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Brief Affect and Emotion Recognition Test: Development of an Original and Culture-Specific Measurement Tool

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ABSTRACT

Objective: Culture plays a prominent role in recognition and rating of emotions. This study aims to develop a standardized measurement tool specific to Türkiye for assessing affect and recognizing emotions. The tool is designed to be brief and practical for use as a bedside test in clinical settings.

Methods: Data were collected from 610 university students (psychology majors). The scale consisted of 500 black-and-white photographs taken under standard conditions by a professional photographer, depicting seven emotions (anxiety, fear, anger, joy, surprise, disgust, and sadness). Through four selection/elimination stages, the initial 500 photographs were reduced to 22. Expert opinions were gathered to assess the content validity of the test. Item reliability was assessed using the test-retest method, and the reliability coefficient was calculated using the Gwet AC1 technique. Following these stages, the final 20 photographs formed the Brief Affect and Emotion Recognition Test (BAET).

Results: The normative emotion recognition percentages for the 20 items ranged between 42.2% and 95.6%. Normative affect intensity scores ranged from 2.3 to 4.8. The Gwet AC1 reliability coefficient of the BAET was calculated as 73.2.

Conclusion: In this study, a culture-specific test was developed to measure affect and emotion recognition processes, and its content validity and reliability were assessed. The findings indicate that the Brief Affect and Emotion Recognition Test (BAET) is a valid and reliable measurement tool, introducing a brief and practical test to the field.

Keywords: Affect, facial expression emotion recognition, rating scale

INTRODUCTION

According to the conventional conceptualization, the three constituents of the mind are emotion, cognition, and motive. Experience, which is one of the components of the trilogy of mind and referred to as emotion in most of the related body of literature, actually consists of these three processes (Ketal 1975): (a) Affect is a potential that consists of intensity and valance dimensions, brings quantity to experience, and generally develops preconsciously or even unconsciously. It is evolutionary in nature. (b) Feeling is subjective and evaluative, and it is like long-term labels and attitudes, whereas it is an internal experience that guarantees the survival of the living being in the long term. (c) Emotion; is the actual or relatively short-term experience that occurs as a result of a specific stimulus, situation, and event, which influences the perception and interpretation of such stimuli, situation, and event by an individual, maintains an overt or implicit relationship with the social structure in the world or in private that can be changed based on the social conditions and expectations. These three processes are closely interrelated: Affect is the emotion that is experienced by a person that brings quantity and positivity dimension to the experience in question. Emotion, however, is the manifestation of experience (Ekkekakis 2012).

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Measurement Approaches in Recognizing Affect-Feeling-Emotion

The most cited classification in the body of literature related to the types of emotions is developed by Ekman (1973). Humans have six emotions according to this classification: fear, anger, joy, surprise, disgust, and sadness. Affect is the most suitable component for quantification and measuring, whereas the intensity dimension is scaled as rank, and the valence dimension (type or category of emotion) is scaled as classification (Ekkekakis 2012, Crispim et al. 2014). In the international body of literature, measurement tools are widely used to measure valence and/or intensity, i.e. affect. For example, the International Affective Picture System (IAPS) (Lang et al. 2008) comprises the evaluation of photographs in various emotion categories in terms of valence (positive-negative), intensity, and dominance (Smith et al. 2014). In the 110-item Pictures of Facial Affect (POFA) tests based on the Ekman classification (Ekman and Friesen 1971), reactions are measured in terms of frequency, duration, and intensity. In the 490-item Karolinska Directed Emotional Faces (KDEF) (Lundqvist et al. 1998), also based on the Ekman (1973) classification, reactions are measured in terms of intensity and arousal dimensions. The standardization of the tests in question was also developed for the intensity dimension, i.e. for affect.

Affect must first be created to be measured. The most common technique to create the component is manipulation with associative stimuli. In creating affect or feeling and enabling emotion-oriented reactions, this technique uses facial expressions, nature scenes, accidents, animals, diseases, and similar pictures or words with different levels of valance and intensity. IAPS, one of the most commonly used tools to measure the expressions in question, also uses this technique (Lang et al. 2008). IAPS, which contains 1196 photographs from different categories, comprises creating affect with photographs, evaluating them in terms of valance (positive-negative), and rating them in terms of intensity (Smith et al. 2014).

Influence of Culture on Feeling, Emotion Recognition and Affect

In the early stages of the biological sciences, the dominant argument was that emotions were universal, i.e. independent of culture (Darwin 1859). This conclusion, which was based mostly on observation, was supported by some scientific studies. However, in subsequent analytic studies, it was seen that one recognizes and rates the facial expressions of other persons from different cultures (Ekman et al. 1987). For example, Americans give higher ratings than the Japanese for all emotions except disgust (anger, fear, joy, sadness, and surprise) (Matsumoto and Ekman 1989). American participants rated anger the highest while Japanese participants rated disgust the highest. Among the reasons for such cultural differences are the uncertainty experienced by the participant in reaching a decision, differences in etiquette and manners, the lack of equivalence in the terms used by different cultures to express the emotion in question, particularly in terms of intensity, the differences in learned, culture-specific display rules that govern and control facial expressions in social contexts, and the differences in coding rules that determine the way emotion is perceived in others (Buck 1984, Ekman et al. 1987). The results above, which demonstrate that there are cultural differences in emotion recognition and rating (affect), reveal the need to use culture-specific measurement tools in this area.

On the other hand, affect, feeling, and/or emotion tools developed abroad were used in their original forms in some of the studies in Türkiye (Abdullayev ve ark 2018, Gültekin ve ark 2017, Baran Tatar ve ark 2015). The scientific value of psychometric tools is parallel to the fact that the process steps (translation, adaptation, validity, and determination of norm values) during standardization in their development have been completed and satisfactory results have been achieved (Karakaş et al. 2024). Using the same photographs exhibited by the members of another country and/or ethnic group in Türkiye means that the measuring tool in question has not been adapted.

Among the tools used without adapting the standardization process are POFA, a test for recognizing and rating emotions (n= 6) expressed by American male and female models in black-and-white photographs (n= 110) (Erdoğan 2016, Tombul 2019); KDEF, a test for recognizing emotions (n= 6) expressed by Swedish male and female models (n= 70) and rating their intensity in black-and-white photographs (n= 490) (Ocak 2020); NimStim a test of recognizing emotions (n= 7) in color photographs (n= 672) expressed by 43 female and male models of African, Asian, European, and Latin-American origin in the United States (NimStim Emotional Expressions Set; Ertan Kaya 2021); FACES, a test for recognizing emotions (n= 5) in color photographs (n= 2052) expressed by 171 female and male models, Caucasian, aged 19-80, wearing T-shirts of the same color, without any noticeable details (e.g., jewelry, glasses) (FACES LifeSpan Database of Facial Expressions; Çap et al. 2017); DANYA, a test for recognizing emotions (n= 3) expressed by six (three female and three male) Turkish models on computer-presented color photographs (n= 72) instead of models from 18 different cultures in different continents (The Diagnostic Analysis of Nonverbal Accuracy; Kara 2014); JACFEE Test of recognizing emotions (n= 3) in photographs (n= 130) expressed by a total of nine male and female models of Caucasian and Japanese race, (Japanese and Caucasian Facial Expression of Emotion; Metin 2018).

Four original tests employing Turkish models were found in Türkiye. Among them are a test for recognizing the emotions (n=17) demonstrated by a female Turkish actress in color photographs (n=53) (Dökmen 1986); a test for recognizing the emotions (n=6) demonstrated by Turkish male and female models (n=40) in color photographs (n=362) (İşleyen 2012); a test for recognizing the emotions (n=6) demonstrated by Turkish male, female, child boy and child girl models (n=4) in black and white photographs (n=24) (Kılıç 2013); a test for recognizing the emotions (n=3) demonstrated by six Turkish models (three female and three male) instead of the models from 18 different cultures on different continents as in the original test in color photographs (n=72) shown on a computer screen (The Diagnostic Analysis of Nonverbal Accuracy: Turkish Adaptation of DANVA: Kara 2014); and a test for recognizing and rating (affect) the emotions (n=6) demonstrated by a total of 30 models (14 female, 16 male) aged between 18-60 from four regions of Turkey, in black and white photographs (n=70), Test of Indetifying Emotions of the Faces of Healthy Individuals in Turkish Society (TTDTT) (Turan 2022).

Even though cultural influence was controlled as required, there was no information in the aforementioned tests regarding whether the visuals/images that could have a confounding effect on the recognition and/or rating of emotions (e.g. jewelry, glasses, beard style, hairstyle, differences in clothing) were controlled. The tests other than TTDTT included only recognition, whereas the measurements such as emotional intensity that could allow statistical analysis were not performed. The standardization process described above applies to the performance of original tests, as well. This process remains incomplete in some of the original tests in question. The number of items in these original tests is between 70 and 162. It can be assumed that the application time required for items in these numbers would considerably limit the usability of the original tests in question, for example in health institutions and psychiatric cases.

Objective

The objective of this study is to introduce an original and culture-specific measurement tool to Türkiye that can be used to recognize affect in terms of rating and types of emotions in terms of their exhibited state. The research objectives in this context are to take a large number of research-specific photographs under standard conditions to be used in the application of the manipulation with associative stimuli technique; to create the Brief Affect and Emotion Recognition Test (BAET) that is brief enough to be used as a bedside test when necessary and to be used particularly in diagnosis and follow-up by selecting a sufficient number of photographs that best represent emotions; to obtain mean and standard deviations for intensity levels in a reference group; to evaluate content validity; to calculate the reliability coefficient for BAET with a statistical technique convenient for the test scores represented in the classification scale.

METHOD

Participants

During the research stages regarding the development of BAET; age type and level of education received were kept constant and controlled. In this context, the sample group was determined by means of purposive sampling with 610 volunteer junior and senior undergraduate students of psychology departments of three different universities.

Potential participants were asked to read the Informed Consent Form, which contained information about the content of the study, risk status, and confidentiality of responses. A standard Demographic Information Form was applied to those who signed the Informed Consent Form which indicates that they accepted the conditions. Exclusion criteria for the study were psychiatric and/or neurological disorder diagnosis, uncorrected visual and/or hearing impairment, and use of medications that affect cognitive functions (e.g., antipsychotics, hallucinogens, hypnotics, narcotics, stimulants).

Materials

Demographic Information Form: Information regarding the demographic characteristics of the participants and exclusion criteria was obtained with this form.

Brief Affect and Emotion Recognition Test (BAET): Photographs taken specifically for the current research were used for BAET. The facial expressions in portrait photographs showing the face and shoulder area were posed by an actress. By using one person, the interaction of gender and appearance with the emotions created was controlled by keeping them constant on one level. The model to which the contents and objective of the study were explained signed a "Modeling Agreement" evidencing that she participated in the study voluntarily and has given full authority to the researchers for the usage of the work to be created. During the photo-shooting process, the model put her hair back, and put on the same black outfit in all photographs. Besides, no visual elements such as glasses, earrings, necklaces, or the like were used.

During the photo shoot, the model was asked to use her facial expressions to demonstrate the emotion types: anxiety, fear, anger, joy, surprise, disgust, and sadness (Ekman 1973). The photographs were taken by a professional photographer in a studio environment in front of a black background. 500

photographs with a resolution of 2848 X 4288 pixels were printed in black and white in 12 cm X 18 cm dimensions.

Process

The ethics committee approval was obtained with letter No: 17162298.600-77 issued by Başkent University Social and Human Sciences and Arts Research Grant Committee.

During the research stages regarding the development of BAET, the participants were provided with the Recording Form that also comprises the Test Booklet containing photographs and the application instruction. It was noted that there was no time limit for the test.

The process of developing the BAET was carried out in stages, with the aim of selecting the photograph that represents each of the seven emotions at the highest level and determining the violence exhibited. In this context, the participants were asked to do the following: (1) To determine which emotion the photograph expresses the most by selecting it among the emotions given, (2) To write the emotion next to the item number of the photograph; to write "Other" next to the item number of the photograph if the photograph represents an emotion that is not listed and specifying the related emotion; to write "Neutral" next to the item number of the photograph if there is no emotion expressed in the photograph, (3) To rate the intensity of the emotion in the photograph according to 5-Point Likert Scale (1: very mild, 2: mild, 3: indecisive about intensity, 4: intense, 5: very intense), (4) To carry out these procedures in order for all photographs.

Preliminary Selection Process: The process of reducing the photographs to a brief test was carried out gradually. In the preliminary selection carried out, 500 photographs taken specifically for BAET were examined by the researchers. The emotions expressed in the photographs were determined by the researchers. The photographs for which each researcher defined a different emotion, i.e. the uncertain photographs, the photographs for which the researchers could not define an emotion, and the photographs that are very similar to the photographs previously selected upon a consensus between the researchers for expressing the basic emotions (131 photographs in total) were eliminated (Table 1).

Selection/Elimination Process: As a result of the preliminary selection, 369 photographs were selected and distributed to 10 test booklets in a quasi-random manner (A-F, H, I booklets: 37 photographs each, G booklet: 35 photographs, J booklet: 38 photographs). During both preliminary selection and the subsequent selection stages, the photographs of each booklet were selected randomly from the pool (n= 369). However, all emotions were attempted to be represented in each booklet. Thus, quasi-random sampling was used in the photographs that constituted the booklet.

The research stages following the selection process, the number of participants at each stage, the photograph examined by the participant, the photograph selected, and the total number of booklets to which the photographs were distributed are presented in Table 1. In the process of reducing the number of items to the number used in BAET, all photographs were not applied to the participants at once. The photographs were reduced gradually to avoid tiredness, familiarity, and motivation loss that may occur when evaluating a large number of photographs. Ten booklets were used in the first selection/elimination stage while four booklets were used in the second selection/elimination stage. However, the photographs were collected in a single booklet in the third selection/elimination stage and afterward, where the number of photographs was reduced to 78.

Data were collected from 18 academic personnel who are specialists in psychology in order to evaluate content validity. The academic personnel in question rated each item and the whole test with a Likert-type scale (1: Does not serve the purpose at all, 5: Serves the purpose very well) to evaluate how well the test serves its development purpose.

The test-retest method was used in the reliability study. The time interval between the two tests was one month as per Karakaş et al. (2024). In total, 105 voluntary young adults in total (22.3 ± 2.2 years; 90 female, 15 male) participated in the sample group in question (Table 1). Reliability data were gathered through 22 photographs determined at Stage

Table 1. Selection/Elimination Stages and the Numbers of Participants, Photographs and Booklets in the Reliability Study.

	Number of Participants	Number of Photographs Reviewed	Number of Photographs Selected	Number of Booklets
Preselection Study		500	369	1
Selection/Elimination Stage-1	226	369	205	10
Selection/Elimination Stage-2	99	205	78	4
Selection/Elimination Stage-3	180	78	78	1
Selection/Elimination Stage-4	505	78	22	1
Reliability Study	105	22	20	1
Total Number of Samples	610			

4 (disgust: 3, anxiety: 4, sadness: 2, fear: 2, joy: 4, anger: 5, surprise: 2).

Statistical Analysis

Statistical Package for the Social Sciences: SPSS, v25, and AgreeStat360 software were used for the analyses. The data of the study were defined by way of descriptive statistics, and analyzed with inferential statistics (Variance Analysis: ANOVA). The reliability of the BAET scores scaled by classification was analyzed with the Gwet AC1 goodness of fit technique. This technique was preferred to, for example, the Cohen Kappa technique since it is not based on the assumption of inter-rater independence is not affected by factors such as prevalence and marginal probability, calculates the level of chance-corrected agreement with different formulas, and provides a more consistent inter-rater reliability coefficient (Wongpakaran et al. 2013).

RESULTS

Selection/Elimination Stages

Stage 1: In this stage, 226 volunteer young adults (21.2 ± 2.0 years; 174 female, 52 male) participated (Table 1), whereas 10 booklets prepared as a result of the preliminary selection were used. In the analysis of the obtained data, (a) the types of emotions defined by the participants for each photograph with the highest frequency and percentage were selected. (b) The photographs that were very similar to each other and/or had a high standard deviation of intensity were eliminated. (c) It was observed that a large number of photographs were evaluated as joy and surprise (62 and 56 photographs, respectively). The photographs that were very similar to each other and/or had a high standard deviation of intensity in these two emotion groups were eliminated; thus, the number of photographs was reduced to 43 for joy and 21 for surprise. As a result of the selection/elimination made according to these criteria, the number of photographs selected for the scale was reduced to 205. The photographs were distributed in 4 test booklets. This time, the booklets were named with numbers (booklets 1-3: 51 photographs, booklet 4: 52 photographs).

Stage 2: In this stage, 99 volunteer young adults (22.6 ± 1.5 years; 86 female, 13 male) participated (Table 1), and 4 booklets prepared as a result of the first stage were used. In the analysis of the obtained data, (a) the types of emotions with the highest frequency and distribution percentage were selected. (b) The photographs that were similar to each other and/or had a high standard deviation of intensity were eliminated. As a result of these processes, the number of photographs decreased from 205 to 78.

Stage 3: In this stage, 180 volunteer young adults (22.2 ± 2.0 years; 154 female, 26 male) participated (Table 1). A single test booklet containing 78 photographs was used at this stage. In the analyses carried out according to the criteria used for Stage 2 data, (a) the emotions with a distribution percentage of 65% and above among the defined emotion types for each photograph were primarily selected. (b) If there were too many photographs with high frequency and distribution percentages in the same emotion group, the photographs with relatively low percentages were eliminated. (c) Photographs that did not meet the 65% criterion but had a higher prevalence percentage than other emotion types were not eliminated. (d) The photographs with intensity averages close to neighboring degrees (such as 2.05 for Likert 2 degree, 1.95 for degree 1) were eliminated; whereas the photographs with an intensity average between 0.10-0.90 were kept.

Stage 4: In this stage, all participants from whom data were collected in previous stages were included in the sample group, thus the sample group was formed of 505 volunteer young adults (21.8 ± 2.0 years; 414 female, 91 male) (Table 1). As a result of the analyses carried out according to the criteria of Stage 3, the number of photographs was reduced from 78 to 22, whereas these 22 photographs were collected in a single test booklet.

Descriptive and Inferential Parametric Findings Regarding Test Scores

The statistics of emotion recognition accuracy and emotion intensity measured in BAET, calculated for the 22 photographs selected at the end of Stage 4, are shown in Table 2. It is seen that the highest correct recognition percentages are in photographs expressing happiness. However, the correct recognition percentages of Items 11 and 14 remained around 30%. Because the participants classified the anger expression in Item 11 as "neutral" and the disgust expression in Item 14 as "sadness".

The reference values of the total correct recognition numbers according to the demographic variables of the study are given in Table 3. The homogeneity of the variances and the normality of the distributions were analyzed before the orthogonal analyses were carried out regarding the effect of demographic variables on the total correct recognition number. The test results showed that the variances were homogeneous (Levene's Test, $p > 0.05$) and the distribution was normal (skewness: -1.0, kurtosis: 1.8).

The effects of age (20-24, 25-29), education (Junior, Senior), and gender (female, male) on the total number of correct recognitions were calculated with 2 X 2 X 2 ANOVA. The results revealed that the main and joint effects of age, education, and gender on the total number of correct recognitions were not significant. These results did not change when the gender variable was eliminated and the ANOVA was repeated only for females.

Table 2. Descriptive Statistics for Emotion Recognition and Affect Intensity, and Gwet's AC1 Reliability Coefficients.

Item No	Emotion Type	Correct Recognition Percentage	Intensity Statistics	Reliability Coefficients	Coefficient Comments
Item 1	Surprise	65.6%	4.3 ± 0.9	0.51	Moderate
Item 2	Joy	95.6%	4.1 ± 0.9	0.92	Very High
Item 3	Anger	45.9%	2.8 ± 1.2	0.52	Moderate
Item 4	Anxiety	81.7%	3.3 ± 1.0	0.79	High
Item 5	Anger	42.2%	2.5 ± 1.1	0.37	Low
Item 6	Anxiety	83.3%	3.3 ± 1.0	0.70	High
Item 7	Anxiety	68.4%	2.6 ± 1.1	0.48	Moderate
Item 8	Surprise	87.7%	3.4 ± 1.0	0.80	High
Item 9	Disgust	84.5%	4.2 ± 0.8	0.83	Very high
Item 10	Anger	76.5%	4.1 ± 0.9	0.77	High
Item 11	Anger	31.3%	1.9 ± 1.0	0.33	Low
Item 12	Disgust	73.7%	3.8 ± 2.1	0.75	High
Item 13	Anger	87.4%	3.9 ± 1.0	0.80	High
Item 14	Disgust	31.1%	3.9 ± 0.9	0.64	High
Item 15	Anxiety	69.8%	2.7 ± 1.1	0.59	Moderate
Item 16	Sadness	69.0%	4.3 ± 0.9	0.75	High
Item 17	Joy	95.6%	4.7 ± 0.5	0.99	Very high
Item 18	Sadness	54.4%	2.5 ± 1.1	0.53	Moderate
Item 19	Fear	51.0%	4.2 ± 0.8	0.57	Moderate
Item 20	Joy	81.0%	2.3 ± 1.0	0.79	High
Item 21	Fear	57.7%	4.0 ± 0.9	0.60	Moderate
Item 22	Joy	93.6%	4.8 ± 0.5	1.00	Very high

Table 3. Total Correct Recognition Numbers According to Age, Education and Gender Variables.

Age (Years)		Education	
	Gender	Undergraduate - Junior	Undergraduate - Senior
20-24	Female	15.9 ± 2.9	15.7 ± 2.9
	Male	14.1 ± 3.6	14.7 ± 2.2
25-29	Female	15.5 ± 1.6	15.2 ± 1.9
	Male	15.0 ± 1.4	11.6 ± 0.6

Validity

Content validity is the extent to which the scale as a whole and each item in the scale serves its purpose. In order to evaluate this, data was collected from 18 academic personnel (16 female, 2 male) who are specialists in the field of psychology. The specialists rated each item of the test and the test as a whole in terms of evaluating the ability to recognize emotions and determine the intensity of emotion. The average degree of serving the purpose was 4.59, whereas the lowest degree was 3.94 for Item 5, and the highest value was 5.00 for Item 15 and Item 20. The average of the values obtained for the test as a whole was 4.61.

Reliability

The class intervals of the reliability coefficients obtained with Gwet AC1 and their descriptive evaluations are as follows (Wongpakaran et al. 2013): 0.00-0.20 (poor), 0.21-0.40 (fair), 0.41-0.60 (moderate), 0.61-0.80 (high), 0.81-1.00 (very high). The reliability coefficients and descriptive evaluations of each of the 22 items in the BAET are given in Table 2. When the table is examined, it is seen that four items have a very high (above 0.81), nine items have a high (0.61-0.80), and seven items have a moderate (0.48-0.60) concordance coefficient.

Item 11, which has low reliability (0.33, Table 2), also has a low percentage of correct recognition (31.3%). Item 14 has high reliability (0.64). However, the low percentage of correct recognition (31.1%) of the item indicates that the photograph was incorrectly recognized. In line with these findings, Items 11 and 14 were eliminated, thus BAET was reduced to its

brief form of 20 items. The percentage of correct recognition calculated for the 20-item BAET was 71.1, whereas the average reliability coefficient was 73.2.

DISCUSSION

In this study, BAET was developed to identify emotional expressions displayed in photographs and to rate the intensity of emotion. The photographs taken specifically for the test using a Turkish model ensured that BAET was original and culture-specific. The sample group was composed of psychology undergraduate students in their senior years of education due to their sensitivity to the subject of emotions and their knowledge of the subject. It was determined that the culture-specific and original BAET had content validity and high test-retest reliability. Due to its brief and easy application and scoring, it is thought that BAET can be used in application areas and as a bedside test in future studies.

Controlling Cultural and Demographic Variables

In order to control the confounding effects of culture and visual elements, photographs of a Turkish model were used in the BAET. Visual details (e.g., type of clothing, hairstyle) were controlled by being kept constant, and visual elements (e.g., jewelry) were excluded. Technical features (e.g., resolution, brightness) were kept constant in the photographs, all of which were black and white. The photographs were taken specifically for the BAET, ensuring that the test was original. Test scores included not only the total number of correct recognitions but also the intensity rating score. Test items were gradually reduced from a large number of photographs to an appropriate number, thus controlling the confounding effects of habit, fatigue, and motivation that may occur during the test-taking process.

BAET was aimed to be used specifically in the healthcare field (e.g., psychiatry, neurology), and therefore a brief test was developed. The reference values required for the BAET, which can also be used at the bedside in evaluating the effectiveness of diagnosis and treatment, were attained by undergraduate students in the junior and senior years of psychology education, due to their sensitivity and their knowledge of the subject (Table 3). The reality that the sample group was homogeneous even though different participants were included in each sub-study (selection/elimination stages, reliability study) was demonstrated by the fact that demographic variables did not have a significant effect on the recognition and rating scores of psychology students.

Among the demographic variables, gender is effective in recognizing emotions and making decisions about emotional intensity, whereas the difference is in favor of women (Kring and Gordon 1998). In line with these differences, which mostly stem from social learning (Duyan et al. 2011), women learn to live with their emotions, are more affected by the environment, and need more information and time (Gill et al. 1987). Language skills of child girls develop earlier than boys, and girls become proficient in expressing their emotions, understanding and evaluating the emotions of others earlier; on the other hand, boys who are not encouraged to express their emotions have difficulty in understanding both their own emotions and the emotions of others, whereas they experience difficulty in correctly evaluating emotions (Tuğrul 1999). The gender effect was not found to be statistically significant in the BAET sample group consisting of women and men. This finding, which demonstrates that gender does not have an effect on BAET scores, was interpreted as psychology education eliminating the difference in favor of women (Kring and Gordon 1998).

Relatively few studies in the body of literature present that affect, feeling, and/or emotional performance increase with education (Trauffer et al. 2013, Demenescu et al. 2014). The effect of age has been the subject of many studies. Emotional experiences begin to develop and diversify from infancy (Crawford et al. 1992), and show rapid development in preschool and primary school years (Boyatzis et al. 1993, Sayıl 1996). Development continues throughout adolescence, adulthood, and old age, whereas differences in emotional evaluations emerge between the periods (Dror et al. 1998). Social and emotional factors are effective in the emotional evaluations and decisions of individuals during adolescence, while emotional evaluations of individuals are rather high-level and more independent in old age (Lizárraga et al. 2007). The effects of age and education were not found to be significant in the BAET sample group, which was formed of a very short age range (20-29) and similar education (seniors and juniors of the same branch of education). This finding, which shows that age and education are not a source of change affecting the BAET scores, demonstrated that the sample group was homogeneous as intended.

With its briefness, validity, reliability as well as the suitability of the selected sample group characteristics, BAET can be used as a measurement tool, especially in application areas. The most important application area is healthcare. Affect and emotion recognition may be defective in many psychiatric disorders (American Psychiatric Association, 2013). BAET can be used in the future to test the impairment in affect and emotion recognition in psychiatric disorders. -

The Mini Mental State Examination (MMSE) (Folstein et al. 1975) is one of the primary tools used by health professionals to measure mental state. In institutional reporting for forensic psychology practices in Türkiye (e.g., determining mental health status), the results of the MMSE (Can et al. 2009) are considered valid. With its psychometric properties and

briefness, it is thought that the BAET will become an analog of the MMSE in affect and emotion recognition.

Future Suggestions

In future studies, it is important to consider affect, feeling, and emotion as separate components and to clarify this distinction in measurement tools. In the body of literature, these three concepts are often used interchangeably, whereas the tests are sometimes called "emotion tests" even though they measure affect. However, BAET was developed as an original measurement tool that comprises the rating of affect and the recognition of facial expressions. Although the view that emotions were independent of cognition was dominant in the past, today's multidisciplinary neuroscience research shows that cognitive and emotional processes are intertwined. Theories such as James-Lange (James and Lange 1922), Cannon-Bard (Cannon 1927, Bard 1928), and Schachter-Singer (Schachter and Singer 1962) reveal that emotions are formed through the interaction of physiological reactions and cognitive processes. From a cognitive neuroscience perspective, emotions carry information about the individual and their environment and contribute to decision-making and thinking processes. In this context, it is expected that the use of BAET will be popularized in future studies and that it will contribute to studies examining the interaction between cognition and emotion. Besides, it is recommended for nationally standardized tests to be developed and psychometric validity-reliability analyses to be carried out in different age and education groups.

Limitations and Conclusions

In the original BAET, which was developed within the scope of multi-staged research in Turkish society, where the visual details of the items were standard, and visual influencers were not used, the research sample group was formed of junior and senior undergraduate psychology students who have knowledge about the subject and of whom the demographic variables such as age and education are fixed. In the stage of selecting the appropriate items, this approach provided an advantage in terms of forming a homogeneous sample group. However, as explained above, age has an effect on emotion-affect. Although not in the same coherence, education, and gender also affect the characteristics in question. The sample group of early adult psychology undergraduate students used is the limitation of this research since affect-feeling-emotion recognition and rating change throughout life. In future studies, BAET should be applied to a wide range of ages and, if possible, education levels; norm values for the development levels of the test should be calculated. The values obtained for life should be given separately for education and gender levels.

In the present study, the selection stages of the test items were explained, and validity and reliability analyses were reported; thus, the scale was brought to its final form. Due to the nature of the scale, other analyses for validity such as factor analysis were not carried out with the obtained data. However, researchers continue their validity studies on clinical sample groups and convergent validity studies.

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