Original Article

Validity and Reliability of the Anxiety Assessment Scale: A New Three-dimensional Perspective

Kaygı Değerlendirme Ölçeğinin Geçerliği ve Güvenirliği: Üç Boyutlu Yeni Bir Bakış

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ABSTRACT

Objective: Anxiety is inseparable from life due to its survival value. Up-to-date and multidimensional assessment of anxiety is necessary to develop effective interventions to cope with high anxiety levels. This study was conducted to examine the psychometrics of the Anxiety Assessment Scale (AAS).

Methods: Data were collected between January and April 2021 from 756 students (42.9% males and 57.1% females) studying medicine at Istanbul Medeniyet University. Seven experts evaluated the items to detect content validity in the final application form. Both exploratory and confirmatory factor analyses (EFA and CFA) were used for construct validity. The Beck Anxiety Inventory was also applied for concurrent validity. Test-retest reliabilities were calculated within four weeks. IBM SPSS 25 and AMOS 24 were used for statistical analyses.

Results: Data were suitable for factor analyses (Kaiser-Meyer-Olkin=0.800, chi-square=3018.854, df=45). The EFA showed the three-factor structure with 10 items, and 70.1% of the variance was explained. Factor loads of the items varied between 0.61 and 0.87; data-model fit was suitable (CFI=0.92, TLI=0.93, RMSEA=0.059, SRMR=0.046, chi-square/df=1.556) according to CFA. Concurrent scale validity was also confirmed by the Pearson correlation (r=0.167, p<0.01). The test-retest reliabilities (r) were all >0.5 (p<0.001). The Cronbach α coefficients were 0.845 (AAS), 0.770 (Physiological Tension=PT), 0.822 (Worrying=W), and 0.838 (Feeling Unsafe=FU).

Conclusions: AAS is a reliable and valid measurement instrument to assess anxiety levels in three dimensions. AAS can be applied for research, psychological assessment, and other appropriate application purposes.

Keywords: Anxiety, assessment, factor analysis, validity, reliability

ÖZ

Amaç: Kaygı, hayatta kalma değeri nedeniyle yaşamın ayrılmaz bir parçasıdır. Aşırı kaygı ile başa çıkmada etkili müdahaleler geliştirmek için kaygının güncel literatüre uygun ve çok boyutlu değerlendirilmesi gereklidir. Bu çalışma Kaygı Değerlendirme Ölçeği'nin (KDÖ) psikometrik özelliklerini incelemek amacıyla yürütülmüştür.

Yöntemler: Veriler 2021 yılının Ocak ve Nisan ayları arasında İstanbul Medeniyet Üniversitesi'nde tıp okuyan 756 (%42,9 erkek ve %57,1 kadın) öğrenciden toplanmıştır. Yedi alan uzmanı, son uygulama formunda yer alacak maddelerin kapsam geçerliğini tespit için maddeleri değerlendirmiştir. Yapı geçerliğinde hem açıklayıcı hem de doğrulayıcı faktör analizlerinden (AFA ve DFA) yararlanılmıştır. Benzer ölçekler geçerliği için Beck Anksiyete Envanteri de katılımcılara uygulanmıştır. Test-tekrar test güvenirlikleri dört hafta içerisinde hesaplanmıştır. İstatistiksel analizler için IBM SPSS 25 ve AMOS 24 yazılımları kullanılmıştır.

Bulgular: Veriler faktör analizine uygundur (Kaiser-Meyer-Olkin=0,800; ki-kare=3018,854, df=45). AFA'da 10 maddeden oluşan üç faktörlü yapı varyansın %70,1'ini açıklanmıştır. DFA'ya göre faktör yükleri 0,61-0,87 arasında değişmektedir ve uyum indekslerinden verinin ölçme modeliyle uyumu anlaşılmaktadır (CFI=0,92, TLI=0,93, RMSEA=0,059, SRMR=0,046, ki-kare/sd=1,556). Benzer ölçekler geçerliği Pearson korelasyonu ile doğrulanmıştır (r=0,167, p<0,01). Test-tekrar test güvenilirliklerinin hepsi (r) 0,5'in üzerinde çıkmıştır (p<0,001). Cronbach α iç tutarlılık katsayıları 0,845 (KDÖ), 0,770 (Fizyolojik Gerginlik=FG), 0,822 (Endişelenme=E) ve 0,838 (Güvensiz Hissetme=GH) olarak hesaplanmıştır.

Sonuçlar: KDÖ, kişilerin kaygı düzeylerini üç boyutta güvenilir ve geçerli olarak değerlendirebilen bir ölçüm aracıdır; araştırma, psikolojik değerlendirme ve uygun olan diğer uygulama amaçlarıyla kullanılabilir.

Anahtar kelimeler: Kaygı, değerlendirme, faktör analizi, geçerlik, güvenirlik

INTRODUCTION

Anxiety is an indispensable part of human life. A certain amount of anxiety is required for survival, but when crosses a threshold and lasts a long time, several pathologies occur, such as panic and phobias. Anxiety leads to psychological tension accompanied by diverse physiological symptoms of arousal, such as trembling and palpitations, caused by a kind of stimulation of danger and threat whose sources are not fully known. Anxiety also refers to negative feelings that arise from insecurity[1]. Besides, lack of confidence and mistrust lead to fear and similar negative reactions[2]. Confident individuals trust others more and experience less anxiety in their lives.

Anxiety has attracted the interest of philosophers throughout the centuries. However, anxiety has become one of the paramount psychological issues in modern times. Literature defines anxiety as fear without an object[3]. Fear is an emotional response to a situation that is unknown to some extent and is perceived as highly dangerous; the source can be another person, an animal, or an event as evident from amygdala activation according to neuroscientific research[4]. The feeling of anxiety as a derivative of fear arises with uncertainty about the source. The dominant emotion in people who do not feel safe is commonly fear or anxiety.

Fight, flight, or freezing-fainting reactions occur when anxiety or fear are experienced. Flight reactions generally develop when the fight and freezing-fainting reactions are thought to become ineffective in the person experiencing anxiety[5]. Avoidance often leads to sense of reduction in anxiety[6]. However, it does not eliminate anxiety but rather postpones facing the underlying problem[7]. The increasing levels of anxiety due to safety concerns are expected to cause intense avoidance-related behavior. Safety is among the most fundamental human needs[8]. The will to avoid and escape from possible dangers and other risks are characterized as a state of anxiety in case of insecurity; such that the more intense the avoidance behavior, the higher the anxiety level[9]. Therefore, such responses can be counted toward signs of anxiety.

The sympathetic nervous system is reported to be overworked in cases of anxiety and therefore the parasympathetic nervous system does not work optimally as well. Falling asleep is the deactivation of sympathetic nervous system and transitioning to the parasympathetic system[10]. People with anxiety experience sleep-related issues such as difficulties in falling asleep, having interrupted sleep, and sometimes experience negative dreams or nightmares[11]. Digestive system disorders, such as inflammatory bowel syndrome, diarrhea, and constipation are physiological symptoms that are frequently observed in cases of anxiety. Numerous clinical studies show that several problems around digestion are common in people with anxiety disorders due to parasympathetic irregularities[12]. Additionally, activation signs of the sympathetic nervous system are observed in case of anxiety, such as muscle contraction and heartbeat acceleration, accompanied by increased breathing[13]. These physiological responses emerge for people experiencing anxiety to fight against or escape from situations that they deem as dangerous. In fact, physiology of anxiety has been broadly discussed in the relevant literature. Hereunder, anxiety produces many physiological stress reactions[14,15] as well as psychological outcomes, such as avoidance.

Meanwhile, worrying is an affective response with a predominant cognitive aspect and is often highly correlated with anxiety[16]. Worry can be considered as a dimension of anxiety rather than a separate emotional experience. People with anxiety experience memory and attention problems, and apprehensive thoughts. These thoughts are often about the future. People with anxiety constantly believe that something bad will happen. Some people cannot bear the uncertainty of the perceived negative event, such as where and how it will occur[17]. They tend to worry and generate intrusive thoughts instead of waiting and seeing what will happen[18]. Some of these thoughts can be disastrous, e.g., "My entire career is over because of my miserable presentation." Another is an overgeneralization, e.g., "Nobody can help me because I am a complete failure" and an unconfirmed negative prediction, such as "Too much work. I'll never make it happen"[19]. These kinds of negative self-evaluations that produce worries can be counted as cognitive markers of anxiety. Hence, worries-tied cognitions should be considered in addition to attention issues and memory-tied cognitive problems when assessing anxiety.

There are several anxiety scales available in the literature. Among them, the most common ones are the State-Trait Anxiety Inventory, Hospital Anxiety and Depression Scale, and Beck Anxiety Inventory (BAI)[20]. However, a collective emphasis on revision of these and similar scales according to current literature and cultural contrasts rather than technical translation is essential[21]. Some problems have been faced when adapting scales into Turkish language and culture. Moreover, the importance of scale multidimensionality[22] and the need for developing shorter versions for ease of use[23] have also been specifically highlighted. Furthermore, some

anxiety scales are generally concentrated on the clinical populations to discriminate between anxiety disorders[24], and some of the recent ones are unidimensional[25]. A number of attempts were made to develop shorter versions of previously developed scales by avoiding methodological errors, such as reverse scoring[26]. All these efforts and alike are indicating the need for developing new measurement tools for anxiety assessment. However, scales should be originally developed within the culture to assess individuals from clinical as well as non-clinical populations.

As previously mentioned, anxiety is an integral part of human nature. There is no way to completely eliminate anxiety, but it can be effectively dealt with. Understanding anxiety is essential for coping. Anxiety levels tend to increase among populations such as medical students and health care professionals during pandemics. More and more people are complaining about their difficulties in anxiety management. Culturally appropriate, valid, and reliable assessment of anxiety is a fundamental step for designing and implementing effective interventions in schools, hospitals, and other institutions. This study aimed to analyze validity and reliability of the Anxiety Assessment Scale (AAS) to assess anxiety from a new three-dimensional perspective considering the physiological, affective, and cognitive aspects.

MATERIALS and METHODS

Participants and Procedure

In this scale validation and reliability study, data were collected online from 756 students who study medicine at Istanbul Medeniyet University via Google forms from January to April 2021. Informed consent was obtained from each participant according to the ethical committee approval (Istanbul Medeniyet University Goztepe Training and Research Hospital-decision no: 2020/0721, date: 02.12.2020). Anxiety was considered as a factor that affects the professional choices of medical students, and AAS was developed to measure the anxiety levels of the participants. All procedures were conducted in accordance with the Helsinki Declaration.

The item pool was created by the researcher based on the current literature on anxiety. Two psychological counselors, two clinical psychologists, and three psychiatrists evaluated the items to determine their content validity. After receiving feedback from these seven experts, suggested revisions were made to finalize the application form. Language validation was conducted with 30 students from the same setting beforehand to ensure that all items were comprehensible,

culturally relevant, and not causing any confusion or misunderstanding.

A 5-point Likert-type grading was preferred as never, very rarely, sometimes, often, and almost always. The scale can yield a total score to assess the anxiety levels, without reverse scoring for any item. AAS items and scoring criteria can be found in the Appendix. The Turkish adaptation of BAI[27,28] was included for evaluating convergent validity to hold more evidence for validity. After four weeks, AAS items were provided to a subgroup of participants (n=34) again to examine the test-retest reliability to observe whether the scores were consistent over time.

Statistical Analysis

Both exploratory (n=454, 60%) and confirmatory factor analyses (EFA and CFA) (n=302, 40%) were applied for testing construct validity, after approving their applicability by testing statistical assumptions. In addition to content and construct validities, convergent validity was also tested by Pearson correlation with BAI scores. IBM SPSS 25 and AMOS 24 (Chicago, Illinois, USA) were used for validation analyses, internal consistency, and test-retest reliability calculations. The significance level of the statistical analyses was considered at least p-values of <0.01.

RESULTS

No missing data was detected. The mean age of the participants was 20.79 (standard deviation=2.35, range: 18-29) years. Most of them (n=492, 65.1%) were born in the province of Istanbul, and 324 (42.9%) were males and 432 (57.1%) were females. None was previously clinically diagnosed with any psychiatric disorder by self-report. The data set of item scores was suitable for factor analyses (Kaiser-Meyer-Olkin=0.800, chi-square=3018.854, df=45). EFA was able to explain the three-factor structure with 10 items (Figure 1) and 70.1% of the variance was almost equally explained by these three constructs (rotation sums: 23.9%=Factor 1, 23.3%=Factor 2, and 22.8%=Factor 3) The extraction method was the Principal Component Analysis and Oblimin with Kaiser Normalization was the rotation method in EFA (Table 1). Figure 2 shows the component plot of the items in the rotated space according to EFA. Factors were named as Physiological Tension (PT) (Factor 1), Worrying (W) (Factor 2), and Feeling Unsafe (FU) (Factor 3). Namings were made according to the content-wise similarities among items within each factor.

In CFA, factor loads of the items varied between 0.61 and 0.87. Data-model fit was suitable as evident

from the fit indices [comparative fit index (CFI)=0.92, Tucker-Lewis index (TLI)=0.93, root mean square error of approximation (RMSEA)=0.059, standardized root mean square residual (SRMR)=0.046, and chi-square/df=1.556] (Figure 3), they were all at acceptable levels (CFI>0.90, TLI>0.90, RMSEA<0.1, SRMR<0.1, chi-square/df<2). No modification was made to the measurement model since each covariance between error terms was almost equally low. Table 2 shows that intercorrelations between items were all significant at 0.001 level, except for two correlations between items 2 and 6 (r=0.088, p<0.01) and items 2 and 9 (r=0.096, p<0.01). Correlations between factor structures were within the range of 0.288-0.354 and all meaningful at 0.01 significance level (Table 3). High degree correlations between the factors and even higher correlations between the items validate the scale structure.
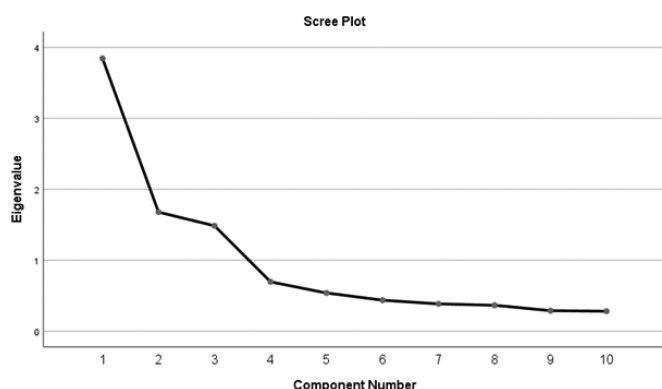
In addition to the evidence for content and construct validities, convergent validity was also approved by Pearson correlation (r=0.167, p<0.01). Cronbach alpha internal consistency reliability coefficients were 0.845 (AAS), 0.770 (PT), 0.822 (W), and 0.838 (FU). The stratified alpha calculation was used due to multidimensional structure of the scale. Within a four-week interval, the test-retest reliabilities (r) were all >0.5 (p<0.001), with 0.534 (PT), 0.652 (W), and 0.683 (FU). All reliability calculations endorse that AAS and its three subscales can yield reliable results.
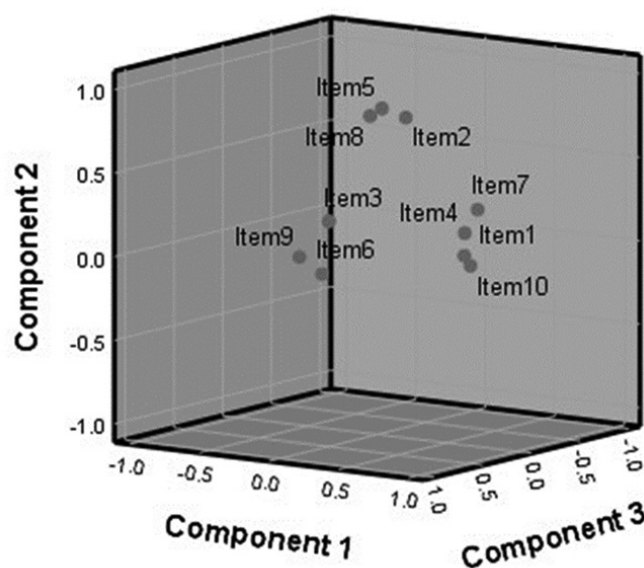

Figure 1. Anxiety Assessment Scale scree plot according to exploratory factor analyses (Component 1st: W, 2nd: FU, 3rd: PT).

PT: Physiological tension, W: Worrying, FU: Feeling unsafe

Figure 2. Anxiety Assessment Scale component plot in rotated space according to exploratory factor analysis.

Item	Statement	M	SD	PT	W	FU
1	I feel my muscles tense.	3.58	0.91	0.760	0.062	0.191
2	I have some attention and memory concerns.	3.31	1.23	0.188	0.800	-0.025
3	I cannot tolerate uncertainty.	3.73	0.83	0.200	0.297	0.781
4	I have sleep-related problems.	3.07	1.05	0.695	0.178	0.094
5	I feel like something bad will happen.	3.15	1.14	0.131	0.873	0.140
6	I do not feel safe.	3.50	0.89	0.202	-0.007	0.855
7	I have digestive system problems.	2.81	0.89	0.750	0.316	0.041
8	I feel uneasy about losing control.	3.29	1.21	0.102	0.837	0.218
9	I want to escape and take shelter.	3.77	0.83	0.068	0.087	0.896
10	My breathing is faster than usual.	2.99	0.93	0.786	0.002	0.166

Table 1. Component score coefficients after rotation in exploratory factor analysis.

Anxiety Assessment Scale subscales, PT: Physiological Tension, W: Worrying, FU: Feeling Unsafe, M: Mean, SD: Standard deviation
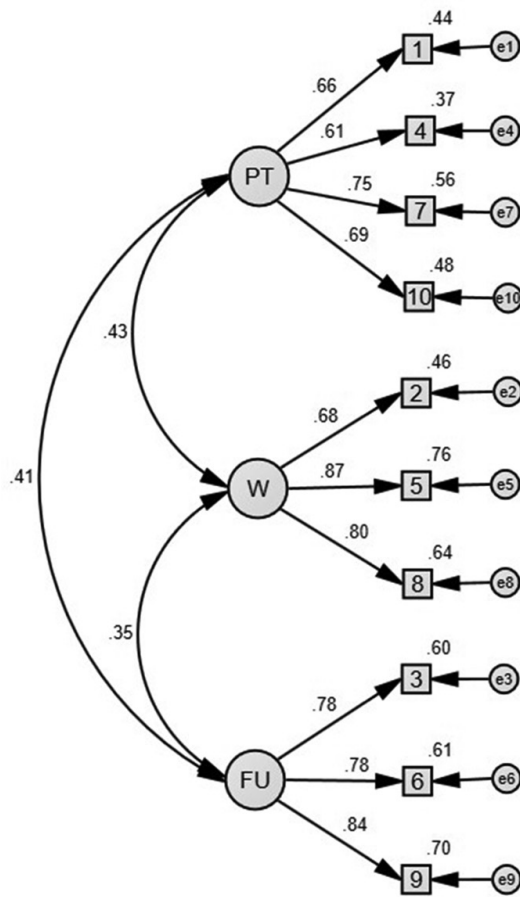
Figure 3. Standardized factor loadings in the Anxiety Assessment Scale measurement model according to confirmatory factor analysis.

PT: Physiological Tension, W: Worrying, FU: Feeling Unsafe

DISCUSSION

Three dimensions were evaluated in the AAS measurement model validation, namely, PT, W, and FU. Notably, the AAS measurement model is compatible with the current literature. The multidimensional nature of anxiety has been largely emphasized in other contemporary anxiety scale development studies[29]. Typically, scales tend to be one-dimensional because all items highly correlate with each other. However, presentations of anxiety are quite diverse in real life[30].

One possible reason for uniformity can be increased anxious attitudes of individuals who are rating items, such as each item may evoke apprehension when answering items in anxiety scales. This may cause a threat to internal validity. The sense of being evaluated can create excess anxiety as a result of possible misunderstanding. Then, anxiety itself can become a significant source of measurement error. Therefore, items in anxiety scales should be formulated as clear and concise as possible due to the nature of the concept aimed at measures to control this. Item clarity increases both validity and reliability. Item statements were kept concise in AAS. Another issue can be the number of items on scales. Generally, the longer the scale, the tendency to score items in the same manner increases for scales of affective domain[31]. In this respect, AAS is a relatively short scale with only 10 items.

Neuroscientific research has proven the physiological activation and/or deactivation while experiencing anxiety[32]. AAS items numbered 1 and 10 reflect sympathetic nervous system activation while items numbered 4 and 7 indicate the parasympathetic nervous system dysregulations. Many sympathetic and parasympathetic physiological symptoms of anxiety, such as neurological, muscular, cardiovascular-respiratory,

Table 2. Intercorrelation matrix of Anxiety Assessment Scale items according to confirmatory factor analysis.									
Item	2	3	4	5	6	7	8	9	10
1	0.234	0.316	0.479	0.173	0.290	0.444	0.184	0.219	0.472
2	1	0.247	0.256	0.596	0.088*	0.319	0.531	0.096*	0.155
3		1	0.215	0.358	0.580	0.285	0.411	0.645	0.313
4			1	0.255	0.239	0.441	0.231	0.186	0.361
5				1	0.157	0.375	0.700	0.208	0.156
6					1	0.187	0.193	0.680	0.276
7						1	0.334	0.146	0.564
8							1	0.248	0.157
9								1	0.179
10									1
Correlations significant at p-values of <0.01 are marked*, the rest are significant at p-values of <0.001									

Scale	M	SD	PT	W	FU
Anxiety Assessment Scale	33.20	6.14	0.779	0.773	0.673
PT subscale	12.45	2.91		0.353	0.354
W subscale	9.74	3.08			0.288
FU subscale	11.01	2.21			

Table 3. Correlations between total and subscale scores of Anxiety Assessment Scale.

Correlations are significant at p-values of <0.001; M: Mean, SD: Standard deviation, PT: Physiological Tension, W: Worrying, FU: Feeling Unsafe

gastrointestinal, urinary, and dermatological are related to the psychosocial risk factors[33]. Both literature reviews and expert opinions exert emphasis on cardiovascular-respiratory, neurological, muscular, and gastrointestinal symptoms of anxiety. Items in the PT factor are from these domains. Additionally, some symptoms of anxiety are either less prevalent or rather specific physiologically, such as dermatological sensitivity but generally, they may not be attributed to anxiety although research shows that serious skin conditions, such as constant itching, induce anxiety[34]. PT due to anxiety can be reduced by physical exercises as treatment modalities in addition to psychotherapy[35]. In other respects, the squared multiple correlation of item 4 of 0.37 (Figure 3) is relatively low compared to other items. Perhaps, if the item was written as "I have problems with falling asleep," the fraction of variance could be higher because difficulty in falling asleep is usually a symptom of anxiety along with not being able to wake up on time.

Connections between anxiety-provoking cognitions and emotional reactivity have been proven in recent research. Multifarious cognitive symptoms of anxiety accumulate around worrisome thoughts, such as concerns about attention and cognition while giving a presentation, delivering a speech, or learning to drive a car[36]. The second item in AAS refers to these kinds of concerns. Instinctive thoughts about losing control and irrational beliefs about unfortunate consequences are also common in anxious individuals[37]. All items are related to each other to some extent to explain a larger concept of anxiety. However, items 6 and 9 correlated less with item 2 (Table 2), probably because cognitive dysfunctions are more stimulated while having safety concerns. Items 5 and 8 refer to these issues, and the high correlation between these items is noteworthy. Figure 2 illustrates that this is the strongest relationship among all items as shown in Table 2 (r=0.700, p<0.001).

In addition to physiological and cognitive mechanisms, the essence of anxiety is emotional. Feelings about insecurity are at the core of feeling anxiety[38]. Sensation and perception of safety influence emotional regulation of anxiety. The sixth item in AAS, "I don't feel safe," aims to directly measure this condition. Situations causing perceptions of low safety provoke more anxiety. People sensing and perceiving themselves as unsafe mostly attempt to avoid anxiety-provoking situations. They often want to escape and take refuge as described in item 6. Therefore, feelings of unsafety seem to be strong indicators of anxiety. Another significant anxiety indicator is uncertainty intolerance, specifically, fearing the unknown[39]. By definition, uncertain situations are sources of anxiety (item 3). This is most probably why people with anxiety keep fighting with uncertain situations and desire to organize everything evenly to avoid surprises. Hence, an unforeseen event can cause terror in highly anxious individuals, but uncertainty gives birth to anxious phenomenology in any case. The COVID-19 caused many uncertainties and increased the anxiety levels of individuals worldwide[40]. Therefore, uncertainties should be rapidly detected and handled appropriately to decrease any kind of anxiety. Additionally, prolonged mask-wearing due to the pandemic has become a serious anxiety source. Thus, people want to see the faces of others to feel safer and less anxious for better understanding and trusting relationships.

Anxiety has several manifestations as seen in AAS items and factors. On an affective level, from mild restlessness to panic; on a cognitive level, from "I am a little confused" to "I am completely losing my mind"; and on a physiological level, anxiety can manifest itself in a wide symptoms range from mild contractions to severe incontinence. Paying attention to all emotional, cognitive, and physiological symptoms of anxiety is necessary because the anxiety level, which may be easy to control initially, can turn the daily life of the person upside down if any of these warnings are ignored. Either for clinical or any other purposes, anxiety assessment should be highly valid and reliable.

We need anxiety to protect ourselves from dangers. It should not be ignored that anxiety can be beneficial but only if it is not at unmanageable extreme levels. On the contrary, a person who is completely free from anxiety becomes vulnerable to danger. We also need anxiety to attain goals because it keeps us alert and productive. A moderate, neither too high nor too low, anxiety level is a requirement for both physiological and psychological survival. For awareness, we can use instruments such as AAS to evaluate anxiety levels.

AAS can be used for research purposes in the future. For example, AAS application with depression scales can show the convergent and divergent relationships between depression and AAS dimensions. Further, second-order measurement and other hierarchical models can also be tested with larger sample sizes to better understand the scale structure and test the construct validity of AAS. Unfortunately, assumptions of hierarchical analysis were inadequate in this study.

This study has some limitations. At first, the participants were from a non-clinical group and limited only to university students in one setting. Hence, it should be repeated in diverse settings. Secondly, the data were collected via self-report online forms due to pandemic restrictions. Online data collection has many shortcomings, such as possible lowering of reliability. We cannot be sure that people paid enough attention and seriously responded to all items with full understanding. Furthermore, people without internet connections could not be reached to fill out the form. Using online data collection was not a preference but a necessity due to pandemic conditions. In the future, more reliable and representative data collection methods, including multisource, can be used to examine the scale validity and reliability. Contrarily, AAS was originally developed based on current scientific literature and based on the opinions of various experts in diverse psychological professions to validate the scale. Culturally relevant and succinctly written 10 items in AAS explain nearly 70% (more than two-thirds) of variance in the construct. However, new research is always necessary to adapt any scale to changing conditions. Scale development is a dynamic process that is sensitive to the current sociocultural conditions of the country.

CONCLUSIONS

Originally developed scales should be preferred for assessment purposes, rather than adapted scales from other cultures. It is important to accurately measure and evaluate anxiety, with as few errors as possible. AAS was developed for this specific purpose, and can evaluate affective, cognitive, and physiological aspects of anxiety with three dimensions of FU, W, and PT. AAS is both valid and reliable to measure anxiety in individuals. Therefore, AAS can be utilized for research and assessment purposes.

Ethics

Ethics Committee Approval: The study was approved by the Clinical Research Ethics Committee of the Istanbul Medeniyet University Goztepe Training and Research Hospital (decision no: 2020/0721, date: 02.12.2020).

Informed Consent: Informed consent was obtained from each participant.

Peer-review: Externally and internally peer-reviewed.

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REFERENCES

1. Aly A, Green L. Fear, anxiety and the state of terror. Stud Confl Terror. 2010;33:268-81.
2. Malakcıoğlu C. Güven Kazanma Kılavuzu: Güvengenlik Senaryoları. Ankara: Nobel Akademik Yayıncılık; 2019.
3. Crocq M. A history of anxiety: from Hippocrates to DSM. Dialogues Clin Neurosci. 2015;17: 319-25.
4. Bystritsky A, Spivak NM, Dang BH, et al. Brain circuitry underlying the ABC model of anxiety. J Psychiatr Res. 2021;138:3-14.
5. Dymond S, Roche B. A contemporary behavior analysis of anxiety and avoidance. Behav Anal. 2009;32:7-27.
6. Dattilo TM, Roberts CM, Fisher RS, et al. The Role of Avoidance Coping and Illness Uncertainty in the Relationship Between Transition Readiness and Health Anxiety. J Pediatr Nurs. 2021;59:125-30.
7. Zorowitz S, Momennejad I, Daw ND. Anxiety, avoidance, and sequential evaluation. Comput Psychiatr. 2020;4:1-17.
8. Lester D. Measuring Maslow's hierarchy of needs. Psychol Rep. 2013;113;1027-9.
9. Berman NC, Wheaton MG, McGrath P, Abramowitz JS. Predicting anxiety: the role of experiential avoidance and anxiety sensitivity. J Anxiety Disord. 2010;24:109-13.
10. Solomonova E, Picard-Deland C, Rapoport IL, et al. Stuck in a lockdown: Dreams, bad dreams, nightmares, and their relationship to stress, depression and anxiety during the COVID-19 pandemic. PLoS One. 2021;16:e0259040.
11. Mıhçıoğlu İ, Malakçıoğlu C, Mutlu HH. Uykusuzluk Şikayetleri ve Uyku Kalitesi Temel Ölçeğinin Türkçe Geçerlilik ve Güvenirliği. TJFMPC. 2021;15:846-52.
12. Askar S, Sakr MA, Alaty WHA, et al. The psychological impact of inflammatory bowel disease as regards anxiety and depression: a single-center study. Middle East Curr Psychiatry. 2021;28:1-10.
13. Ginty AT, Oosterhoff BJ, Young DA, Williams SE. Effects of arousal reappraisal on the anxiety responses to stress: Breaking the cycle of negative arousal intensity and arousal interpretation. Br J Psychol. 2022;113:131-52.
14. Steimer T. The biology of fear- and anxiety-related behaviors. Dialogues Clin Neurosci. 2002;4:231-49.
15. Tolin DF, Lee E, Levy HC, et al. Psychophysiological assessment of stress reactivity and recovery in anxiety disorders. J Anxiety Disord. 2021;82:102426.
16. Zebb BJ, Beck JG. Worry Versus Anxiety. Is there really a difference? Behav Modif. 1998;22:45-61.
17. Ren L, Wei Z, Li Y, et al. The relations between different components of intolerance of uncertainty and symptoms of generalized anxiety disorder: a network analysis. BMC Psychiatry. 2021;21:448.
18. Gústavsson SM, Salkovskis PM, Sigurðsson JF. Cognitive analysis of specific threat beliefs and safety-seeking behaviours in generalised anxiety disorder: revisiting the cognitive theory of anxiety disorders. Behav Cogn Psychother. 2021;49:526-39.

19. Sokol Y, Rosensweig C, Levin C, Linzer M. Anxiety and temporal self-appraisal: How people with anxiety evaluate themselves over time. J Affect Disord. 2022;296:309-14.

20. Julian LJ. Measures of anxiety: State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). Arthritis Care Res (Hoboken). 2011;63 Suppl 11:S467-72.

21. Rust J, Kosisnki M, Stillwell D. Modern Psychometrics: The Science of Psychological Assessment, 4th Edition. London: Routledge; 2020.

22. Barros F, Figueiredo C, Brás S, Carvalho JM, Soares SC. Multidimensional assessment of anxiety through the State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA): From dimensionality to response prediction across emotional contexts. PLoS One. 2022;17:e0262960.

23. Coleman KD, Chow Y, Jacobson A, Hainsworth KR, Drendel AL. An evaluation of short anxiety measures for use in the emergency department. Am J Emerg Med. 2021;50:679-82.

24. Ivaki M, Poursharifi H, Bakhshipour A, Simon E, Moloodi R. Validity and Reliability of Youth Anxiety Measure for DSM-5 in Iranian Non-Clinical Children and Adolescents. Child Psychiatry Hum Dev. 2021;52:1218-25.

25. Merhy G, Azzi V, Salameh P, Obeid S, Hallit S. Anxiety among Lebanese adolescents: scale validation and correlates. BMC Pediatr. 2021;21:288.

26. Radez J, Waite P, Chorpita B, et al. Using the 11-item Version of the RCADS to Identify Anxiety and Depressive Disorders in Adolescents. Res Child Adolesc Psychopathol. 2021;49:1241-57.

27. Fydrich T, Dowdall D, Chambless DL. Reliability and validity of the Beck Anxiety Inventory. J Anxiety Disord. 1992;6:55-61.

28. Ulusoy M, Sahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory: Psychometric properties. J Cogn Psychother. 1998;12:163-72.

29. Champagne A, Landreville P, Gosselin P. A systematic review of the psychometric properties of the Geriatric Anxiety Inventory. Can J Aging. 2021;40:376-95.

30. Chan SM, Au-Yeung TC, Wong H, Chung RY, Chung GK. Long Working Hours, Precarious Employment and Anxiety Symptoms Among Working Chinese Population in Hong Kong. Psychiatr Q. 2021;92:1745-57.

31. McCoach DB, Gable RK, Madura JP. Instrument Development in the Affective Domain (Third Ed). New York: Springer, 2013.

32. Padgaonkar NT, Phuong Uy J, DePasque S, Galván A, Peris TS. Neural correlates of emotional reactivity and regulation in youth with and without anxiety. Depress Anxiety. 2020;38:804-15.

33. Narmandakh A, Roest AM, de Jonge P, Oldehinkel AJ. Psychosocial and biological risk factors of anxiety disorders in adolescents: a TRAILS report. Eur Child Adolesc Psychiatry. 2021;30:1969-82.

34. Ellison L, Witcraft SM, Dixon LJ. Anxiety sensitivity and social anxiety in adults with psychodermatological symptoms. Arch Dermatol Res. 2021;313:531-7.

35. Frederiksen KP, Stavestrand SH, Venemyr SK, Sirevåg K, Hovland A. Physical exercise as an add-on treatment to cognitive behavioural therapy for anxiety: a systematic review. Behav Cogn Psychother. 2021;49:626-40.

36. Hidalgo-Muñoz AR, Evennou M, Collette B, Stephens AN, Jallais C, Fort A. Cognitive and body manifestations of driving anxiety according to different onsets. Anxiety Stress Coping. 2021;34:778-93.

37. Tariq A, Quayle E, Lawrie SM, Reid C, Chan SWY. Relationship between early maladaptive schemas and anxiety in adolescence and young adulthood: A systematic review and meta-analysis. J Affect Disord. 2021;295:1462-73.

38. Cupid J, Steward KE, Sumantry D, Koerner N. Feeling safe: Judgements of safety and anxiety as a function of worry and intolerance of uncertainty. Behav Res Ther. 2021;147: 103973.

39. Carleton RN, Norton PJ, Asmundson GJ. Fearing the unknown: A short version of the Intolerance of Uncertainty Scale. J Anxiety Disord. 2007;21:105-17.

40. Chang JJ, Ji Y, Li YH, Pan HF, Su PY. Prevalence of anxiety symptom and depressive symptom among college students during COVID-19 pandemic: A meta-analysis. J Affect Disord. 2021;292:242-54.

Appendix. Anxiety Assessment Scale items and scoring.

Anxiety Assessment Scale

There are 10 items on this scale. Please rate the questions with the most appropriate number from 1 to 5 according to the given rating below.

Never (1); Very Rarely (2); Sometimes (3); Often (4); Almost Always (5)

1- I feel my muscles tense. ( )

2- I have some attention and memory concerns. ( )

3- I cannot tolerate uncertainty. ( )

4- I have sleep-related problems. ( )

5- I feel like something bad will happen. ( )

6- I do not feel safe. ( )

7- I have digestive system problems. ( )

8- I feel uneasy about losing control. ( )

9- I want to escape and take shelter. ( )

10- My breathing is faster than usual. ( )

Scoring: This scale has no item reverse scoring. The scale yields a total anxiety score. For subscales: item numbers 1, 4, 7, and 10 are Physiological Tension (PT) score; items 2, 5, and 8 are Worrying (W) score; items 3, 6, and 9 are Feeling Unsafe (FU) score