


RESEARCH ARTICLE

Validating happiness scale for the elderly: A confirmatory factor analysis study in Indonesia

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ABSTRACT

This study addressed the need for a validated instrument to measure happiness among elderly individuals in Indonesia. The research aimed to examine the construct validity of a modified version of The Happiness Scale Interval Study (HSIS). Data were collected from 211 elderly individuals aged 60 years and above residing in Jakarta using a non-probability convenience sampling method. Confirmatory Factor Analysis (CFA) with LISREL 8.70 software was employed to test the unidimensionality and construct validity of the scale. The initial model showed unsatisfactory fit, but after allowing for correlated errors among certain items, the model achieved a good fit with a final Chi-square value of 25.43, p -value = .22884, and RMSEA = .032. The results indicate that all items significantly measure a single factor of happiness, confirming the construct validity of the modified HSIS for elderly populations in Jakarta. This study provides evidence for the validity of this happiness scale as a tool for future research on happiness and well-being among the elderly population in Indonesia, informing the development of targeted interventions.

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INTRODUCTION

Happiness is understood as a personal, positive emotional condition. According to Seligman (2002), happiness involves an individual's capacity to experience positive emotions across time. Aristotle suggested that happiness extends beyond simply avoiding difficulties or seeking pleasure; it consists in managing one's life with awareness and purpose, leading to both personal and societal benefits (Arif, 2016). Furthermore, happiness encompasses feelings of joy, satisfaction, and overall well-being, along with a sense of living well and meaningfully with a positive future perspective (Berghella, 2014). Veenhoven (2009) defines happiness as the extent to which someone enjoys and likes their life, reflecting a positive and subjective evaluation, as well as a sense of contentment. The core of Veenhoven's definition lies in the concepts of "subjective evaluation" and "enjoying life," also referred to as contentment.

According to Veenhoven (2009), happiness can be understood through two key aspects: affective and cognitive. The affective aspect of happiness involves various feelings, emotions, and moods, which can range from active to inactive and pleasant to unpleasant. This is also referred to as the 'hedonic

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tone' or 'hedonic level of effect', which Veenhoven (2009) defines as an individual's assessment of their feelings, emotions, and moods. The cognitive aspect of happiness relates to how individuals evaluate their lives by comparing their current situation to their desires and ideas about their ideal life. This involves the extent to which a person believes they have achieved what they want in life and is also known as contentment. Veenhoven (2009) emphasized that this cognitive component is a part of the overall experience of happiness.

Happiness is a fundamental aspect of human well-being, playing a crucial role in both physical and mental health (Diener et al., 2008). Over the past few decades, psychological research has increasingly focused on understanding happiness, particularly among older adults, due to its implications for quality of life and aging well (Ryan & Deci, 2001). Happiness can be defined as a subjective evaluation of life satisfaction and emotional well-being, shaped by individual experiences and societal factors (Diener, Suh, Lucas, & Smith, 1999). Theories of happiness suggest that it is influenced by both intrinsic and extrinsic factors, such as personality traits, social relationships, financial stability, and health status (Lyubomirsky, Sheldon, & Schkade, 2005). Seligman's (2002) well-being theory posits that happiness consists of positive emotions, engagement, relationships, meaning, and achievement (PERMA model), which collectively contribute to a fulfilling life. Veenhoven (2009) further emphasized that happiness is not only an emotional state but also a cognitive appraisal of life satisfaction. The elderly population often experiences changes that impact happiness, including retirement, loss of loved ones, and health challenges. Given these factors, accurately measuring happiness among older adults is crucial for developing interventions that enhance well-being and life satisfaction.

The Happiness Scale Interval Study (HSIS) was developed to assess happiness based on affective and cognitive components (Kalmijn, Arends, & Veenhoven, 2010). The affective component pertains to emotional states, such as joy and contentment, while the cognitive component reflects life satisfaction and fulfillment of personal goals (Diener & Biswas-Diener, 2008). Despite extensive research, a need remains to validate happiness measurement tools across diverse cultural contexts, as the meaning and determinants of happiness may vary across populations (Uchida, Norasakkunkit, & Kitayama, 2004). Indonesia, with its diverse socio-cultural landscape, presents a unique setting for examining happiness among the elderly. Cultural values, family structures, and economic conditions influence how happiness is perceived and experienced (Suh & Oishi, 2002). In collectivist societies like Indonesia, social support from family and community plays a crucial role in overall well-being, contrasting with the more individualistic perspectives on happiness prevalent in Western countries. By validating the HSIS in an Indonesian context, this study aims to provide a reliable tool for assessing happiness among the elderly, contributing to the broader discourse on well-being and aging.

This study aims to examine the construct validity of the modified Happiness Scale Interval Study (HSIS), which assesses both affective and cognitive dimensions of happiness, among the elderly population residing in Jakarta, Indonesia. By employing Confirmatory Factor Analysis (CFA), this research seeks to determine if the adapted HSIS effectively measures the intended constructs of happiness within this specific cultural context. Ultimately, this study aims to provide empirical evidence for the validity of the HSIS for assessing happiness among elderly Indonesians, thereby contributing a reliable tool for future research on well-being and aging in Indonesia.

METHOD

This study employed a quantitative research design using Confirmatory Factor Analysis (CFA) to validate the happiness scale. CFA is a statistical technique used to verify the factor structure of a set of observed variables (Brown, 2015). The analysis was conducted to test the unidimensionality and construct validity of the happiness scale. In this study, we test the instrument's validity using

Confirmatory Factor Analysis (CFA) with LISREL 8.70 software. This stage is used to determine whether each variable is valid and can accurately measure the construct being assessed. The steps for testing the CFA validity are as follows (Umar & Nisa, 2020):

1. There is a concept that is operationally defined, allowing questions or statements to be formulated to measure it. This concept is referred to as a factor, and its measurement is carried out by analyzing the responses to the items.
2. Testing the hypothesis of the unidimensional model of items constructed to test the model's suitability. This examines whether each item measures only one factor, indicating that both the item and the subscale are unidimensional.
3. Performing the CFA test with a one-factor model by looking at the Chi-square value. If the Chi-square value is significant ($p < 0.05$), it means that all items measure only one factor. However, if the Chi-square value is not significant ($p > 0.05$), it is necessary to modify the measurement model. The step to modify if the Chi-square value is not significant ($p > 0.05$) is to free the parameter in the form of a correlation measurement error. This occurs when an item measures more than one construct to be measured (measuring more than one construct 'multidimensionally'). If the measurement error is freed to correlate with each other and finally produce a fit model, the model can be used and continued to the next step.
4. If you have obtained a fit model, an analysis is then carried out for each item, regardless of its validity. The analysis is evaluated based on whether the factor load of an item is significant and has a positive coefficient value. If the t-value for the factor load coefficient of an item > 1.96 (significant), then the item is declared significant in measuring the factor to be measured (not dropped) if the t value for an item is obtained < 1.96 (not significant), then the item is deemed not to make a significant contribution to measurement so that the item will be eliminated.
5. There is also an additional criterion (optional), namely, by looking at the number of partial correlations between measurement errors on an item that is correlated with measurement errors in other items. Items will also be eliminated if there are too many partial correlations between measurement errors (more than three) on an item. The reason the item was eliminated was that it also measured other factors (multidimensional).
6. Finally, by calculating the score factor. After completing the steps above, a correct item will be obtained to measure the specified factors.

The sample consisted of 211 elderly individuals aged 60 years and above, residing in Jakarta. A non-probability convenience sampling method was employed, allowing for accessible data collection while ensuring representation of diverse demographic backgrounds. The inclusion criteria required participants to have the cognitive ability to understand and respond to survey questions independently. Prior to participation, informed consent was obtained, and ethical approval was secured in accordance with the guidelines of the institutional review board (APA, 2017).

The happiness scale used in this study was adapted from The Happiness Scale Interval Study (HSIS) by Kalmijn, Arends, and Veenhoven (2010). It comprises 10 items that assess two dimensions of happiness: affective (hedonic level of affect) and cognitive (life satisfaction/contentment). A 4-point Likert scale (1 = Strongly Disagree, 4 = Strongly Agree) was used to measure responses. Both positive and negative statements were included to mitigate response bias (DeVellis, 2016).

Table 1. Happiness Scale

Aspect	Indicator	Item	Sample Item
Affective (<i>hedonic level of affect</i>)	Individual assessment of how well feelings, emotions, and moods perceived.	1,7,3,4,10	I can feel a lot of positive things in living life.
Cognitive (<i>contentment</i>)	Individual perceptions in assessing the desired achievement in life (contentment).	8,5,6,2,9*	Life today is close to what I want.

Information: (*) unfavorable item

Table 2. Likert Scale Score

Category	Favorable	Unfavorable
Strongly Disagree	4	1
Disagree	3	2
Agree	2	3
Strongly Agree	1	4

Data were collected through self-administered questionnaires distributed to participants in community centers, elderly associations, and religious groups. Assistance was provided to participants who required help due to literacy challenges. Researchers ensured that responses remained confidential and anonymous to encourage honest reporting.

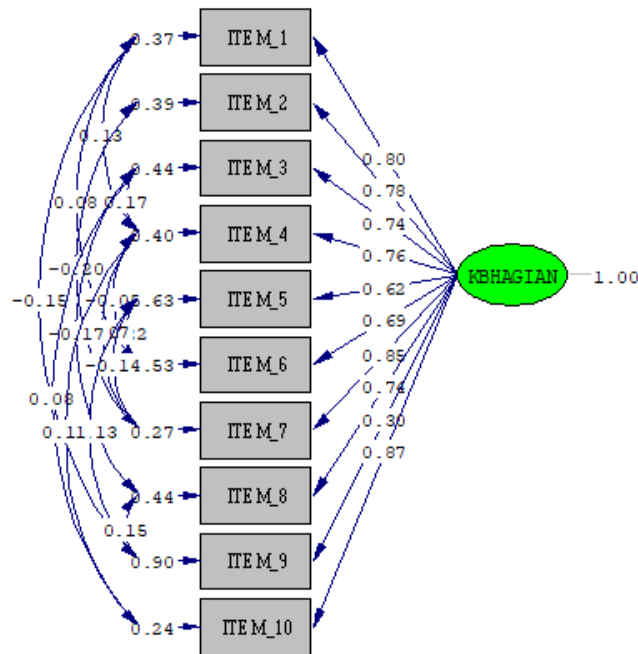
The collected data were analyzed using LISREL 8.70 software. The CFA procedure followed a stepwise approach, including model specification, parameter estimation, model evaluation, and potential modification to improve fit indices (Byrne, 2016). Model fit was assessed using Chi-square (χ^2), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR), with acceptable thresholds set according to Hu & Bentler (1999). Items with factor loadings below 0.50 were considered for removal to ensure the construct validity of the scale (Hair et al., 2010).

RESULT

The Confirmatory Factor Analysis (CFA) initially revealed that the hypothesized model did not exhibit a satisfactory fit to the data, with a Chi-square value of 261.47 ($p < 0.001$) and a Root Mean Square Error of Approximation (RMSEA) of 0.1762. To improve the model fit, modifications were made by allowing correlations between the error terms of specific items, as suggested by the modification indices. The revised model demonstrated a significantly improved fit, yielding a Chi-square value of 25.43 ($p = 0.229$) and an RMSEA of 0.0322. According to established criteria (Hu & Bentler, 1999), these final fit indices indicate a good fit of the unidimensional model to the data.

Examination of the factor loadings for the final model showed that all ten items loaded significantly onto a single factor, with t-values exceeding 1.96 ($p < 0.05$). The factor loadings ranged from 0.30 to 0.87, indicating that all items contribute to the measurement of the happiness construct. Specifically, Item 10 displayed the highest factor loading (0.87), while Item 9 had the lowest loading (0.30). Despite having the lowest loading, Item 9 was retained due to its statistical significance ($t = 4.31$, $p < 0.05$), confirming that it still makes a meaningful contribution to the measurement of happiness in this sample.

These results, as detailed in Table 3, support the conclusion that the modified 10-item happiness scale effectively measures a unidimensional construct of happiness among the elderly individuals in this study. Based on the table above, it can be seen that all items are significant items with a positive coefficient and a value of $t > 1.96$. Therefore, the ten items will be included in the next stage and have proven to accurately measure what they are intended to measure, namely happiness.



Chi-Square=25.43, df=21, P-value=0.22884, RMSEA=0.032

Figure 1. Confirmatory Factor Analysis (CFA) Model of the Happiness Construct

Table 3. The factor load of the Happiness Item

Item	Coefficient	Standard Error	T-Value	Significant
1	0.80	0.06	13.66	✓
2	0.78	0.06	13.02	✓
3	0.74	0.06	12.41	✓
4	0.76	0.06	12.47	✓
5	0.62	0.07	9.55	✓
6	0.69	0.06	11.14	✓
7	0.85	0.06	15.00	✓
8	0.74	0.06	12.55	✓
9	0.30	0.07	4.31	✓
10	0.87	0.06	15.78	✓

Information: ✓ = significant (t > 1.96); X = not significant (t < 1.96)

DISCUSSION

The findings of this study provide empirical support for the validity of the modified happiness scale in measuring the construct among elderly individuals in Jakarta, Indonesia. Initially, a two-dimensional structure of happiness, encompassing affective (hedonic level of affect) and cognitive (life satisfaction/contentment) components, was proposed based on Veenhoven's (2009) conceptualization. However, the initial Confirmatory Factor Analysis (CFA) revealed a poor model fit. After allowing for correlated errors among certain items, the final model demonstrated a good fit with a non-significant Chi-square value ($\chi^2 = 25.43$, P-value = 0.22884) and an acceptable Root Mean Square Error of Approximation (RMSEA = 0.032). This indicates that a unidimensional model adequately represents the construct of happiness in this sample of elderly Indonesians.

This finding of unidimensionality aligns with prior research emphasizing the stability of happiness as a psychological construct (Diener et al., 2008). The substantial factor loadings of all ten items (ranging from 0.30 to 0.87, all with t-values > 1.96) further confirm that each item significantly

contributes to the measurement of this single underlying factor of happiness. These results resonate with previous studies on happiness measurement, such as Kalmijn, Arends, and Veenhoven (2010), who also explored the affective and cognitive dimensions of happiness. While their initial framework posited two dimensions, the current study's outcome suggests that for elderly individuals in Jakarta, these dimensions may converge into a more holistic experience of overall happiness. This could be due to the specific life stage and socio-cultural context of the participants.

From a cultural perspective, the influence of collectivist values prevalent in Indonesia, as highlighted by Suh & Oishi (2002), may play a role. In such societies, happiness is often closely tied to social harmony, interpersonal relationships, and community well-being (Uchida, Norasakkunkit, & Kitayama, 2004). The current findings, supporting a strong general factor of happiness, reflect this interconnectedness, where both emotional experiences and cognitive evaluations of life satisfaction are collectively influenced by and contribute to overall well-being within a social context. The cognitive aspect, linked to life achievements and personal goals (Diener & Biswas-Diener, 2008), likely interacts with the affective experiences within the framework of these cultural values.

Despite these significant findings, certain limitations warrant consideration. Firstly, the sample was drawn exclusively from elderly individuals residing in Jakarta, which may not fully capture the diversity of experiences and perspectives of the elderly population across Indonesia's vast archipelago. Socio-economic factors, regional cultural differences, and access to resources may vary considerably, potentially influencing the structure and experience of happiness. Therefore, future research should include participants from diverse geographical locations within Indonesia to enhance the generalizability of the findings. Secondly, the reliance on self-reported data introduces the potential for response biases, such as social desirability bias, which might be particularly relevant in older adult populations influenced by cultural norms (Podsakoff et al., 2003).

Future research should consider employing longitudinal designs to investigate the stability of this unidimensional happiness structure over time and explore how external factors such as changes in economic status, health conditions, and social engagement might impact happiness levels in elderly Indonesians. Furthermore, a mixed-method approach incorporating qualitative data collection methods, such as in-depth interviews, could provide richer insights into the lived experiences and conceptualizations of happiness among this population, complementing the quantitative findings and offering a more nuanced understanding. Investigating potential differences in the factor structure of happiness across various demographic subgroups within the Indonesian elderly population could also be a valuable avenue for future research.

CONCLUSION

This study confirms the construct validity of the modified happiness scale for elderly individuals residing in Jakarta, Indonesia, through Confirmatory Factor Analysis (CFA). The findings supported a unidimensional model of happiness for this specific population. This insight contributes to the understanding of happiness as a psychological construct, particularly within a specific cultural and demographic context. The practical implication of this study lies in providing a reliable and valid instrument for assessing happiness among the elderly in Jakarta, which can be utilized in future research and potentially inform the development of targeted interventions aimed at enhancing their well-being and quality of life. Understanding the structure of happiness in this population can help create more effective support systems and policies. While this study provides valuable insights, future research should aim to validate this unidimensional structure across more diverse samples of elderly individuals throughout Indonesia to enhance the generalizability of the findings, considering the country's vast socio-cultural variations. Additionally, longitudinal studies are recommended to explore

the stability of this happiness structure over time and to investigate the influence of various life events and external factors, such as health changes, economic shifts, and evolving social relationships, on happiness levels in older adulthood.

DECLARATION

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Author contribution statement

The authors contributed to the study's design, data collection, analysis, and manuscript preparation.

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The data described in this article are available upon request.

Declaration of interest's statement

The authors declare that they have no conflict of interest.

Additional information

No additional information is available for this paper

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