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Measurement Equivalence of the Turkish Version of the Satisfaction with Life Scale across Age

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Abstract

The Satisfaction with Life Scale is a widely used measurement tool. In this study, it was aimed to examine the measurement invariance of the Turkish version of the life satisfaction scale across ages. Of the 483 people participating in the study, 198 were men and 285 were women. Participants were divided into two age ranges, 18-24 and 25-43. A first-order single factor solution was provided for both the entire group and all age groups. The findings showed that the configural invariance was achieved by age groups. However, metric invariance could not be provided for age groups. The absence of equivalent factor loadings between the ages of 18-24 and 25-43 means that the latent structure measured by life satisfaction according to age groups does not have the same meaning. Partial metric invariance was obtained when the constraint of the 4th item parameter was freely estimated in further analysis. Subsequent analysis showed that scalar invariance was supported. On the other hand, full strict invariance could not be obtained, but only partially when the parameter constraint of item 1 was released. In summary, the results of this study revealed that comparison of age groups is possible with invariant items. It is hoped that this research will help us to clarify and deepen our inferences about life satisfaction and lifespan.

Keywords: Life satisfaction, age, invariance, partial metric, partial strict

Introduction

Studies on examining psychological variables in a cultural context and comparing them between cultures have intensified in the last three decades. One of the main reasons for this is to determine whether the psychological construct of interest is specific to the developed culture or a structure that has intercultural validity. With such studies, our understanding of these psychological constructs also improves (Dimitrov, 2010; Leong et al., 2010).

As of their origins, psychological theories and scales are of western origin. The validity of these scales and theories in different languages and cultures is investigated through adaptation. However, following the routine adaptation processes does not mean that the scores of the relevant psychological structure are comparable across cultures and between subgroups (Hambleton, 2005; Sireci, 2005). It has been suggested that taxonomic equivalence should be examined in evaluating the comparability of translated or adapted tests (van de Vijver & Tanzer, 2004). The most important thing in the adaptation process is to be able to figure out whether the scores obtained from the adapted scale are at a common scale level with the original scale (Sireci, 2005). Provided that this is achieved, the comparability of the scores becomes meaningful. In other words, to the extent that equivalence is not achieved, the comparability of scores becomes limited (van de Vijver & Poortinga, 2005). The impairment of equivalence may mean that test scores may be affected by cultural bias.

A series of incremental processes are required to ensure score comparability across cultures. The first stage is to test the configural equivalence (providing the same factor pattern between the comparison groups), the second stage requires testing the metric equivalence (providing the same factor loadings between the groups), and the third stage requires testing the scalar equivalence (providing the same intercepts and same measurement unit between the groups) (Dimitrov, 2010; van de Vijver &

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Poortinga, 2005). However, if an equivalence at the scalar level can be achieved, it is able to compare the characteristics of individuals included in diverse groups in a valid and direct manner. When scalar equivalence is mentioned, it is assumed that measurements are made completely independent of bias (van de Vijver & Poortinga, 2005). Strict equivalence is considered the top-order equivalence and refers to the residual variances equivalence between comparison groups. However, invariance testing "across groups is often loosely applied (or not at all) in studies that deal with validation of assessment instruments in counseling and education" (Dimitrov, 2010, p. 121).

Subjective well-being (SWB) refers to individuals' judgments about evaluating their lives which "include people's emotional reactions to events, their moods, and judgments they form about their life satisfaction, fulfillment, and satisfaction with domains such as marriage and work" (Diener et al., 2003, p. 404). The cognitive dimension of subjective well-being, which is presented as a two-dimensional construct, has been defined to express life satisfaction (Diener et al., 1985). The reason why the cognitive dimension is important is that it is a more robust construct "typically not susceptible to change due to short-term emotional reactions to life events" (Proctor et al., 2009, p. 129).

Life satisfaction has been an issue studied in numerous areas such as education, health, psychology, social sciences, and economics (Diener et al., 1999). This is because life satisfaction is related to many variables (Tomás et al., 2015), including the individual's personality (Diener et al., 2003; Meléndez et al., 2019), self-esteem and self-perception (Miller et al., 2019), attitudes (Crowe & Kim, 2020), social support (Hansson et al., 2005), job satisfaction (Ilies et al., 2019), financial situation (Steckermeier, 2021), mental health (Fergusson et al., 2015; Huebner et al., 2000), psychiatric disorders (in Goldbeck et al., 2007) and health behavior (Grant et al., 2009).

Life satisfaction is also highly correlated with educational variables. Researches have indicated that life satisfaction is connected with academic achievement (Areepattamannil & Bano, 2020), student engagement (Hakimzadeh et al., 2016), achievement goals (Antaramian, 2017; Diseth et al., 2012), academic competence (Leung et al., 2004), academic self-efficacy (Kandemir, 2014; O'Sullivan, 2011), achievement motivation, academic stress and locus of control (Karaman & Watson, 2017), school climate (Suldo et al., 2008) and academic procrastination (Balkıs, 2013). On that account, it is very valuable to scrutinize life satisfaction in understanding the characteristics of human and social welfare in behavioral sciences as well as in education (Diener et al., 2003). Besides, life satisfaction has become accepted as an indicator of social progress and development for policymakers and social scientists (Stiglitz et al., 2009). The use of such statistical indicators is important and necessary as they reflect "modern economies and the widespread use of information technology" (Stiglitz et al., 2009, p. 7) as well as the developments in education. Besides being an educational indicator, due to the importance and functionality of the critical role it plays in decision-making mechanisms, the tools employed to ascertain the level of life satisfaction should be well tested psychometrically.

The Satisfaction with Life Scale (SWLS; Diener et al., 1985) is a short and easy-to-use self-report tool. Therefore, it has been adapted to many cultures and languages. In addition, it is widely used in comparing life satisfaction between cross-cultural and socio-demographic groups. If the metrics used are not equivalent for the comparison groups, inferences based on these metrics may be flawed or biased. Therefore, measurement invariance studies should be conducted for life satisfaction to be valid for both the relationships with other variables and the scores obtained for the comparison groups.

The measurement invariance of life satisfaction (LS) according to many socio-demographic variables was examined. One of these variables was age; since it was stated in the studies that life satisfaction could change with age depending on factors such as attitude, health, and social-economic status (Suh et al., 2012). Life satisfaction is sensitive to changing life conditions; therefore, life satisfaction is expected to change depending on age (Hartung et al., 2021). Cross-sectional and longitudinal studies have shown that life satisfaction scores change as life periods change (Bittmann, 2021; Chen, 2001; Jovanović & Lazić, 2020)

Since life satisfaction is an age-related variable, life satisfaction in different age groups was examined. Inconsistent findings on life satisfaction regarding age in the literature necessitated the continuity of these studies. In some studies, measurement invariance was obtained among age groups. For instance,

Checa et al. (2019) obtained scalar invariance in LS between the groups aged 18-24 years and aged 25-47 years. Durak et al. (2010) also reported no statistically significant difference between the constrained and non-constrained models among the ages. Tomás et al. (2015) found strict invariance across age (among 14–65-year-old). Likewise, Ortuño-Sierra et al. (2019) found scalar invariance for participants' ages ranged from 13 to 19. Esnaola et al. (2017) found scalar invariance in LS among adolescents. Similarly, Bacro et al. (2020) found strict invariance across students aged 8 to 16 years.

On the other hand, different findings regarding the equivalence of life satisfaction scores in age groups were also reported in some studies. Clench-Aas et al. (2011) found partial scalar invariance was met, but strict invariance couldn't be achieved across age groups. Pons et al. (2000) observed factor structure and factor loading non-invariance between adolescent and elderly groups. Hultell and Gustavsson (2008) stated in their study that two items were sensitive to the three age groups (24 years old or younger, 25 to 34 years, and 35 years old or older). The researchers stated that age differences in life satisfaction might be "the result of adaptation strategies, cohort effects or age-specific life circumstances" (Westerhof et al., 2001, p. 183). Likewise, in the study conducted by Chen (2001), it was stated that age groups might have a cohort effect on life satisfaction. The previous research findings yielded traces of measurement invariance for particular age groups. Therefore, measurement invariance should be inspected to provide valid inferences on age-based life satisfaction latent mean comparisons.

In the literature, there are different results regarding the form of the relationship between age and life satisfaction (Pinquart & Sörensen, 2000). A considerable amount of research from large-scale life satisfaction surveys shows a U-shaped pattern of life satisfaction with age. (Blanchflower, 2020, Blanchflower & Oswald, 2008; Frijters & Beatton 2012; Park et al., 2020). Hudomiet et al. (2021) stated "average life satisfaction is high at younger ages, reaches a minimum at about age 40, which is sometimes called the 'midlife crisis,' after which it monotonically increases" (p. 1). Checa et al. (2019) examined measurement invariance in two groups aged 24 years or younger and older than 24 years in their study. The researchers declared that "these two groups were used as life-change references in previous SWLS invariance studies" (Checa et al., 2019, p. 267). Clench-Aas et al. (2011), on the other hand, examined the measurement invariance of life satisfaction according to the 16-24 and 25-44 age groups. Tomás et al. (2015) also separated two of the age groups as 18-24 and 25-34 in their study in which they examined the measurement invariance of life satisfaction according to age. In the current study, age groups were determined in accordance with the literature. Participants aged 24 and under are still defined as students, and participants aged 25 and over are defined as a graduate, non-working or working. In addition, it was deemed appropriate to take the cut-off age as 24 in order to provide a sufficient number to examine the measurement invariance in the older age group.

In short, cultural and contextual studies have been going on for a long since in life satisfaction studies. However, most of these studies focus on western and individualistic cultures. There are relatively a few studies drawn from eastern and collectivist cultural settings. However, a deep analysis of each psychological construct in a particular culture provides important information about both that variable and the culture under which it is studied (Cheung et al., 2011). Many studies conducted in Turkey have benefited from the satisfaction with life scale. However, life satisfaction measurement invariance has rarely been studied in the Turkish sample (e.g., Arıkan & Zorbaz, 2020). Furthermore, exploring age differences in life satisfaction can raise awareness to have more care for the psychological development of individuals throughout life. It can also help guide our assessments of educational and quality of life to advance the life satisfaction of individuals regarding age.

Purpose of the Study

Therefore, in this study, it was aimed to examine the measurement invariance of the Turkish version of the life satisfaction scale by age.

Method

This study is a cross-sectional study. At the same time, it is an explanatory study as it examines the measurement invariance of the Life Satisfaction Scale in this culture.

Participants

Data were collected with convenience sampling. There were 483 people in the sample. All individuals were volunteers. The 198 of the participants were men, and the 285 were women. The 309 participants were between the ages of 18-24, and 174 were between the ages of 25-43.

Data Collection Instruments

The SWLS developed by Diener et al. (1985) was used. There are five items in the SWLS scale. These items are as follows: (1) "In most ways my life is close to my ideal." (2) "The conditions of my life are excellent." (3) "I am satisfied with my life." (4) "So far I have gotten the important things I want in life." (5) "If I could live my life over, I would change almost nothing." The response set is taken from a 7-point Likert-type scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Therefore, the total score can take values between 5 and 35. The scale is a one-dimensional self-reporting scale. Items measure perceived general life satisfaction. SWLS was adapted into Turkish first by Köker (1991) and then by Yetim (1993). Köker (1991) adapted the life satisfaction scale on 150 university students aged between 17 and 24 within the scope of his/her thesis. The researcher stated that the test-retest reliability of the scale was .85 and the item-test correlations were .71 to .80. The Turkish version of the scale, which was later adapted to Turkish culture by Yetim (1993), was reported to have .86 Cronbach alpha and .73 test-retest reliability. This current study revealed that Cronbach's Alpha reliability was .87 in the 18-24 age group and .82 in the 25-43 age group.

Data Analysis

Analyses were conducted with AMOS version 22. Multi-group confirmatory factor analyses (MGCFA) were performed to examine the measurement invariance. Following the suggestion of Hu and Bentler (1999), multiple fit indices such as the root mean square of error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), Tucker–Lewis Index (TLI), Goodness of fit (GFI), Incremental Fit Index (IFI), chi-square (χ^2), and the chi-square to degrees of freedom ratio (χ^2/df) were taken into account in the evaluation. RMSEA and SRMR values less than .08, CFI, TLI, GFI, IFI values higher than .90, a non-significant p-value of the chi-square test and χ^2/df ratio of 3 or less indicate an acceptable fit to the data (Byrne, 2008; Hu & Bentler, 1999).

Measurement Invariance Tests

When examining measurement invariance, a taxonomic order is followed. Starting with the simplest/unconstrained model (configural), an upper constrained model (metric, scalar, and strict, respectively) is evaluated with gradually increased constraints. Before conducting a multi-group analysis, the model-data fit should be evaluated separately for both the whole group and each comparison group (Milfont & Fischer, 2010). In the invariance analysis, "a baseline model needs to be established prior to any invariance constraints" (Wu & Yao, 2006, p. 1263). Therefore, firstly two CFAs are conducted separately for participants in each age group. At this stage, after examining the model data fit indices and deciding that the baseline model is the same for both age groups, the configural model is tested. What is tested here is whether each of the age groups being compared has the same factor pattern. Model fit indices are taken into account when evaluating the configural model. If the configural model is achieved, it is time to test the more restricted metric model. In order to test for metric invariance, factor loadings are constrained to be equal across the groups (Wu & Yao, 2006). Thus, the equivalence of factor loadings is tested for age groups compared in the metric model. At this stage, difference tests are applied to test equivalence. In difference tests, the difference between an

upper (more restricted) model and a lower (less restricted) model is tested. If the inequivalence is determined, partial equivalence is examined. In this study, each newly tested model is sequentially numbered (such as model 1, model 2, etc.). If metric or partial metric invariance is achieved, scalar invariance is tested in the next step. In scalar invariance process, the equivalence of latent intercepts for age groups is investigated. If scalar or partial scalar invariance is achieved, then the highest level of strict invariance is tested. The equivalence of residual variances is tested in strict invariance.

Difference tests are applied to evaluate these nested models (Cheung & Rensvold, 2002). In this study $\Delta\chi^2$, ΔCFI and ΔRMSEA were applied. The fact that the chi-square difference ($\Delta\chi^2$) between the models is not statistically significant means that invariance is provided (Dimitrov, 2010). Considering the suggestion of Chen (2007), a ΔCFI of $\geq$-.01 was used to indicate invariance, and ΔRMSEA of $\geq$ .015 was used to indicate of non-invariance between nested models (Chen, 2007).

In addition, the Akaike information criterion (AIC) value was also taken into account in the decision of model selection of nested models since the AIC is "one of the more popular methods of comparing multiple models, taking both descriptive accuracy and parsimony into account" (Wagenmakers & Farrell, 2004, p. 192). The smaller the AIC, the better the fit of the model. When comparing models, the lower AIC value is preferred. "However, the process of model evaluation is complicated by the fact that a model with many free parameters is more flexible than a model with only a few parameters" (Wagenmakers & Farrell, 2004, p. 192). Therefore, AIC has been evaluated together with the other indicators mentioned above when comparing nested models.

Results

Initial analysis displayed that there were no extreme responses or missing values. Means, standard deviations, skewness, and kurtosis for SWLS items were examined. The skewness and the kurtosis values were found to be within the range of (-2.00, 2.00). The values of means and standard deviations were given in Table 2. The reason why it is given in Table 2 is so that it can be evaluated together with other values. As a result of examining these values, no findings that violate the assumptions under CFA analysis were found.

Before examining the measurement invariance, a series of CFAs were performed. First of all, the model-data fit of the one-factor structure was evaluated for the entire sample. As seen in the Table 1, the overall model-data fit of the Turkish version of SWLS was quite well except for the chi-square value (χ^2 / df = 3.91). However, it has been noticed that the RMSEA (.079) value was very close to the cut-off value. Then, the baseline model was examined separately for age groups. The CFAs tests for separate groups revealed that model data fit was better in the older group than in the younger group (in Table 1).

Table 1
Goodness-of-fit Indexes for the Full Sample and the Baseline Model among Age Groups

										90% CI for RMSEA	
Group	χ^2	*df*	*p*	χ^2/df	CFI	GFI	TLI	SRMR	RMSEA	L	U
Whole	19.58	5	.000	3.91	.98	.99	.97	.032	.079	.049	.111
18-24 aged	17.65	5	.003	3.53	.97	.98	.94	.053	.089	.051	.147
25-43 aged	6.03	5	.302	1.21	.99	.98	.99	.060	.045	.000	.150

As seen in Table 1, the 25-43 aged were provided excellent model-data fit. Although the incremental fit index values were very well for the 18-24 aged group, absolute fit indices such as chi-square and RMSEA indicated model misfit. Since chi-square is a statistic sensitive to the sample size, it is not surprising that it indicates a model mismatch. The literature states that when the degree of freedom (df) of the model is small, "the RMSEA too often falsely indicates a poor fitting model" (Kenny et al., 2015, p. 486). The fact that the chi-square and RMSEA could produce misleading results in assessing

model data fit under current conditions, other indices were taken into account. According to these other indices, it was observed that the model-data fit was achieved across age groups.

Standardized factor loadings and error terms for the baseline model across age presented in Table 2. Standardized factor loadings varied from .51 and .82 for the 18-24 aged group, and .65 and .89 for the 25-43 aged group. Since no justification for modification was found in the analysis outputs, the unmodified model was used for multi-group tests. After the suitability of the baseline model was supported, it was time to examine a series of models in which the constraints were gradually increased in order to examine equivalence between age groups.

Measurement Invariance

Table 3 represents the results of comparison fit indexes between the 18-24 aged and 25-43 aged respondent groups. Model 1 fitted well across age groups, so configural invariance was met across the age groups. The change in chi-square between model 1 (configural) and model 2 (metric) was not statistically significant at the .01 level, but with regard to ΔCFI there was being present a significant diminish in model fit (ΔCFI = -.014 < -.01). The lack of support for metric invariance provided evidence of non-invariance factor loadings across age groups. At this stage, the difference between the factor loadings of the item is the most; the loading of that item is released. As given in Table 2, the difference between factor loadings for item 4 was found to be the highest. Additionally, tests showed that if factor loading of the item 4 (SWLS-4) is freely estimated across the age groups, partial metric invariance is achieved by assessing the differentiation in chi-square, ΔCFI and ΔRMSEA for model 1 and model 3 (partial metric) (Table 3). In the consequent process, scalar invariance was met. However, the comparison of model 4 (scalar) and model 5 (strict) pointed out significant decrease in model fit both statistically ($p < .01$) and practically (ΔCFI = -.034 > -.01). Since strict invariance was rejected, partial invariance was examined. After investigating which item or items caused the largest difference between the error terms in the unconstrained model across the age groups (Table 2), item 1 was detected the source of discrepancy. When the error parameter of item 1 freely estimated across age groups, non-significant model decrease was observed between the model 4 and model 6 ($p = .092$, ΔCFI = -.008 > -.01 and ΔRMSEA = -.001 < .015). Thus, partial strict invariance was met.

Table 2

Standardized Factor Loadings and Error Terms (for the baseline model) Across Age Groups

	Standardized factor loadings		Error variances		Mean (SD)	
Items	18 - 24	25 - 43	18 - 24	25 - 43	18 - 24	25 - 43
1	.72	.65	.66	1.35	4.85 (1.10)	4.71 (1.38)
2	.70	.76	.83	1.14	4.32 (1.26)	4.31 (1.44)
3	.82	.77	.54	.96	5.08 (1.29)	5.06 (1.38)
4	.68	.89	.91	.44	4.88 (1.18)	4.60 (1.47)
5	.51	.67	2.35	1.98	3.70 (1.70)	3.32 (1.91)

Table 3

Fit Indices for MGCFA Models and Difference Tests

Model	χ^2	*df*	χ^2/df	CFI	TLI	IFI	AIC	RMSEA
Model 1 Configural	26.172	10	2.617	.970	.94	.97	66.17	.072
Model 2 Metric	37.825	14	2.702	.956	.94	.96	69.83	.074
Model 3 Partial metric-I4	28.357	13	2.181	.972	.96	.97	62.36	.062
Model 4 Scalar	37.340	17	2.196	.963	.96	.96	83.34	.062
Model 5 Strict	60.433	22	2.747	.929	.94	.93	96.43	.075
Model 6 Partial strict-I1	45.327	21	2.158	.955	.96	.96	83.33	.061
Difference models	$\Delta\chi^2$		Δdf		p	ΔCFI		ΔRMSEA
Model 2 – Model 1	1.653		4		.020	-.014		.002
Model 3 – Model 1	2.185		3		.534	.002		-.01
Model 4 – Model 3	8.983		4		.062	-.009		.00
Model 5 – Model 4	23.093		5		.000	-.034		.013
Model 6 – Model 4	7.987		4		.092	-.008		-.001

Discussion and Conclusion

This study investigated measurement invariance for the Turkish version of life satisfaction items across the age groups. Moreover, its dimensionality in such a middle-eastern culture has been examined. The solution for the first-order one-factor model indicated an acceptable fit for the entire sample. Therefore, the one-dimensional structure of SWLS has been verified without modification. These results showed that the one-factor structure was supported in the entire group. This result was consistent with the other findings in the literature that the one-dimensional structure of SWLS is quite common (Emerson et al., 2017).

With regard to measurement invariance, configural invariance was observed, suggesting that the SWLS uni-dimensional model operates similarly between age groups. That means, a similar latent factor structure was affirmed with respect to age groups. Therewithal, among the age groups, the concept of life satisfaction was framed similarly. In this research, metric invariance was not supported according to age groups. The fact that metric invariance is not reached shows that the factor loadings connecting life satisfaction construct and items are not equivalent between age periods. The factor loadings were not invariant across samples aged 18-24 years and aged 25-43 years. The further tests indicated that individuals with aged 18-24 years and aged 25-43 years were assigned a different weight to item 4 "So far, I have gotten the important things I want in life" while evaluating their life satisfaction. Concerning the loading of item 4, it is .68 in the younger age group and .89 in the older age group. Item 4 had more weight in the older group. This implies item 4 more strongly related to life satisfaction for aged 25-43 years. Meanwhile, van de Vijver and Poortinga (2005) mentioned that differences in factor loadings on an item basis might indicate item bias. After the constraint on item 4 was set to free, partial metric invariance has achieved throughout age groups. In other words, it implies that item 4 does not have the same meaning for the age periods. This finding is consistent with Hultell and Gustavsson (2008), who pointed out that item 4 was sensitive to age. In their study, the findings did not demonstrate any invariance for three age groups (24 or younger, 25-34 years, and aged 35 or elder).

These results are in accordance with the findings of Pavot and Diener (2008), who stated that the item 4 might be linked with aging. Consistent with the results of this present study, it has been reported that item 4 is not invariant with respect to age groups in other studies (Bai et al., 2011). Esnaola et al. (2017) pointed out that "still there was only partial scalar invariance, with the intercept for item 4 varying across countries" (p. 597).

After obtaining partial invariance by releasing factor loadings' constraint of item 4, the scalar invariance was tested. The scalar invariance was supported, which indicated no age differences occurred at the level of item intercepts. However, strict invariance has not been achieved throughout the age groups. Partial strict invariance was reached after the residual variance of item 1 was freely estimated. That is, the residual of item 1 (In most ways my life is close to my ideal) varied throughout the age groups. Emerson et al. (2017) pointed out that the interpretation of the words such as the word ideal in the item content might differ in various languages and cultural contexts. The word ideal is perhaps more questioned over time and may be an ambiguous concept for older individuals.

Differences in response patterns in item 4 and item 1 indicate that there may be conceptual differences between age groups. Previous studies reported similar results (Pavot & Diener, 2008). For instance, Clench-Aas et al. (2011) obtained partial metric invariance by freeing constraints on factor loadings for item 1. Likewise, Pons et al. (2000) found the error variances for the observed item 4 to be different between adolescents and elderly age groups. Similarly, Jovanović (2019) achieved partial scalar invariance by age. Emerson et al. (2017) declared that item 4 might have functioned differently between age groups because of differences in time conceptualization. The finding that item 4 is not invariant in age groups indicates that there is sensitivity to this item in the context of age subgroups.

Considering the age group, it was observed that the younger participants had higher -but not significant- mean scores on the LS items than the elderly. In parallel with this research result, Diener and Diener (1995) emphasized, in many parts of the world, it has been stated that university students are mostly satisfied with their lives. Similarly, Jovanović (2019) found that older adults reported the

lowest life satisfaction. Likewise, in the study conducted by Chen (2001), it was stated that "life satisfaction decreased as age advanced" (p. 74).

The results confirmed a first-order single-factor solution in both for the whole group and each of the age group members. Briefly, these results mean that the single-factor latent structure of the Turkish version of SWLS is valid. The findings suggested that the configural invariance was achieved with regard to age groups. This represents the same factor pattern is valid among age groups. Metric invariance was not supported for age groups. The fact that there were not equivalent factor loadings across 18-24 years and aged 25-43 years suggested that the latent construct measured by the life satisfaction regarding age groups does not attribute the same meaning. However, invariant factor loadings for age were partially confirmed when the restriction of item 4 parameter was freely estimated. The forward analysis showed that scalar invariance was supported. On the other hand, full strict invariance could not be obtained, but only partially when the parameter constraint of item 1 was released. Summing up, the results of this study reveal that comparison of age groups is possible through invariant items.

This study was conducted in only two age categories. This limits the fulfillment of generalizability. It is recommended to repeat the future studies by expanding the diverse age span. Since such cross-sectional studies may limit our understanding of life satisfaction, it is recommended that future studies be conducted in such a way that researchers can examine all segments of society more comprehensively. For example, longitudinal panel studies may provide more valid results for age groups. Researchers are recommended to interpret with caution when comparing SWLS scores by age, as the results of the study show that partial invariance has been achieved.

Despite its limitations, this study has some implications. The knowledge that life satisfaction is a factor related to age gives hints to professionals on how to improve the physiological, mental and psychological well-being of the individuals. In addition, the emergence of age-specific non-invariance on life satisfaction items indicates that we should be careful when comparing between age groups to achieve valid inferences. Despite the variety of findings in the literature, the continuation of such research will help us to clarify and deepen our inferences regarding life satisfaction and life period/span.

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