use of the personal past.

AUTHOR CONTRIBUTIONS

Conceptualization: Sangmi Park, Ji-Hyuk Park, and Tae Hui Kim. Data curation: Sangmi Park. Formal analysis: Sangmi Park and Ickpyo Hong. Investigation: Sangmi Park and Ji-Hyuk Park. Methodology: Sangmi Park, Ji-Hyuk Park, and Ickpyo Hong. Original draft preparation: Sangmi Park, Tae Hui Kim, Nicole Alea, and Susan Bluck. Review and editing: all authors.

CONFLICT OF INTEREST STATEMENT

The authors have no potential conflicts of interest to disclose.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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