Turkish adaptation of the comprehensive inventory of mindfulness experiences-adolescents: A reliability and validity study

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Abstract. In this study, it was aimed to adapt the Comprehensive Inventory of Mindfulness Experiences-Adolescents into Turkish, and to analyze the measure's validity and reliability. The sample of the study consisted of 415 high school students. Confirmatory factor analysis confirmed the original eight-factor structure. Cronbach alpha coefficient for the overall scale is 0.70 and the coefficients differ from 0.48 to 0.69 for the sub-scales. Corrected item-total correlations are found to be between 0.20 and 0.55. The convergent and divergent validity was examined and statistically significant relations were found. The study showed that the Turkish adaptation of The Comprehensive Inventory of Mindfulness Experiences-Adolescents is a reliable and valid scale for measuring mindfulness in adolescents.

1 Introduction

In recent years, interest in Eastern psychology has increased in the West, and it has been a time of increased work of investigating the effectiveness of the use of Buddhism-originated practices in clinical settings [1]. The discipline, which is described as the heart of Buddhism-based psychology and which constitutes its essence, is mindfulness [2]. The widespread use of mindfulness-based practices brought about various studies about the effectiveness of these practices and these understandings and practices, which are rooted in the East, have been transferred to the West with a trans-epistemological approach [1].

1.1 What is Mindfulness?

Mindfulness is one of the basic elements of Buddhism, which has a history of 2500 years [3]. With the use of Buddha, the word mindfulness got the meaning of memorizing certain facts, remembering and being aware of them. Of these facts, the most important ones are that all physical and mental phenomena are temporary and awareness must be applied

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repeatedly, to every life experience, from a moral point of view [4]. According to one of the pioneers of mindfulness-based therapeutic practices, Jon Kabat-Zinn [5], mindfulness is the state of awareness that arises as a result of paying attention to the moment deliberately and without judgement. According to another definition, mindfulness is a self-regulation of attention which enables the attention to focus on the moment of experience and to recognize the cognitive activities of oneself. This is the first component of mindfulness. The second component is to approach one's experiences, in the moment, with curiosity, open heartedness and acceptance [6].

Grossman [7], emphasizes that mindfulness makes it possible to move away from the daily affairs of everyday life and in that sense, it is a transformative pathway. While aiming to direct attention to the present time and to pursue it, mindfulness is not only about staying in the moment; at the same time, it regulates "how" to stay in the moment [8]. Jon Kabat-Zinn [9], summarizes the qualities which support and reinforces mindfulness as acceptance, non-judgemental stance, to let it go, patience, nonstriving, trust, a beginner's mind, gratitude and generosity. Wolf and Serpa [8], added curiosity, kindness and humor to these qualities.

1.2 Mindfulness in Adolescence

The elements of executive function, which is defined as the purposeful control of thoughts, actions and feelings; and which includes cognitive flexibility, inhibitory control and working memory [10], appear in infancy, show significant changes in the pre-school period and reach the point of competence in adolescence and young adulthood [11]. Along with the metacognitive abilities that develop during adolescence, when neural plasticity still occurs at high levels, the self-regulation processes of the person become more conscious and controlled, but again, arousal and anxiety can undermine these processes. At this point, it is stated that mindfulness may be a very appropriate intervention in self-regulation for adolescents with a balancing task by strengthening executive function and reducing the influence of emotions on the one hand [12].

Scientific research is important for ensuring that practices are not harmful and for the correct understanding of the mechanisms that enable change. Until recently, the interest was on whether those practices were effective or not. As studies increased the confidence in the efficacy of those psychological treatments, interest has shifted to investigating the processes [13].

A number of scales about mindfulness have been developed, some of which have been adapted to Turkish language. Due to the fact that mindfulness is a relatively new subject in the scientific world and it has a complex structure, criticisms have been made to the existing scales in the sense that multidimensional linear and additive models cannot encompass the synergistic and reciprocal structure of mindfulness [14] and that the investigation of the interaction of different dimensions will be useful for a better understanding of the mechanisms of change [15]. Considering these issues, it was stated that the measurement of mindfulness should be improved [16].

While there are many studies on mindfulness in adults, mindfulness in adolescents is a newly emerging field and there are a limited number of measurement tools [17]. Several mindfulness scales are available in Turkish but there isn't any mindfulness scale developed for adolescents. The importance of this study is that it is the first Turkish mindfulness inventory which was developed for adolescents and it enables examining separately the sub-factors mentioned as necessary to understand the mechanisms of change.

In this study, it was aimed to adapt the Comprehensive Inventory of Mindfulness Experiences-Adolescents, developed by Johnson, Burke, Brinkman and Wade [17] into Turkish and to analyze its validity and reliability.

2 Method

In this study the quantitative descriptive survey method was adopted accordingly with the aim of examining the statistical sufficiency of a measurement tool.

2.1 Participants

The sample of the study was selected according to the multistage sampling method from the high school students of Suleymanpaşa District of Tekirdağ Province during the 2016-2017 academic year. Firstly, all the schools in the Süleymanpaşa District were accepted as a cluster and then students from each school (Social Sciences High School, Science High School, Anatolian High School) were selected by simple random sampling technique according to their own ratios. For the criterion-dependent validity as well as for other analyzes, 94 students from a school (Anatolian Religous Studies High School) from the district of Güngören in Istanbul were included in the sample. The sample was constituted of 415 high school students (291 girls, 124 boys) from preparation class, 9th grade, 10th grade, 11th grade and 12th grade of four different schools types.

2.2 Measures

2.2.1 The Comprehensive Inventory of Mindfulness Experiences – Adolescents (Chime-A) (Turkish version)

It was originally developed by Johnson, Burke, Brinkman and Wade [17]. It is a modified version of the 37-item Comprehensive Inventory of Mindfulness Experiences developed by Bergomi, Tschacher and Kupper [18] for adults. The adolescent version consists of 25 items and 8 factors. The inventory is a 5-point Likert-type scale and high scores indicate a high level of mindfulness experience. There are 8 reverse items at the end of the scale. The eight factors are Awareness of Internal Experiences, Awareness of External Experiences, Acting with Awareness, Accepting and Non-judgemental Orientation, Decentering and Non-reactivity, Openness to Experience, Relativity of Thoughts and Insightful Understanding.

2.2.2 The EPOCH Measure of Adolescent Well-Being

The EPOCH Measure of Adolescent Well-Being was developed by Kern, Benson, Steinberg and Steinberg [19] and it was adapted to Turkish by Demirci and Ekşi [20]. The scale consists of 20 items and 5 sub-factors and also provides a total score of well-being. The sub-factors are Engagement, Perseverance, Optimism, Connectedness and Happiness. The internal consistency coefficient of the scale was reported to be .95 while the internal consistency coefficients of the subscales were reported to range from .72 to .88. Significant relationships have also been reported as a result of criterion-related validity analysis.

2.2.3 The Mindful Attention Awareness Scale

The scale was developed by Brown and Ryan [21] and it was adapted to Turkish by Özyeşil, Arslan, Kesici and Deniz [22]. It consists of 15 items. It is a 6-point Likert-type scale and has a one-factor structure. The internal consistency coefficient of the scale was reported to be .80 and item factor loadings were reported to range from .48 to .81. Test-

retest correlation was .86. Significant relationships have also been reported as a result of criterion-related validity analysis.

2.3 Procedure

After obtaining the necessary permissions, for providing linguistic equivalence, four advanced level English speakers, two of whom were bilinguals, translated the inventory and then three academicians different from the translators, one in the field of English Language Teaching and the other two in the field of Counseling and Psychological Counseling, put the inventory into the final form. After the data were collected, missing data analysis was performed and it was observed that there was no participant with more than 5% of data loss. Data were completed with expectation maximization method in order to perform factor analysis. As a result of singular and multivariate normality evaluations, there were no outliers in terms of singular normality, whereas in the case of multivariate normality, 3 individuals were determined to be outliers and these 3 persons were left out of the analysis.

The suitability of the data for factor analysis was tested by Kaiser-Meyer-Olkin (KMO) coefficient and Bartlett test; and found to be suitable. Confirmatory factor analysis was performed and the results were analyzed according to the model fit indices. Criteria-related validity analysis was conducted within the scope of validity analysis. The Mindful Attention Awareness Scale [22] for convergent validity and The EPOCH Measure of Adolescent Well-Being [20] for the divergent validity were included for the analyses. Finally, Cronbach alpha coefficients, corrected item-total score correlations, and item mean scores of the lower 27% and upper 27% of the total scores of the factors were examined.

3 Results

3.1 Validity Analysis

3.1.1 Construct Validity

The suitability of the data for factor analysis was tested by Kaiser-Meyer-Olkin (KMO) coefficient and Bartlett test. The KMO coefficient is expected to be greater than .60 in terms of suitability for factoring. The Bartlett sphericity test examines whether there is a relationship between variables by looking at partial correlations and it is an evidence of normality [23]. The KMO coefficient was greater than .60 (KMO = .77) and the chi-square value was found to be statistically significant (Chi-Square $\chi2$ =2368,55; p=0,00). This indicated that the sample size was sufficient and the normality of distribution assumption was satisfied.

3.1.2 Confirmatory Factor Analysis

Confirmatory factor analysis was applied to the data from 412 students using the IBM SPSS AMOS 23 program to analyze the construct validity of the Comprehensive Inventory of Mindfulness Experiences-Adolescents. The results of the analysis showed that the 8-factor structure is a good fit as it is in the original study ($\chi2$= 568.143., sd= 247, $\chi2$/sd= 2,3, RMSEA= ,056, GFI= .90, AGFI= .87, CFI= .85, SRMR= .074) according to the model fit indices.

3.1.3 Criterion-related Validity

The Mindful Attention Awareness Scale [22] was included to examine convergent validation and The EPOCH Measure of Adolescent Well-Being [20] was included to examine divergent validation with the CHIME-A Turkish version. The relationships were analyzed with Pearson correlation coefficient method and the results are shown in the Table 1 and 2.

Table 1. Convergent validity analysis with the MAAS

Subscale		MAAS
Awareness of Internal Experiences	r	-,113
	p	,277
Awareness of External Experiences	r	-,006
	p	,952
Acting with Awareness	r	,532*
	p	,000
Accepting and Non-judgemental Orientation	r	,311*
	p	,002
Decentering and Non-reactivity	r	,284*
	p	,006
Openness to Experience	r	,298*
	p	,004

*significant correlations with p<.01

As shown in the Table 1, positively significant correlations were found between the factors Acting with Awareness, Accepting and Non-judgemental Orientation, Decentering and Non-reactivity, Openness to Experience and The Mindful Attention Awareness Scale (p<.01). In other words the The Mindful Attention Awareness Scale shows good convergent validity with the Acting with Awareness (r=.53), Accepting and Non-judgemental Orientation (r=.31), Decentering and Non-reactivity (r=.28), Openness to Experience subscales (r =.29).

As shown in the Table 2, positively significant correlations were found between Awareness of Internal Experiences, Awareness of External Experiences, Accepting and Non-judgemental orientation, Decentering and Non-reactivity, Insightful Understanding subscales and The EPOCH Measure of Adolescent Well-Being total score and all of its subscales (p<0.01). Positively significant correlations were found between Acting with Awareness factor and all of the subscales of the EPOCH Measure of Adolescent Well-Being except the total score and the Engagement subscale (p<0.01). A negatively significant correlation was found between Openness to Experience and the Engagement subscale of the EPOCH Measure of Adolescent Well-Being (p<0.01). Finally, positively significant correlations were found between the Relativity of Thoughts factor and the Engagement, Optimism subscales of the EPOCH Measure of Adolescent Well-Being and its total score (p<0.01). These results indicate that the EPOCH Measure of Adolescent Well-Being shows good divergent validity with the Comprehensive Inventory of Mindfulness Experiences – Adolescents Turkish version.

Table 2. Divergent validity analysis with the EPOCH Measure of Adolescent Well-Being

Subscale		Engagement	Perseverence	Optimism	Connectedness	Happiness	EPOCH
Awareness of Internal Experiences	r	,174*	,151*	,139*	,171*	,137*	,210*
	p	,000	,002	,005	,000	,005	,000
Awareness of External Experiences	r	,233*	,256*	,227*	206*	,217*	,310*
	p	,000	,000	,000	,000	,000	,000
Acting with Awareness	r	-,011	,291*	,234*	,161*	,214*	,242*
	p	,825	,000	,000	,000	,000	,000
Accepting and Non-judgemental Orientation	r	,144*	,312*	,399*	,147*	,347*	,372*
	p	,003	,000	,000	,003	,000	,000
Decentering and Non-reactivity	r	,237*	,326*	,396*	,197*	,308*	,401*
	p	,000	,000	,000	,000	,000	,000
Openness to Experience	r	-,150*	,011	-,039	,007	-,017	-,052
	p	,002	,817	,432	,880	,725	,292
Relativity of Thoughts	r	,116*	-,004	,125	,077	,041	,099
	p	,018	,932	,011	,117	,411	,045
Insightful Understanding	r	,220*	,154*	,148*	,130*	,200*	,233*
	p	,000	,002	,003	,008	,000	,000

* Significant correlations with p<.01

3.2 Reliability Analysis

3.2.1 Internal Consistency Analysis

As a result of the internal consistency analyses, the Cronbach alpha value was found to be α=.70 for the overall inventory. The effect of any item that has a declining effect on the Cronbach alpha value was determined not to be greater than 0.003. The internal consistency reliability coefficient of .70 is regarded as sufficient for newly developed tests [23]. The internal consistency coefficients of the subscales were found to be α =.57 for Awareness of Internal Experiences, α =.67 for Awareness of External Experiences, α =.66 for Acting with Awareness, α =.48 for Accepting and Non-judgemental orientation, α =.60 for Decentering and Non-reactivity, α =.64 for Openness to Experience, α =.54 for Relativity of Thoughts and α =.69 for Insightful Understanding.

3.2.2 Corrected Item-Total Score Correlations

The corrected item-total score correlations, describe the relationship between the points taken from the items and the total score. Positive and high correlations of item-total scores are accepted as indicators of measuring similar behavior and high internal consistency of the test. .30 and above are indicative of good discrimination, values between .20 and .30 are indicative that the item may be protected if compulsory, and values below .20 are recommended not to be taken into the test [23]. The corrected item-total score correlations of the factors of the Comprehensive Inventory of Mindfulness Experiences – Adolescents-Turkish version were ranged between 0.55 (item 22) 0.20 (item 24). The values between

0.20-0.30 were protected because there were few items in the inventory and 3-4 items in each of the factors.

In the scope of the item analysis, the differences between the item mean scores of the lower 27% and upper 27% of the total scores of the factors were examined by independent samples t-tests and statistically significant results were found (p<0.01).

4 Discussion

In this study, it was aimed to adapt the Comprehensive Inventory of Mindfulness Experiences-Adolescents, developed by Johnson, Burke, Brinkman and Wade [17] into Turkish and to analyze the measure's validity and reliability. Confirmatory factor analysis was performed and the results were analyzed according to the model fit indices. Confirmatory factor analysis confirmed the original eight-factor structure. Therefore, the Comprehensive Inventory of Mindfulness Experiences-Adolescents (Turkish version) consists of 25 items and 8 factors. The inventory is a 5-point Likert-type scale and high scores indicate a high level of mindfulness experience. There are 8 reverse items at the end of the scale. The eight factors are Awareness of Internal Experiences, Awareness of External Experiences, Acting with Awareness, Accepting and Non-judgemental orientation, Decentering and Non-reactivity, Openness to Experience, Relativity of Thoughts and Insightful Understanding.

The internal consistency coefficient of the scale is α =.80 and the internal consistency coefficients of the sub-factors are between α =.48 and α =.69. Corrected item-total correlations are found to be between 0.20 and 0.55. The convergent and divergent validity were examined and statistically significant relations were found. The study showed that the Turkish adaptation of The Comprehensive Inventory of Mindfulness Experiences-Adolescents is a reliable and valid scale for measuring mindfulness in adolescents.

References

1. F. Didonna, *Introduction: Where new and old paths to dealing with suffering meet. In Clinical handbook of mindfulness* (Springer, New York, 2009)

2. N. Thera, *Satipatthana: The heart of Buddhist meditation: A handbook of mental training based on the Buddha's way of mindfulness* (Rider, 1962)

3. R. D. Siegel, C. K. Germer, A. Olendzki, *Mindfulness: What is it? Where did it come from?. In Clinical handbook of mindfulness* (Springer, New York, 2009)

4. B. Bodhi, CB, **12** (01), 19-39, (2011)

5. J. Kabat-Zinn, CP: Science and practice, **10**(2), 144-156, (2003)

6. S. R. Bishop, M. Lau, S. Shapiro, L. Carlson, N. D. Anderson, J. Carmody, G. Devins, CP: Science and practice, **11**(3), 230-241, (2004)

7. P. Grossman, Mindfulness, **1.2**, 87-97, (2010)

8. C. Wolf, J. G. *Serpa, A Clinician's Guide to Teaching Mindfulness: The Comprehensive Session-by-Session Program for Mental Health Professionals and Health Care Provider,* (New Harbinger Publications, 2015)

9. J. Kabat-Zinn, *Full catastrophe living: The program of the stress reduction clinic at the University of Massachusetts Medical Center,* (Delta, New York, 1990)

10. A. Miyake, N. P. Friedman, M. J. Emerson, A. H.Witzki, A. Howerter, T. Wagar, Cog. Psy., **41**, 49–100, (2000)

11. S. M. Carlson, Dev. Neuropsy., **28**, 595–616, (2005)

12. P. D. Zelazo, K. E. Lyons, Child Dev. Pers., **6,** 154–160, (2012)

13. R. A. Baer, Cont. Buddhism, **12**(01), 241-261, (2011)

14. M. Christopher, B. Gilbert, Faculty Scholarship (SPP), **2**, (2007)

15. T. A. Eisenlohr-Moul, E. C. Walsh, R. J. Charnigo Jr, D. R. Lynam, R. A. Baer, Assessment, **19**(3), 276-286, (2012)

16. P. Grossman, N. T. Van Dam, Cont. Buddhism, **12**(01), 219-239, (2011)

17. C. Johnson, C. Burke, S. Brinkman, T. Wade, Psy. Assessment, **29**(3), 264, (2007)

18. C. Bergomi, W. Tschacher, Z. Kupper, Diagnostica, (2014)

19. M. L. Kern, L. Benson, E. A. Steinberg, L. Steinberg, Psy. assessment, 28(5), 586, (2016)

20. İ. Demirci, F. Ekşi, Gençlik Araştırmaları Dergisi, 3(3), 9-30, (2015)

21. K. W. Brown,R. M. Ryan, J. of personality and social psy., **84**(4), 822, (2003)

22. Z. Özyeşil, C. Arslan, Ş. Kesici, M. E. Deniz, Eğitim ve Bilim, **36**(160), 224-235, (2011)

23. Ş. Büyüköztürk, *Veri analizi el kitabi*, (Pegem Akademi, Ankara, (2012)