

Validity and Reliability of the Turkish version of the Affiliated Stigma Scale for Caregivers of Dementia



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ABSTRACT

Objective: The aim of this study was to adapt the “Affiliated Stigma Scale” to Turkish for caregivers of people with dementia and determine its psychometric properties. The scale measures the affiliated stigma experienced by caregivers of people with dementia.

Method: We assessed the psychometric properties of Affiliated Stigma Scale in 218 adults who were primary caregivers for their relatives with dementia. Sociodemographic data was collected and the Affiliated Stigma Scale, the Caregiver Burden Inventory, and the Beck Depression Inventory were administered.

Results: The Confirmatory Factor Analysis results did not support the three-factor structure of the original scale, Exploratory Factor Analysis (EFA) was performed. EFA, revealed that the Turkish form of the Affiliated Stigma Scale has a four-factor structure as “other related/cognition”, “emotion”, “self-related”, and “behavior” with a total of 20 items. The variance explained by four factors constitutes 65.34% of the total variance. It was positively correlated with depression and caregiver burden scores. The internal consistency coefficients of the scale range was between 0.82 and 0.86 and was 0.91 for the total scale.

Conclusion: The Affiliated Stigma Scale is a valid and reliable measurement tool in Turkey for the caregivers of people with dementia in assessing affiliated stigma.

Keywords: Affiliated Stigma, Caregiver, Dementia, Reliability, Validity

INTRODUCTION

Dementia is a condition of disability that is continuous and often progressive in areas of the mind such as memory, language, visual spatial skills (Karakaş 2017), attention, motor movements, acquiring new knowledge and skills, judgment, abstract thinking, problem solving (Öztürk and Uluşahin 2015). From the early stages of the disease, cognitive impairment is accompanied by psychological and behavioral problems (Cankurtaran and Kulaksızoğlu 2020). Although the biggest risk factor for dementia is age, the World Health Organization states that there are around 55 million people with dementia worldwide and this number is expected to triple by 2050 (WHO 2021; 2023). From the perspective of Türkiye, in studies conducted in different regions, the prevalence of dementia was found to be 8.4% in Central Anatolia (Arslantaş

et al. 2009) and 22.9% in Izmir (Keskinoğlu et al. 2006). Dementia is a health problem that negatively affects not only the patient but also the caregiver in various ways. It is known that caring for an individual with dementia negatively affects the lives of caregivers in many areas such as psychological, financial, physical, and social areas (Eğilli and Sunal 2017). Caregivers may quit their jobs and social lives, experience fatigue due to the demands of 24-hour care, and develop symptoms of depression, anxiety, burnout, stress, and prolonged grief disorder as a result of caregiving (Alfakhri et al. 2018, Bertrand et al. 2006, Liu et al. 2016, Önal et al. 2023).

The concept of stigmatization, which is widely used in the psychology literature, was first defined by Goffmann (1963) as attributing less value to the other person and/or devaluing that person due to any characteristic. It can be considered as the person being labeled as flawed, worthless, and undesirable

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by others in society due to deviating from the standards accepted as 'normal' by the society they live in (Karagöl et al. 2013). When examining the characteristics for which individuals are subjected to stigma, it is stated that situations such as chronic physical diseases (Aktan Bektaş et al. 2023), mental illnesses (Danacı et al. 2016), cognitive disabilities (Ağaç and Turan 2022), belonging to a different group (race (Deniz et al 2016), age (Yaşar and Avcı 2020), gender identity, sexual orientation (Başar and Öz 2016, Ünal and Yılmaz 2020, etc.) are seen as risk factors for stigmatization (Goffmann 1963). In some cases, not only the person with stigmatizable characteristics, but also their relatives such as friends, family members and even health professionals who provide care for them are known to be stigmatized and to experience the negative effects of stigma. This situation, which occurs in the relatives of the actual person being stigmatized, is defined as affiliate stigma (Mak and Cheung 2008).

In the literature on affiliate stigma, it has been noted that due to the relatively limited studies on caregivers of individuals with dementia, results related to affiliate stigma often rely on findings concerning the relatives of individuals with psychiatric illnesses (Werner and AboJabel 2020). When examining the existing literature on the relationship between dementia and affiliate stigma, Su and Chang's (2020) study on 270 caregivers found that caregivers of individuals with dementia with high levels of affiliated stigma experienced higher levels of anxiety, depression, and burnout. This study also revealed that variables affecting the level of affiliate stigma included the younger age of the patient and their lower dependency on daily living activities, both of which were associated with higher levels of affiliate stigma. Additionally, a high level of burnout within the family was also found to be related to affiliate stigma. Some other studies in the literature found that low educational level and social support were the main predictors of affiliated stigma (Werner and AboJabel 2020); severity of the disease (Livingston and Boyd 2010), low self-esteem and self-efficacy in caregivers, and inadequate coping skills (Gerlinger et al. 2013, Krejevski et al. 2013; Livingston and Boyd 2010) were found to be associated with higher affiliated stigma. Another study examining the impact of affiliate stigma on psychological well-being (such as depressive symptoms, sleep problems, and fatigue) found that female relatives of patients were more affected by the negative impacts of affiliate stigma compared to male relatives, those with higher education levels compared to those with lower education levels, and partners of patients compared to non-partner relatives. This study also revealed that the longer the duration of dementia, the greater the affiliate stigma (Van den Bossche and Schoenmakers 2022).

There is a need for an objective measurement of affiliated stigma to evaluate how it affects caregivers' caregiving functions, their own mental and physical health, and patients.

One of the scales developed to evaluate affiliate stigma is the Affiliate Stigma Scale (ASS) by Mak and Cheung (2008), which measures affiliate stigma among relatives of individuals with any psychiatric disorder or cognitive impairment and has been frequently used in recent studies. In the literature, it has been observed that ASS has been adapted into various languages such as Persian, Greek, Hindi, Malay (Kumari et al. 2022, Papadopoulou et al. 2022, Saffari et al. 2019, Yun et al. 2018), and it is known that in other languages, this scale can be used not only for caregivers of individuals diagnosed with dementia but also for caregivers of individuals with different diagnoses (Parkinson's disease, cancer, autism spectrum disorder, etc.). When considering the study results using the ASS especially in caregivers of individuals with dementia, it is noted that male gender, high anxiety level, and high caregiver burden are significant risk factors for affiliated stigma in terms of variables related to caregivers (Su and Chang 2020).

It has been seen that adaptation studies of the ASS have been conducted in Türkiye for caregivers of children with mental disabilities (Kasımoğlu and Arıkan 2020) and individuals with spinal cord injury/disorder (Kuzu et al. 2023). However, despite its presence in international literature (Saffari et al. 2019), it is highlighted that there has been no Turkish adaptation specifically for caregivers of individuals with dementia, which constitutes a different disease category. Considering the increasing prevalence of dementia (Alzheimer Disease International 2013) and the negative effects it has on both patients and caregivers (Bass et al. 2012, Fonareva and Oken 2014, Soner and Aykut 2017, Cankurtaran and Kulaksızoğlu 2020), it is thought important to validate and establish the reliability of the scale within the Turkish cultural context to examine the situation of affiliate stigma among caregivers of individuals with dementia and determine its relationships with other variables. In addition, it is thought that developing an easily understandable affiliated stigma scale with relatively few questions into our language will fill an important gap in the literature to evaluate the effectiveness of intervention programs to be developed to prevent the stigma that relatives who care for individuals with dementia may experience. Therefore, this study was aimed at adapting the ASS developed by Mak and Cheung (2008) for an adult sample of caregivers of individuals with dementia in our country (Türkiye) and to determine its psychometric properties.

METHOD

Participants

Within the scope of the study, a total of 218 participants aged between 19 and 88 years ($Mean=49.55$, $SD=13.22$) who were caregivers for family members diagnosed with dementia were reached. In the study, caregivers of individuals already known to have a diagnosis of dementia were reached through convenient sampling methods (through the Turkish

Alzheimer's Association) and snowball sampling techniques. The majority of participants resided in Ankara and Istanbul provinces. Of the participants, 78.4% were female and 20.2% were male. Most participants (81.2%) perceived themselves to be at a middle-income level. Data collection was conducted face-to-face with 28.4% of participants (N=62) and online with 71.6% (N=156). The mean age of the Patients with Dementia that participants being cared for was 77.71 years (SD=8.99), with approximately half of the patients (47.7%) diagnosed in the middle-stage of dementia. Descriptive information about the participants and the individuals with dementia they care for can be found in Table 1.

Measures

Within the scope of the current study, in addition to the Socio-Demographic Information Form, the Affiliated Stigma Scale, the Caregiver Burden Inventory and the Beck Depression Inventory were administered to the participants.

Socio-Demographic Information Form: This form was created by the researchers to gather various demographic characteristics from caregivers of individuals with dementia and information about the individuals with dementia as listed in Table 1.

The Affiliated Stigma Scale (ASS): The leading data collection tool is the ASS, which was developed by Mak and Cheung (2008) and whose Turkish adaptation, validity and reliability studies were conducted within the scope of the current study. This scale aims to measure affiliate stigma experienced by relatives of individuals with any psychiatric or cognitive impairment and consists of 22 items organized into three factors: Affective, behavioral, and cognitive. Questions 1, 4, 7, 10, 13, 16, 19 in the scale assess affective factors; questions 2, 5, 8, 11, 14, 17, 20, 22 assess behavior factors; and questions 3, 6, 9, 12, 15, 18, 21 assess cognition factors. Responses are measured on a 4-point Likert scale (1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree). Higher scores on the scale indicate higher levels of affiliate stigma experienced by the respondent. In its original form, the scale demonstrated good internal consistency with Cronbach's alpha coefficients ranging from 0.85 to 0.94 for the subscales, and split-half reliability coefficients ranging from 0.88 to 0.99 (Mak and Cheung 2008). The scale was adapted for use with the adult sample of caregivers of individuals with dementia in this research.

The Caregiver Burden Inventory (CBI): The CBI, developed by Novak and Guest (1989) and adapted into Turkish by Küçükgüçlü et al. (2009), aims to measure the burden experienced by caregivers of individuals with dementia. The scale consists of 24 items with five sub-dimensions: Time-dependence burden, developmental burden, physical burden, social burden, and emotional burden. The CBI is evaluated using a 5-point Likert-type scale (0:Not all descriptive - 4:Very

descriptive). Higher scores on the scale indicate a higher level of caregiver burden. The internal consistency coefficients of the adapted scale's subdimensions ranged from 0.82 to 0.94. In the current study, this value was determined to be 0.93 for the total scale.

The Beck Depression Inventory (BDI): The scale developed by Beck (1961) and adapted into Turkish by Hisli (1989) aims to measure the degree of emotional, motivational, somatic, cognitive, and interpersonal disturbances associated with depression through a self-report method. The scale is scored from 0 to 3 for each item, with a total possible score ranging from 0 to 63. Higher scores indicate a higher level of severity of depression. In the adaptation study, the Cronbach's alpha internal consistency coefficient of the scale was found to be 0.80, and the split-half reliability was found to be 0.74 (Hisli Şahin 1989). For the current study, the Cronbach's alpha value was calculated to be 0.91.

Procedure

First, permission was obtained from the authors who developed the ASS (Mak and Cheung 2008) to adapt it to Turkish and to determine its psychometric properties in caregivers of individuals with dementia. Subsequently, the scale items were blindly translated from English to Turkish by a clinical psychology PhD student, a psychiatric nursing PhD student, and a clinical psychologist who were fluent in English and Turkish. The Turkish items were examined by three experts (clinical psychologists) who are proficient in both languages, and the text regarding the translation of the scale items was finalized. A clinical psychologist and an English instructor, who were not involved in the initial translation process, performed a back-translation of the scale items from Turkish to English, and this was compared with the original items by the research team. No changes were made to the scale items during the adaptation process (only a note was added to item B11: "Please answer without considering Covid-19 precautions"). Finally, approval for the final version of the items was obtained from the original developers, and the Turkish version of the scale was finalized. A pilot study with five caregivers of individuals with dementia was conducted to evaluate the clarity of the scale items.

The current research was conducted with the approval of the Ethics Committee of Hacettepe University, dated December 13, 2021, with the reference number E-35853172-900-00001914070. After obtaining the necessary permissions, contact was made with neurologists specializing in dementia and the "Turkish Alzheimer Association", which operates in the field of dementia in Türkiye, and required permissions from the administrators were obtained. In the study, we reached out to caregivers of individuals already diagnosed with dementia. Before administering the scale, participants were confirmed to have a relative with a dementia diagnosis,

Table 1. Information for Caregivers and the Patients with Dementia They Care for

Variables Related to Caregivers	N (%)	
Age (Mean ± Standard Deviation)	49.55±13.22 Min-Max:19-88	
Caregiving time (Mean ± Standard Deviation)	46.25±46.22 (month) Min-Max: 1-288	
Gender	Female	171 (78.4)
	Male	44 (20.2)
	I don't want to specify	3 (1.4)
Marital Status	Single	51 (23.4)
	Divorced	16 (7.3)
	Married	147 (67.4)
	Widowed	4 (1.8)
Educational Background	Primary school	17 (7.8)
	Middle school	15 (6.9)
	High school	40 (18.3)
	University	122 (56)
	Graduate	24 (11)
Working status	Working	76(34.9)
	Not working	74 (33.9)
	Retired	68 (31.2)
Perceived income level	Low	23 (10.6)
	Middle	177 (81.2)
	High	18 (8.3)
Status of receiving help for care	I don't get help	57 (26.1)
	Help from another family member	111 (50.9)
	Help from a professional caregiver	30 (13.8)
	Help from someone beyond my family	20 (9.2)
Physical illness	Yes	33 (15.1)
	No	185 (84.9)
Psychiatric diagnosis	Yes	27 (12.4)
	No	191 (87.6)
Variables Related to Patients with Dementia		
Age (Mean ± Standard Deviation)	77.71±8.99 Min-Max: 54-96	
Gender	Female	151 (69.3)
	Male	66 (30.3)
	I don't want to specify	1 (0.5)
Dementia level	Mild	31 (14.2)
	Moderate	104 (47.7)
	Advanced	68 (31.2)
	I don't know	15 (6.9)
Degree of kinship between the patient and the caregiver	Mother	114 (52.3)
	Father	39 (17.9)
	Sibling	3 (1.5)
	Spouse	22 (10.1)
	Grandmother	15 (6.9)
	Grandfather	5 (2.3)
	Mother-in-law	13 (6)
	Father-in-law	1 (0.5)
Relative (sister-in-law, aunt etc.)	5 (2.3)	

and informed consent was obtained after providing information about the study. Data collection was carried out between January 2022 and February 2023, either face-to-face or online, with caregivers of individuals with dementia. Care was taken to ensure that participants did not fill out the form multiple times in the online environment. Completing the scales took an average of 30-35 minutes for the participants.

Statistical Analysis

Before the analysis, the data entries were checked to determine if any of the 220 participants did not meet the inclusion criteria (providing care to a family member with dementia) or left more than 10% of the scale items unanswered. No data was excluded at this step. Following this, a univariate outlier analysis was performed, and two participants who did not meet the criterion ($-3.29 < Z < +3.29$; Field 2009) were excluded from the analyses. All analyses were then conducted with the remaining 218 participants. Lastly, the normality of the data distribution was assessed, and it was found that the skewness and kurtosis values of all scale scores were within the normal range ($-1.96 < \text{skewness and kurtosis} < +1.96$; Field 2009).

The factor structure of the Turkish version of the scale was first evaluated using confirmatory factor analysis (CFA), with the following fit and error statistics considered: $\chi^2/\text{df} < 3.0$, NFI, CFI, GFI, or IFI ≥ 0.95 , and RMSEA < 0.08 (Hu and Bentler 1999, Kline 2016). Construct validity was also examined using exploratory factor analysis (EFA). Pearson Product-Moment Correlation analyses were conducted to assess the relationships between the scale and other measurement tools used in the study. Correlation coefficients were interpreted as follows: 0.10-0.29 as low, 0.30-0.49 as moderate, and 0.50 and above as high (Cohen 1988). In reliability analyses, both the Cronbach's Alpha coefficient and reliability coefficients calculated using the split-half method were reported. The SPSS 26.0 software was used for analyses, and LISREL 8.8 (Jöreskog and Sörbom 2006) was used for confirmatory factor analysis.

RESULTS

Results Regarding the Validity of the Affiliated Stigma Scale

Construct Validity: To evaluate whether the factor structure of the Turkish version of the ASS is similar to the factor structure of the original scale, a first-order CFA was conducted.

Results of Confirmatory Factor Analysis (CFA): A measurement model was created for the original scale, which consists of a total of 22 items, with the latent variable "emotion" composed of 7 observed variables, the latent variable "behavior" composed of 8 observed variables, and the latent

variable "cognition" composed of 7 observed variables. The CFA results showed that the t-values of the factor loadings for all items, except item 13 in the "emotion" latent variable, were statistically significant. However, it was determined that the first measurement model did not provide an acceptable fit to the data: $\chi^2(206)=1299.41$, $p=0.00$, $\chi^2/\text{df}=6.31$, CFI=0.69, NFI=0.64, GFI=0.65, IFI=0.69, RMSEA=0.156. Even after removing item A13, whose factor loading was not significant, and reanalyzing the measurement model, the model still did not fit the data: $\chi^2(186)=1080.53$, $p=0.00$, $\chi^2/\text{df}=5.81$, CFI=0.71, NFI=0.68, GFI=0.68, IFI=0.72, RMSEA=0.149. To improve the fit and error statistics, five error variances (A4-A10; C15-C18; B11-B22; A10-A19; B2-B17) were related as suggested by the modification indices, and the measurement model was retested. However, in the final measurement model, the fit and error indices were still not within acceptable limits: $\chi^2(181)=763.97$, $p=0.00$, $\chi^2/\text{df}=4.22$, CFI=0.79, NFI=0.74, GFI=0.75, IFI=0.79, RMSEA=0.122. As a result of the analysis, it was observed that the model did not fit the data because the ratio of the χ^2 value to the degrees of freedom was greater than 3, the RMSEA value was greater than 0.05 (Kline 2011, Schermelleh-Engel ve ark. 2003), the CFI, NFI, and IFI values were below 0.90 (Jöreskog ve Sörbom 1993), and the GFI value was below 0.85 (Anderson ve Gerbing 1988). In conclusion, it can be said that the factor structure of the scale adapted for dementia caregivers did not resemble the factor structure of the original scale.

Despite the consensus on the face and content validity of the scale in the literature, researchers from other countries have also encountered similar psychometric issues with these items and identified a factor structure different from the initially proposed one (e.g., Yun et al. 2018). This suggests that some items may have been understood differently or corresponded to different concepts due to cultural characteristics. Additionally, considering that the original scale was intended by the researchers to be adapted for caregivers of individuals with dementia, it was decided to conduct an EFA to redefine the dimensions and items of the scale in Türkiye. Such a step is considered an initial part of the internal validation process in factor analysis (Kline 1994).

Results of Exploratory Factor Analysis (EFA): First, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity were applied to determine the suitability of the data for principal components factor analysis. The KMO index was found to be above 0.50 (0.90), indicating that the sample was adequate for factor analysis, and Bartlett's Test of Sphericity was statistically significant ($p=0.00$), indicating that the variables were sufficiently correlated with each other (Kaiser 1974; as cited in Field 2009). When the distribution of items to factors was left free and the analysis was conducted, it was found that the eigenvalues of four factors were greater than 1 (8.78, 2.74, 1.10, 1.03). Considering that

the scree plot (Figure 1) also pointed to a four-factor solution and the item contents formed a more meaningful common structure in four factors, it was decided to proceed with a four-factor solution in the analysis. Additionally, since the subdimensions of the scale were assumed to be correlated with each other, it was deemed appropriate to use the Direct Oblimin rotation method (Seçer 2013).

Based on the analysis, items B14 and A1, which had a variance explanation rate of less than 0.50 in a common factor (Costello and Osborne 2005), were sequentially removed and the analyses were repeated. No cross-loading items were found among the remaining 20 items, and the factor loadings of all items ranged from 0.32 to 0.81. Since the factor loadings were above 0.30, it can be said that the items are related to their respective dimensions (Field 2009). Reviewing the content of the items in the four factors, it was deemed appropriate to name the factors as “other related/cognition”, “emotion”, “self-related”, and “behavior”. As a result, it was found that the ASS has a four-factor structure with eigenvalues above 1 and each factor explaining more than 5% of the variance in the scale (Seçer 2018). The factor of “other related/cognition” with an eigenvalue of 8.25 explained 41.27% of the variance, the factor of “emotion” with an eigenvalue of 2.71 explained 13.57% of the variance, the factor of “self-related” with an eigenvalue of 1.07 explained 5.35% of the variance, and the factor of “behavior” with an eigenvalue of 1.03 explained 5.16% of the variance. The four factors together accounted for 65.34% of the total variance, which is considered to be at an acceptable level (Büyüköztürk 2009). The final details regarding the factors, factor loadings, eigenvalues, and

explained variances of the scale items are presented in Table 2 under the title “AFA Results”.

Criterion (Relationship) Validity: To assess the criterion validity of the adapted scale in this study, the relationships between the ASS and the Caregiver Burden Inventory and the Beck Depression Inventory were evaluated using Pearson Product-Moment Correlation analysis. The results of the correlation analysis show that the sub-dimensions of the ASS—related to other related/cognition, emotion, self-related, and behavior—and the total score have significant positive correlations with depression and caregiving burden. The results of the correlation analysis are presented in Table 3.

Results Regarding the Reliability of ASS

Cronbach’s Alpha internal consistency coefficient: The Cronbach’s Alpha values calculated to determine the internal consistency of the ASS were 0.86 for Factor 1 (the “other related/cognition” dimension), 0.82 for Factor 2 (the “emotion” dimension), 0.84 for Factor 3 (the “self-related” dimension), 0.82 for Factor 4 (the “behavior” dimension) and 0.91 for the total scale.

Item-Total Correlations: Item-total correlations assess whether an individual item measures the attribute that the whole scale is intended to measure and its discriminative ability. Therefore, this study aimed to determine the reliability of the scale through this method as well. In the current adaptation study, the corrected item-total correlations of the scale items ranged from 0.53 to 0.71 (Table 2), indicating that the items were functioning very well.

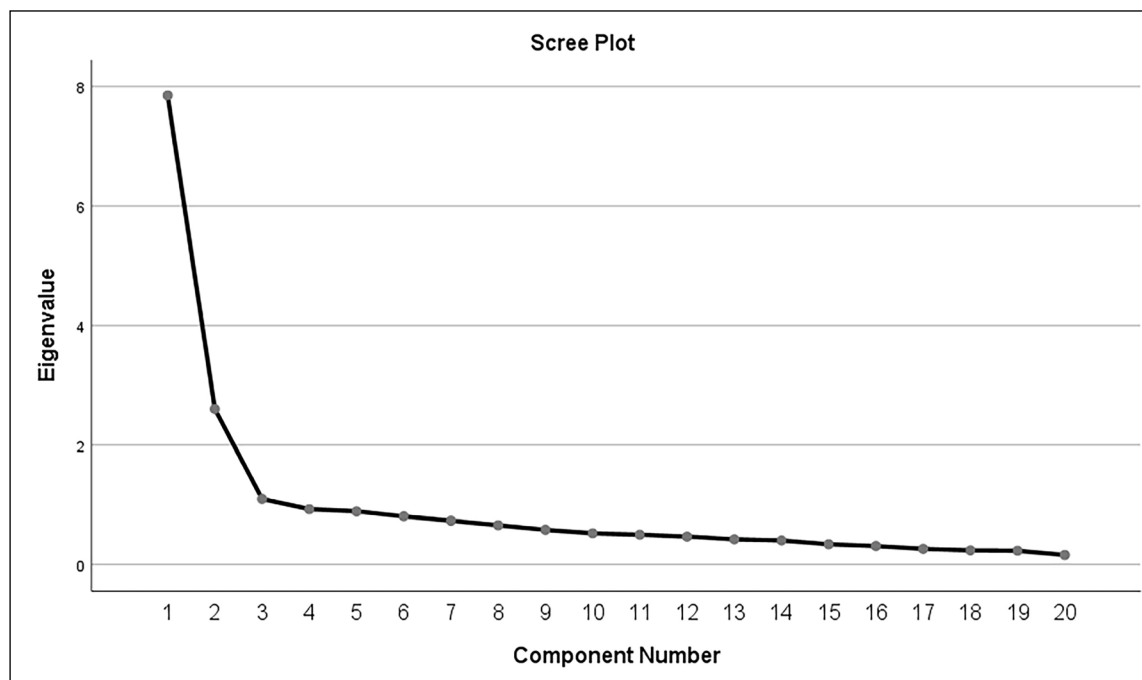


Figure 1. Scree Plot of the Affiliate Stigma Scale.

Table 2. Results of the Exploratory Factor Analysis

		Factor Loading				Item-Total Correlation
		1	2	3	4	
Factor 1: Other Related/Cognition/Variance=%41.27; Cronbach α=0.86						
Item No	Item					
21	Having a family member with dementia makes me lose face.	0.79				0.70
20	I do not dare to participate in activities related to dementia lest other people suspect I have a family member with dementia.	0.78				0.70
16	I worry that other people will find out I have a family member with dementia.	0.75				0.67
18	Having a family member with dementia makes me think that I am less than others.	0.70				0.71
15	Having a family member with dementia makes me think that I am incompetent compared to other people.	0.70				0.65
Factor 2: Emotion/Variance=%13.57; Cronbach α=0.82						
Item No	Item					
10	I feel helpless about having a family member with dementia.		0.80			0.71
13	I feel sad because I have a family member with dementia.		0.79			0.53
12	Having a family member with dementia has a negative impact on me.		0.74			0.66
4	I feel emotionally disturbed because I have a family member with dementia.		0.71			0.56
19	I feel that I am under great pressure because I have a family member with dementia.		0.63			0.62
Factor 3: Self Related/Variance=%5.35; Cronbach α=0.84						
Item No	Item					
3	Other people would discriminate against me if I was with a family member who has dementia.			0.81		0.60
6	My reputation is damaged because I have a family member with dementia.			0.72		0.69
5	I do not dare to tell others that I have a family member with dementia.			0.63		0.68
7	The behavior of my family member with dementia is embarrassing.			0.49		0.62
9	People's attitudes towards me are negative when I am with my family member who has dementia.			0.32		0.59
Factor 4: Behavior/Variance=%5.16; Cronbach α=0.82						
Item No	Item					
2	I avoid communicating with my family member who has dementia.				0.38	0.60
11	I reduce contact with my friends and relatives because I have a family member with dementia. * Please answer without considering COVID precautions.				0.80	0.61
22	I reduce contact with my neighbors because I have a family member with dementia.				0.73	0.68
8	I avoid going out with my family member who has dementia.				0.47	0.61
17	I reduce interacting with my family member who has dementia.				0.34	0.63

The Cronbach's alpha for the total scale was calculated to be 0.91; there are no reverse-coded items in the scale.

Table 3. Results of Correlation Analysis

Variables	1	2	3	4	5	6	7
1. The ASS-Other-Related/Cognition Dimension	1						
2. The ASS-Emotion Dimension	0.34***	1					
3. The ASS-Self-Related Dimension	0.70***	0.30***	1				
4. The ASS-Behavior Dimension	0.71***	0.45***	0.70***	1			
5. The ASS-Total	0.83***	0.71***	0.80***	0.87***	1		
6. The Caregiver Burden Inventory	0.25***	0.43***	0.22**	0.43***	0.43***	1	
7. The Beck Depression Inventory	0.19**	0.42***	0.15*	0.31***	0.36***	0.67***	1

ASS: Affiliate Stigma Scale, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Split-half reliability: To assess whether there were any random errors in the responses to the scale, the split-half method was also used for reliability analysis. The split-half procedure typically involves dividing the items into odd and even and calculating the correlation coefficients obtained from half-tests (Erkuş 2003). Accordingly, the Cronbach Alpha value for the first half was 0.84, for the second half it was 0.84, the inter-form correlation was 0.81, the Spearman-Brown coefficient for equal length was 0.89, and the Guttman split-half value was 0.89. Based on this, it can be said that the adapted scale is a reliable measurement tool.

DISCUSSION

In this study, the aim was to adapt the ASS developed by Mak and Cheung (2008) into Turkish and to determine the psychometric properties of the scale in caregivers of individuals with dementia. Since there was no Turkish scale available to assess affiliate stigma among caregivers of individuals with dementia in our country, the validity and reliability analyses of the ASS were addressed within the scope of the research. The scale's validity was evaluated in terms of Confirmatory Factor Analysis (CFA), Exploratory Factor Analysis (EFA), and criterion validity, while its reliability was assessed through Cronbach's Alpha internal consistency, item-total correlations, and split-half reliability. The adaptation study conducted with a sample of 218 adults caring for individuals with dementia revealed that the 20-item, four-dimensional scale is valid and reliable in our country.

In the current study, a first-order Confirmatory Factor Analysis (CFA) was conducted to evaluate whether the factor structure of the ASS is similar to the original scale's factor structure (Young and Bullock 2003). It was found that the fit and error indices of the tested measurement model were not within acceptable limits. Some modifications (such as removing non-significant factor loadings and correlating the error variances of observed variables) were performed to improve the fit and error statistics, but the CFA results indicated that the original scale's three sub-dimensions were not validated. In other words, the factor structure of the adapted scale did not resemble that of the original scale. This discrepancy may be attributed to some items in different dimensions of the original scale being understood differently or corresponding to different conceptual meanings due to cultural characteristics. Although some studies in the literature have shown that scales adapted to different languages have similar structures to the original scale (Cheng-Chang et al. 2016, Saffari et al. 2019), other studies (e.g., Kasımoğlu and Arıkan 2020, Yun et al. 2018) such as this one, have reported that the scale has a different structure from the original and that items forming a dimension have loaded onto different factors. Furthermore, since the scale in this study was adapted

to assess affiliate stigma in caregivers of individuals with dementia, rather than caregivers of individuals with mental or cognitive impairments as in the original study, the differences in the target sample may have contributed to the lack of validation of the original scale's items and dimensions.

EFA was conducted to evaluate the structure of the ASS for caregivers of individuals with dementia in our country. As a result of the EFA, items B14 and A1, which had low common variance ratios (Costello and Osborne 2005), were removed from the analysis. Therefore, unlike the original scale, the adapted scale consisted of 20 items and four dimensions. The fact that the lowest factor loading for items in each dimension was above 0.30 (Field 2009) and that the variance explained by each factor alone was above 5% (Seçer 2018) indicates that the adapted scale has a valid structure. The total variance explained by these four factors being 65.34% of the total variance is another indicator suggesting that these variance amounts are at an acceptable level (Büyüköztürk 2009). When examining the content of the items, it was deemed appropriate to name the factors as "other-related/cognition", "emotion", "self-related", and "behavior" due to the common structure they form based on their meanings. The other-related/cognition dimension includes items related to negative thoughts arising from comparing oneself to others (e.g., "Having a family member with dementia makes me think that I am incompetent compared to other people."); the emotion dimension includes items related to negative emotions associated with affiliate stigma, similar to the original (e.g., "I feel sad because I have a family member with dementia."); the self-related dimension includes items related to the self and self-esteem of a stigmatized person (e.g., "Other people would discriminate against me if I was with a family member who has dementia."); and the behavior dimension includes items related to actions associated with affiliate stigma, as in the original (e.g., "I avoid communicating with my family member who has dementia."). In particular, most of the items in the "self-related" dimension, which emerged as a different factor in this study, were also part of the "self-esteem" dimension in Yun et al.'s (2018) study, hence it was defined similarly in the current study. Consequently, although the factor names and the dimensions to which some items loaded differ from the original, various differences in the number of factors and items have also been observed in versions adapted to other languages. For instance, the scale adapted to Malay for caregivers of individuals with mental illness consists of four sub-dimensions and 21 items (Yun et al. 2018), whereas the adaptation for parents of children with intellectual disabilities into Turkish resulted in a single-factor structure (Kasımoğlu and Arıkan 2020).

To examine criterion validity, correlation analysis between the ASS and the Caregiver Burden Inventory and the Beck Depression Inventory revealed that the scale's other-related/

Limitations

cognition dimension and self-related dimension were found to have low-level correlations with both caregiver burden and depression levels, while the emotion and behavior dimensions had moderate-level significant correlations with these variables. Additionally, the total score of the adapted scale showed a moderate-level significant correlation with caregiver burden and depression. Positive and significant relationships between affiliate stigma in caregivers of individuals with dementia and caregiver burden and depression were expected. Caregivers experience increased burden due to providing care for family members with dementia and coping with dementia symptoms (Watson et al. 2019). Moreover, the negative attitudes, emotions, and avoidant behaviors of other individuals in society towards those providing care to their patients pose a risk of negative experiences for caregivers due to affiliate stigma that caregivers experience (Park and Park 2014). Consequently, an increase in the caregivers' burden and a subsequent decline in their psychological health can be anticipated (Kolanowski et al. 2017). Indeed, numerous studies have shown that caregivers with high levels of affiliate stigma experience burnout (Su and Chang 2020), increased caregiver burden, and elevated levels of depression (Chen et al. 2023, Hu et al. 2023).

The reliability of the ASS was evaluated in terms of Cronbach's Alpha internal consistency, item-total correlations, and split-half reliability. The internal consistency coefficients being above 0.80 for both sub-dimensions and the total scale (Nunnally et al. 1994) indicate that it is a reliable measurement tool. Additionally, in psychological research, coefficients of 0.70 and above are generally considered satisfactory (Field 2009). Furthermore, the fact that both in the development of the original scale and in other studies adapted into different languages (e.g., Kumari et al. 2022, Yun et al. 2018) these coefficients for sub-dimensions were reported above 0.80 and for the total scale above 0.90 supports the findings of this study. Another method used to evaluate the scale's reliability was examining the item-total correlations. If the item-total correlation value is above 0.20 (Aiken 2020, Ebel 1965) or 0.30 (Nunnally and Bernstein 1994), it indicates that the item makes a significant contribution to the total score and has high discriminative power, while a value above 0.40 corresponds to a good item (Büyüköztürk 2009). In this study, the appropriateness of the corrected item-total correlations indicated that the items worked very well. Additionally, since the lowest correlation coefficient among the total scores of the sub-dimensions of the adapted scale was 0.30 (Nunnally and Bernstein 1994), it was considered that the ASS was reliable. The final method used for reliability is split-half reliability (Erkuş 2003). Accordingly, the Cronbach Alpha values and Guttman split-half reliability coefficients for both halves were found to be above 0.80, providing further information about the scale's reliability.

The current study's findings are likely to be more generalizable due to its inclusion of caregivers across a wide age range. However, there are some limitations to this research. First, most participants were caregivers who visited neurologists with their patients or were affiliated with branches of the Turkish Alzheimer Association. In this context, it is likely that the caregivers are relatively more informed about the disease and their patients. The fact that a large proportion of participants were female could also be a limitation. Additionally, many demographic variables were unevenly distributed across groups, which prevented any analysis of the scale's discriminative validity. Second, the data collection method used was self-report, which may introduce a bias of socially desirable responses. Moreover, responses related to the level of dementia (mild, moderate, severe, etc.) in the descriptive statistics were reported by caregivers based on information provided by physicians to the patients' relatives. However, since this information was not directly obtained from a physician and there may be instances of incorrect knowledge or recall by caregivers, this can be considered another limitation. The lack of detailed information on types of dementia constitutes a third limitation of the study. Fourth, since some of the data were collected online, the sample may not be fully representative of the population. Finally, the model predetermined for the original scale structure was rejected in this study through CFA, and changes were only identified using EFA. Moreover, since data were collected from a single sample for the adaptation study and it was noted that both EFA and CFA could not be conducted within the same sample (Lorenzo-Seva 2022), CFA could not be conducted again to validate the structure determined in this study. Therefore, future research should focus on validating this scale in our country or discussing possible changes in the scale's dimensions and items.

The Contribution of the Study to Clinical Practice

As previously mentioned, assessing the level of affiliate stigma among caregivers of individuals with dementia is particularly important for psychological health. Given that dementia is increasingly prevalent and has adverse effects on both patients and caregivers, there is a need for a scale in our country that can evaluate affiliate stigma from various perspectives. The current study was aimed to address this gap by providing a valid and reliable scale for measuring affiliate stigma, which is easy to understand, has a relatively small number of items, facilitates scoring and interpretation, and consists of four dimensions. This adaptation of the scale is expected to contribute to the existing body of scales in our country and shed light on both theoretical and practical studies in psychology and geriatrics to prevent affiliate stigma among caregivers of individuals with dementia. Moreover, the

availability of this scale in our language will enable support for psychological health and planning of rehabilitation services for those affected by stigma. It can be said that the ASS is a valid and reliable measurement tool for assessing affiliate stigma among adults caring for individuals with dementia in scientific research in our country.

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