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RESEARCH ARTICLE

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Investigation of the relationship between continuing bonds and adjustment after the death of a first-degree family member by using the Multidimensional Continuing Bonds Scale

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Abstract

Objectives: The study aims to develop a continuing bonds scale, investigate the relationship between continuing bonds and adjustment after loss, and test the moderating role of meaning reconstruction in this relationship.

Methods: Data were collected from two different samples of 306 (Study 1) and 271 (Study 2) bereaved adults.

Results: The four factors structure of the Multidimensional Continuing Bonds Scale (MCBS) was explored and confirmed. Hierarchical regression analysis revealed that continuing bonds showed a significant relationship with prolonged grief symptoms after controlling the risk factors such as gender, age of the deceased, time since loss, and cause of death. Meaning reconstruction moderated the relationship between continuing bonds and prolonged grief symptoms.

Conclusion: The results revealed that the MCBS can be used as a valid and reliable scale to assess the continuing bonds construct. The relationship between continuing bonds and prolonged grief symptoms varies according to the levels of meaning reconstruction.

KEYWORDS

bereavement, complicated grief, continuing bonds, meaning reconstruction, prolonged grief

1 | INTRODUCTION

Many people witness the death of a loved one at some point in their lives. However, for the bereaved, physical absence does not mean that the relationship and emotional bond with the deceased will disappear. Bereaved people can unilaterally continue their emotional bonds and relationship with the deceased. This ongoing relationship is defined as continuing bonds (Klass & Steffen, 2017). For example, experiences such as *talking about the deceased* (Scholtes & Browne, 2015), *looking at pictures of the deceased* (Field & Filanosky, 2010), *writing about the deceased* (Foster et al., 2011), *keeping some items related to the deceased* (Field et al., 2003), *dreaming about the deceased* (Black et al., 2020), *thinking that they heard or saw the deceased for a moment, talking to the deceased, identifying with the deceased* (Field & Filanosky, 2010), and *posting about the deceased on social media* (Kasket, 2012) are regarded as experiences of continuing bonds.

1.1 | Functions of the continuing bonds in the grief process

There is an ongoing debate as to whether the role of continuing bonds in the grief process is adaptive or maladaptive. Two basic views are prominent in the literature. The first view is that continuing bonds are indicators of denial, and bereaved people should relinquish them to accept the reality of the loss and go on their lives. In other words, continuing bonds are maladaptive and they should be minimized for a healthy grief process (Root & Exline, 2014). The second view is that continuing bonds are a natural component of the mourning process, helping mourners regulate their emotions and identity cohesion and soothing separation anxiety, and, thus, sometimes having an adaptive role (Field et al., 2005; Field, 2006; Klass et al., 1996). Field et al. (2005) interpret continuing bonds from the perspective of attachment theory and emphasizes their emotion-regulating function.

Empirical studies investigating whether the role of continuing bonds in the grief process is adaptive have given inconsistent results. While most studies using various methodologies such as cross-sectional, longitudinal, experience sampling have found positive correlations between continuing bonds and prolonged grief symptoms in different cultures and age groups (e.g., Black et al., 2020; Lipp & O'Brien, 2020; Scholtes & Browne, 2015), others have associated continuing bonds with variables such as growth and meaning reconstruction (e.g., Black et al., 2020; Field & Filanosky, 2010; Gillies et al., 2015). Moreover, most qualitative studies have reported that participants regarded continuing bonds as positive experiences that comfort them (e.g., Foster et al., 2011; Stein et al., 2018).

1.2 | Measuring continuing bonds

Continuing bonds are broad and uncertain constructs. All memories, dreams, morning rituals, thoughts about deceased, the effect of deceased on bereaved are considered as continuing bond experiences (Field & Filanosky, 2010; Scholtes & Browne, 2015). Moreover, the expression of continuing bonds may vary according to the nature of death, kindship between bereaved and deceased, culture, and religion (Lalande & Bonanno, 2006). Hence, there is a need for measuring continuing bonds with all their diversity and richness using a comprehensive measurement tool.

To date, three different measurement tools have been developed to assess continuing bonds construct. The first tool is an 11-item and one-dimensional continuing bonds scale developed by Field et al. (2003). Another measurement tool is the Continuing Bonds Scale that is made up of 16 items and two subscales and developed by Field and Filanosky (2010) to measure internal and external continuing bonds. Finally, Scholtes and Browne (2015) developed a continuing bonds scale with 25 items and three subscales (internal bonds, external bonds, and transference bonds). In some studies, continuing bonds were measured using various items created by researchers

themselves (e.g., Boelen et al., 2006; Stroebe et al., 2012). It is expected that the scale to be developed in the current study will be a good alternative that comprehensively assesses continuing bonds with various subscales.

1.3 | Meaning reconstruction

Traumatic life events such as the death of a loved one might shatter people's assumptions and core beliefs related to self, others, future, and the world (Janoff-Bulman, 2010). People need to make, revise, or reconstruct their shattered meaning systems after the death of a loved one (Neimeyer, 2019). Meaning reconstruction is a re-writing process of the self-narrative by using sense-making, benefit finding, and identity change themes (Neimeyer, 2016). To date, numerous studies showed that there is a positive correlation between meaning reconstruction and decreased prolonged grief, depression, anxiety, and posttraumatic stress symptoms (e.g., Gillies et al., 2015; Keser & Isikli, 2018; Milman et al., 2019). Some researchers suggest whether continuing bonds are adaptive or maladaptive can be understood might depend on the meaning reconstruction level of bereaved people (e.g., Neimeyer et al., 2006; Stroebe et al., 2010). Neimeyer et al. (2006) tested this idea and found that the relationship between continuing bonds and complicated grief symptoms was moderated by meaning reconstruction scores.

1.4 | The cultural context of the study

It is known that culture might affect the role of continuing bonds in the grief process. For example, Lalande and Bonanno (2006) found that continuing bond experiences at 4 months after the loss predicted better adjustment at 18 months in Chinese bereaved adults. However, continuing bonds scores at 4 months predicted poorer adjustment at 18 months in American bereaved adults. Similarly, it was found that types of continuing bond experiences and their functions in the grief process might differ according to the family, religion, and culture (Suhail et al., 2011). Bereaved people might perceive continuing bonds as respect to the deceased, or connection between the cultural roots in a collectivist culture. On the other hand, continuing bonds might be seen as an indicator of an unsuccessful decathexis process in an individualist culture (Hussein & Oyebode, 2009). Studies to date have generally focused on continuing bonds in western cultures. The current study is the first research investigating the relationship between continuing bonds and grief adjustment in Turkish culture. The participants of this study have different cultural and religious backgrounds from the previous studies' samples in the literature.

1.5 | Aim and scope

The objectives of this study are: (a) to develop a multidimensional measurement tool to assess different subdimensions of continuing bonds construct, (b) to examine the relationship between continuing bonds and the prolonged grief symptoms in two independent samples, and (c) to test the moderator role of meaning reconstruction in this relationship.

It is expected that the results of the current study will enrich the assessment alternatives of continuing bonds construct, developing a comprehensive measurement tool. Besides, the study will expand the scope of the existing literature by providing detailed information about the role of continuing bonds in the grief process in Turkish culture.

2 | METHODS

2.1 | Participants

Characteristics of the samples were presented in Table 1.

Chi-Square analysis showed significant differences between the two samples in terms of gender, marital status, income, and education level. The variables of the age of the participants, elapsed since the loss, and the distribution of the causes of death were also different in the two samples. All these findings show that Study 1 and Study 2 were carried out with samples with different characteristics.

2.2 | Measurement tools in Study 1

2.2.1 | The Demographic Information Form

This form included descriptive questions about the personal characteristics of the participant (gender, age, education, and income), the deceased (kinship and age), and the nature of the loss (cause of death).

2.2.2 | The continuing bonds item pool

Field conducted semi-structured clinical interviews with 357 bereaved people and created an item pool of 47 items related to experiences of continuing bonds. The item pool created by Field was used in the current study (Field & Filanosky, 2010). With the addition of other items based on other measurements of continuing bonds in the literature, a pool of 57 items in total was created. Using Explanatory Factor Analysis and Confirmatory Factor Analysis (CFA), a Multidimensional Continuing Bonds Scale (MCBS) was created from this item pool. The psychometric properties of the created scale are explained in detail in the Results section.

2.2.3 | The Grief and Meaning Reconstruction Inventory

The Grief and Meaning Reconstruction Inventory (GMRI), developed by Gillies et al. (2015), is a Likert-type scale consisting of 29 items and five subscales consisted of Personal Growth, Continuing Bonds, Sense of Peace, Meaninglessness-Emptiness, and Valuing Life. The Cronbach's α values of the subscales were found to be between 0.76 and 0.83. The test–retest reliability values were found to be between 0.60 and 0.73. The GMRI was adapted to Turkish culture by Keser and Isikli (2018). Cronbach's α values of the Turkish form of the subscales were between 0.74 and 0.85 (Keser & Isikli, 2018). In this study, the Turkish form of the scale was used, and Cronbach's α values were calculated to be between 0.75 and 0.85.

2.2.4 | The Prolonged Grief Disorder Scale

The Prolonged Grief Disorder Scale (PG-13) is a measurement tool consisting of 13 items that can be used to measure the severity of prolonged grief symptoms (Prigerson et al., 2009). The Likert-type questions assess longing, yearning, emotional pain, sorrow, grief, being stunned, shocked, or dazed, role confusion, trouble accepting the loss, inability to trust others, difficulty moving on, numbness, and emptiness-meaninglessness. Higher scores on the scale indicate an increase in prolonged grief symptoms (Prigerson et al., 2009). Prigerson et al. (2009) found the scale's

TABLE 1 Characteristics of the samples

Variables	Study 1 (*N* = 306)		Study 2 (*N* = 271)		Analysis
	N	%	*N*	%	
Gender					
Male	72	23.5	89	32.8	X^2 (1) = 6.2, p = 0.01
Female	234	76.5	182	67.2	
Education level					
Primary or Middle	23	7.6	31	11.4	X^2 (3) = 19.5, p = 0.000
High school	64	20.9	80	29.5	
University	110	35.9	106	39.2	
Postgraduate	109	35.6	54	19.9	
Marital status					
Married	134	43.8	156	57.2	X^2 (1) = 10.6, p = 0.001
Single	172	56.2	116	42.8	
Income					
Low	93	30.4	76	28.0	X^2 (2) = 10.5, p = 0.005
Middle	136	44.4	94	34.7	
High	77	25.2	101	37.3	
Deceased (Kinship)					
Mother	88	28.8	79	29.2	X^2 (3) = 2.2, p = 0.53
Father	158	51.6	131	48.3	
Spouse	16	5.1	11	4.1	
Sibling	44	14.4	50	18.4	
Cause of death					
Cancer	152	49	92	34	
Heart attack/brain hemorrhage	83	27	68	25	
Diabetes/blood pressure	–	–	18	6.5	
Alzheimer's/Dementia	35	11	4	1.3	
Traffic accident	20	6.5	11	4	
Suicide/homicide	8	2.7	11	4	
Terror attacks	4	1.3	–	–	
Natural disasters	4	1.3	–	–	
Old age	–	–	38	14	
Other reasons	–	–	27	10	
Age of participants	*M* = 35.71	*SD* = 11.3	*M* = 40.9	*SD* = 12.6	
Age of deceased	*M* = 54	*SD* = 17.2	*M* = 62.1	*SD* = 17.7	
Elapsed time since loss (month)	*M* = 42	*SD* = 11.01	*M* = 30	*SD* = 6.2	

internal consistency coefficient to be 0.90. The adaptation study of the PG-13 to Turkish culture was performed by Işıklı et al. (2020). The validity and reliability values obtained in the adaptation study were similar to the original study. In this study, the Turkish version of the PG-13 was used, the Cronbach's α value of which was calculated as 0.90.

2.2.5 | The Beck Depression Inventory

The Beck Depression Inventory (BDI) is a 4-point Likert-type measurement tool with 21 items developed to evaluate the cognitive, emotional, and physiological symptoms of depression. Higher scores on the scale indicate an increase in depressive symptoms (Beck et al., 1961). The adaptation study of the BDI to Turkish culture was done by Kapci et al. (2008). In the current study, the Turkish version of the scale was used, the Cronbach's α value was found as 0.91.

2.3 | Measurement tools in Study 2

Participants in the second study completed the Demographic Information Form, the MCBS, the GMRI, and the BDI. All details regarding the MCBS can be found in Section 3.

2.4 | Procedure

The study was approved by the Hacettepe University Ethical Board. All participants first signed an online informed consent form and then completed online surveys. In both samples, the participants were reached by the convenience sampling method (Sedgwick, 2013). An announcement text outlining the purpose and scope of the research was shared with bereaved groups on social media and e-mailed to Hacettepe University students and staff. In addition, students of the Hacettepe University Psychology Department regularly shared the announcement and links on social media and increased its visibility. Online versions of the measurement tools were created with the software "SurveyMonkey." During the collection of data, the duration of time the participants took to fill out the questionnaires and the frequency of questionnaire completions from the same computer were monitored. No participants who filled out the questionnaire in an unreasonably short time or completed it multiple times from the same computer were found. The participants were given the contact information of the researchers at the beginning of the online questionnaire, with the emphasis that they could call them if they had any questions about the research.

2.5 | Data analysis

SPSS (Statistical Package for the Social Sciences) 18 and AMOS 16 programs were used for the data analysis. All items of the scales in both studies were filled out by at least 99% of the participants. It can be inferred that the missing value rate is so minimal that cannot affect the statistical analysis results (Schafer, 1999). The missing values were filled by the "replace by mean" method in the SPSS program. The skewness and kurtosis values were divided by their errors and z values were calculated for total scores of all measurement tools. These z values were between −2 and +2. This finding was a good indicator of normal distribution (George & Mallery, 2010).

Principal Component Analysis (PCA) and CFA were conducted were with the data collected from the sample of Study 1 and Study 2, respectively. CFA results were evaluated according to the following indicators: Chi-Square/

Degrees of Freedom (CMIN ≤ 5), Goodness of Fit Index (GFI ≥ 0.90), Adjusted Goodness of Fit Index (AGFI ≥ 0.90), Comparative Fit Index (CFI ≥ 0.90), Normal Fit Index (NFI ≥ 0.90), and Root Mean Square Residual (RMSEA ≤ 0.08); (Hu & Bentler, 1999; Kline, 2015; Tabachnick & Fidell, 2001).

To calculate the concurrent validity of the developed continuing bonds scale, the Pearson correlation analyses were performed. In addition, Cronbach's α values were examined for reliability analysis.

After controlling for risk factors (e.g., elapsed time since the loss, gender, age of the deceased, and unnatural loss), hierarchical linear regression analyses were performed in both samples to determine whether continuing bonds and the severity of prolonged grief symptoms are related. Finally, the moderator role of meaning reconstruction in the relationship between continuing bonds and prolonged grief symptoms was tested using PROCESS macro for SPSS developed by Hayes (2017).

3 | RESULTS

3.1 | Exploring factor structure and items of the MCBS

A PCA with direct oblimin factor rotation was carried out using data collected within the scope of Study 1 ($N = 306$), and the number of factors in which the 57 items in the item pool of continuing bonds were grouped was examined. The Kaiser–Meyer–Olkin (KMO) value was found to be 0.94, and Barlett's sphericity test result was found to be $X^2 = 9970$ ($p < 0.001$). These values showed that the collected data was suitable for the PCA. The scree-plot graph and eigenvalues were examined to determine the number of factors in which the items were grouped. The scree-plot and eigenvalues indicators showed that the 57 items were grouped into four main factors. These four factors were seen to account for 55% of the total variance (Table 2). Tabachnick and Fidell (2001) stated that each item should have a factor loading of at least 0.32 and suggested that items with a lower factor loading can be removed. They also pointed out that if an item is loaded on more than one factor with a coefficient greater than 0.32, it can no longer be distinctive and can be removed from the scale (Tabachnick & Fidell, 2001). In addition to statistical reasons, if all other items in a factor are very similar semantically or contextually, an item that seems to be completely unrelated to the other items in this factor can be removed (Field, 2009). As a result, 57 items were analyzed in terms of factor loadings and contents, and items with a factor loading below 0.32, loaded on more than one factor, and conflicting with other items in the same subscale contextually were removed. The MCBS with 28 items and four subscales was obtained as a result of this process. Since factor loadings could change when many items were excluded from the item pool, another PCA was with direct oblimin rotation performed again on these 28 items. The subscales obtained from the analysis and the factor loadings of the items are presented in Table 2.

3.2 | Confirmation of the factor structure of the MCBS

To confirm the factor structure of the MCBS created from a pool of 57 items using data collected under Study 1, a CFA with Maximum Likelihood was performed on the data collected in the scope of Study 2 ($N = 271$). The fit indices for the 4-factor 28-item structure of the MCBS were found to be $X^2/Sd = 2.76$, $p < 0.001$, CFI = 0.90, IFI = 0.87, GFI = .88, AGFI = 0.91, NFI = 0.84, and RMSEA = 0.06. Almost all fit indices showed that the theoretical model of the 4-factor 28-item structure of the MCBS is significant, and compatible with real data. Finally, another CFA was conducted to test the 1-factor structure of the scale and compare its fit indices with the 4-factor model. The fit indices for the 1-factor model were found to be $X^2/Sd = 3.68$, $p < 0.001$, CFI = 0.68, IFI = 0.68, GFI = .73, AGFI = 0.69, NFI = 0.61, and RMSEA = 0.10. It was observed that all fit indices of the 4-factor model are better than the 1-factor model. Therefore, the CFA analyses supported the four dimensions of the continuing bonds construct.

TABLE 2 Subscales and item loadings of the Multidimensional Continuing Bonds Scale

Items and subscales	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1: External bonds				
54 – I searched for objects that reminded me of her/him.	**0.75**	0.31		
50 – I looked at her/his photos.	**0.74**			
55 –I kept something that belonged to her/him (such as jewelry, clothing, or personal belongings) with me so that I could feel like she/he was with me.	**0.74**			
8 – I used some of her/his belongings to alleviate my distress.	**0.71**			
47 – I listened to songs that remind me of her/him.	**0.69**			
52 – I went to her/his grave to be physically closer to her/him.	**0.67**			
56 – I found myself looking for her/him, even though I knew it didn't make sense.	**0.63**			
39 – I wrote about her/him.	**0.52**			
43 – People that looked like her/him caught my attention.	**0.49**	0.37		
Factor 2: Identification bonds				
16 – I noticed that I was trying to live my life the way she/he wanted.		**0.73**		
20 – I noticed that I tried to emulate her/him.		**0.67**		
29 – I noticed myself becoming acting like her/him.		**0.66**		
34 – I realized that I was trying to fulfill her/his wishes.	0.35	**0.65**		
25 – When making important decisions I thought of what she/he would do if she/he was in my position, and this thought helped me in making the decision.	0.35	**0.63**		
11 – I thought about the effect of her/him on the person I am today.		**0.63**		
33 – I realized that I was trying to complete some business that she/he had left unfinished.	0.32	**0.61**		
23 – I thought she/he was guiding me with her/his invisible presence.		**0.56**	0.38	
40 – I felt that she/he was still alive because of her/his influence on my identity today.		**0.47**		
Factor 3: Perceptual illusions				
10 – I heard her/him actually talking to me.			**0.81**	
19 – I physically felt her/him touching me.			**0.77**	
32 – I saw her/him really standing before me.			**0.76**	
26 – There was such a clear image of her/him in my mind that it was as if she/he was standing in front of me.	0.37		**0.61**	
4 – I had the feeling that she/he was visiting me.			**0.49**	0.38
Factor 4: Unresolved situations				
27 – I talked to her/him inside my head, got angry with, criticized, or blamed her/him.				**0.70**
22 – I tried to do things the opposite way from what she/he would.				**0.61**

TABLE 2 (Continued)

Items and subscales	Factor 1	Factor 2	Factor 3	Factor 4
14 – I had thoughts that she/he was trying to punish me.			0.39	**0.50**
12 – I realized that her/his memories did not soothe me.	0.42			**0.44**
30 – I talked to her/him inside my head, and she/he got angry with me, criticized me, or blamed me.		0.37	0.38	**0.41**
Variance explained by subscales:	34%	1%	7%	5%
Total variance explained:	57%			

3.3 | Internal consistency of the MCBS

In Study 1 ($N = 306$) Cronbach's α values were found to be 0.93 for the entire scale, 0.90 for the external bonds subscale, 0.87 for the identification subscale, 0.79 for the perceptual illusions subscale, and 0.61 for the unresolved situations subscale. In Study 2 ($N = 271$), Cronbach's α values were found to be 0.91 for the entire scale, 0.84 for the external bonds subscale, 0.88 for the identification subscale, 0.72 for the perceptual illusions subscale, and 0.68 for the unresolved situations subscale. These values indicate that the internal consistency coefficients of the MCBS are acceptable (van Griethuijsen et al., 2015).

3.4 | Correlation analyses

Using the data collected under Study 1 ($N = 306$) and Study 2 ($N = 271$), the Pearson correlation coefficients between the MCBS and the BDI, the GMRI, and the PG-13 were examined.

As shown in Table 3, correlation coefficients between the subscales and general score of the MCBS and the BDI, and the PG-13 range between 0.17 and 0.62 ($p < .001$). These correlation coefficients support the concurrent validity of the MCBS. Finally, the correlation coefficients between the subscales of the MCBS range between 0.31 and 0.67 ($p < 0.001$). These values show that the subscales are related, and that at the same time, their intersection levels are not very high. This indicates that the subscales measure different components of the structure of the continuing bonds.

3.5 | Hierarchical regression analysis results

The results of the hierarchical regression analyses performed to determine the relationship between the MCBS subscales and PG-13 scores are presented in Table 4.

Variables in the first block explained 20% of the variance in the PG-13 scores ($R^2 = 0.20$, F (8, 297) = 9.09, $p < 0.001$) in Study 1 and 26% of the variance in the PG-13 scores ($R^2 = 0.26$, F (8, 60) = 11.67, $p < 0.001$) in Study 2. Being female, low-income, young age of deceased, unnatural cause of death (e.g., suicide, homicide, accident, terror attack, physical assault, etc.), and elapsed time since the loss showed significant relationships with the PG-13 scores in both samples. The subscales of the MCBS were added to the equation in the second block, and the explained variance increased from 20% to 54% ($R^2_{Change} = 0.34$, F_{Change} (4, 293) = 53.88, $p < 0.001$) in Study 1, and increased from 26% to 52% in Study 2 ($R^2_{Change} = 0.26$, F_{Change} (4, 256) = 35.23, $p < 0.001$). The results revealed that external bonds, identification bonds, and unresolved situations bonds showed significant relationships with the PG-13

TABLE 3 Correlations of the Multidimensional Continuing Bonds Scale and its subscales with each other and other measurement tools

	1	2	3	4	5	BDI	GMRI	PG-13
1 - Multidimensional Continuing Bonds Scale Total		0.90* (0.88*)	0.89* (0.90*)	0.74* (0.71*)	0.66* (0.50*)	0.38* (0.38*)	0.19* (0.27*)	0.62* (0.60*)
2 - External Bonds subscale			0.67* (0.65*)	0.54* (0.53*)	0.50* (0.36*)	0.38* (0.39*)	0.17* (0.23*)	0.62* (0.61*)
3 - Identification Subscale				0.58* (0.60*)	0.47* (0.34*)	0.21* (0.25*)	0.28* (0.29*)	0.46* (0.47*)
4 - Perceptual Illusions Subscale					0.47* (0.31*)	0.25* (0.25*)	0.06 (0.10)	0.43* (0.32*)
5 - Unresolved Situations Subscale						0.46* (0.35*)	−0.05 (0.06)	0.49* (0.39*)

Abbreviations: BDI: Beck Depression Inventory; GMRI: Grief and Meaning Reconstruction Inventory; PG-13: Prolonged Grief Disorder Scale.

*$p < 0.001$.

TABLE 4 Hierarchical regression results related to the Prolonged Grief Disorder Scale (PG-13) scores, demographic characteristics, and subscales of the MultiDimensional Continuing Bonds Scale

	Study 1 (*N* = 306)			Study 2 (*N* = 271)		
	β	*SE*	95% CI	*β*	*SE*	95% CI
Block 1						
Age of bereaved	−0.06	0.06	−0.19 to 0.08	−0.05	0.06	−0.16 to 0.06
Gender (0 = female, 1 = male)	−2.47*	1.25	−4.93 to −0.007	4.45**	1.14	2.20–6.70
Marital status	0.61	1.32	−1.98 to 3.20	1.46	1.27	−1.03 to 3.97
Education	−0.66	0.70	−2.02 to 0.71	−0.02	0.51	−1.03 to 0.98
Income (0 = low, 1 = middle, 3 = high)	−2.71*	0.92	−4.52 to −0.90	−1.05*	0.39	−1.83 to −0.27
Cause of death (0 = Natural, 1 = Unnatural cause)	3.92*	1.44	1.08–6.74	2.72*	1.21	1.11–5.43
Elapsed time since loss	−0.06*	0.02	−0.09 to −0.02	−0.05*	0.03	−0.08 to −0.01
Age of deceased	−0.11*	0.04	−0.19 to −0.03	−0.14**	0.04	−0.22 to −0.07
Block 2						
External bonds	0.32**	0.04	0.24–0.41	0.68**	0.12	0.44–0.91
Identification bonds	0.22*	0.07	0.12–0.37	0.36**	0.11	0.14–0.58
Perceptual illusion bonds	0.02	0.10	−0.18 to 0.22	−0.35	0.31	−0.96 to 0.26
Unresolved situations	0.47**	0.14	0.18–0.74	0.76**	0.25	0.28–1.27

Abbreviations: *B*: Unstandardized beta; *SE*: Standard error; 95% CI: confidence intervals. Unnatural cause of death: suicide, homicide, accident, terror attack, physical assault, etc.

*$p < 0.05$; **$p < 0.001$.

scores in both samples after controlling for age of bereaved, gender, cause of death, elapsed time since the loss, and age of deceased variables.

3.6 | The moderator role of meaning reconstruction

A moderator analysis using PROCESS macro (Hayes, 2017) was performed to investigate the conditional relationship between continuing bonds and prolonged grief symptoms as meaning reconstruction was a moderator. The results showed that there was a significant difference between the magnitude of the relationships between continuing bonds and prolonged grief symptoms according to the meaning reconstruction levels ($\beta = 0.43$, $SE = 0.15$, $t = 2.87$, 95% CI = 0.13–0.72). The relationship between the MCBS scores and the PG-13 scores was significantly stronger in the condition the mean GMRI score was below a standard deviation ($\beta = 0.94$, $SE = 0.15$, $p < 0.001$, 95% CI = 0.70–1.3) than it was in the condition the mean GMRI score was above a standard deviation ($\beta = 1.6$, $SS = 0.16$, $p < 0.001$, 95% CI = 1.3–1.9).

4 | DISCUSSION

One of the main objectives of the study was to develop a multidimensional measurement tool to measure continuing bonds construct. PCA results supported the 28-item and four-subscale structure and CFA confirmed this factor structure and item distribution in a different sample. Many studies to date have found positive relationships

between continuing bonds and prolonged grief and depression symptoms (e.g., Currier et al., 2015; Gillies et al., 2015; Lipp & O'Brien, 2020). Consistent with the literature, MCBS scores were positively correlated with prolonged grief and depression symptoms both in Study 1 and Study 2. The positive relationships supported the construct validity of the scale. In conclusion, the MCBS is a reliable and valid measurement tool for the assessment of continuing bond experiences in bereaved adults. It is thought that the MCBS contributed to the previous measurement tools, measuring some aspects of the construct such as identification and unresolved situations bonds that were not captured by the previous scales (Field & Filanosky, 2010; Field et al., 2003; Scholtes & Browne, 2015).

The second aim of the study was to examine the role of continuing bonds in the grief process. The results revealed that the external bonds, identification bonds, and unresolved situations subscales showed significant relationships with the severity of prolonged grief symptoms after controlling other risk factors (gender, cause of death, age of bereaved, and elapsed time since loss). Moreover, the findings were confirmed by the sample in Study 2 and found to be replicable. Only the perceptual illusions subscale did not show a significant relationship with prolonged grief symptoms in the hierarchical regression analysis even though there was a significant positive correlation between the subscale and PG-13 scores. We are of the opinion that other subscales might suppress the scores of the perceptual illusion subscale in the regression analysis. The findings are consistent with most findings in the literature. For example, Boelen et al. (2006) in the Netherlands, Neimeyer et al. (2006) in the United States, and Ho et al. (2013) in China found that as the frequency and severity of continuing bonds experiences increases, the symptom level of the prolonged grief increases also. The relationship between prolonged grief symptoms and continuing bonds can be theoretically explained using the psychoanalytic approach. In *Mourning and Melancholia* (1917), Freud emphasizes that the expectations and desires relating to the deceased must be terminated to adjust to life after loss. He states that the continuation of the relationship, that is, the continuing bonds after the loss, prevents the individual from investing their libidinal energy into new objects. According to Freud, the bereaved must end their desires for and expectations from the deceased through deep grief work and, thus, regain their capacity to love and work (as cited in May (2019)). Similar to Freud's approach, Volkan and Zintl (2018) mentioned the necessity of transforming bonds with the deceased into memories with no future and argue that if the relationship with the deceased person persists and cannot be transformed, the grieving process will turn into abnormal grief with continuing relationships as 'ghosts wandering the unconscious' and maintaining expectations. In addition to psychoanalytic theory, Rubin's (1999) Two-Track Model of Bereavement can also be used to explain the findings of the present research. According to the approach, the grieving process consists of two axes. The first axis covers all biopsychosocial symptoms due to loss and the general level of functionality in daily life. The second axis focuses on organizing continuing bonds with the deceased. According to this model, people deal with everyday issues that are aimed at increasing their overall level of functionality while also organizing their relationships. The balance between these two axes brings harmony during the mourning period. If the bereaved is constantly preoccupied with continuing bonds, they may not be able to focus on daily life-related stressors or activities that are aimed at increasing the overall level of functionality. In other words, the balance between the axes may be disturbed. In this study, prolonged grief symptoms increased as continuing bond scores increased. This may be due to an unbalance between the two axes.

The third and final aim of the study was to examine the moderating role of meaning reconstruction in the relationship between continuing bonds and prolonged grief symptoms. Moderator analyses showed that the relationship between continuing bonds and prolonged grief symptoms is stronger if the level of meaning reconstruction was low. As the meaning reconstruction scores increased, the relationship between continuing bonds and the symptoms of prolonged grief weakened. The finding is consistent with the findings of the study conducted by Neimeyer et al. (2006) in the United States. The researchers collected data from university students who had lost a relative in the last 2 years and found that the relationship between continuing bonds and prolonged grief symptoms weakened when the level of meaning reconstruction increased. The findings can be explained using the meaning reconstruction approach of Neimeyer. Neimeyer (2006) defined meaning reconstruction using the components of sense-making, benefit finding, and identity change. According to Neimeyer (2006), if bereaved

people can make sense of their loss, find something positive in it, and change their own identity according to new roles in life, their capacity for adaptation increases. In studies to date, meaning reconstruction has been found to have a negative relationship with prolonged grief symptoms (e.g., Gillies et al., 2015; Holland et al., 2006; Keser & Isikli, 2018). People who can make sense of the loss they experienced, see a positive side of the loss, and rearrange their identities might also use continuing bonds as a more adaptive coping mechanism.

4.1 | Strengths and limitations

In the study, using two samples that significantly differ in terms of their demographic characteristics allowed the replication of the findings. However, establishing a cause and effect relationship between the variables was not possible, as the study was conducted using a cross-sectional pattern. Conducting an experimental study and investigating the effect of continuing bonds on prolonged grief symptoms is not possible because most of the ongoing relationships with deceased experiences are not conducive to be manipulated. Therefore, future studies might focus on the predictive role of continuing bonds on prolonged grief symptoms, using the MCBS in different samples and longitudinal designs. Various memory biases might have affected the results since the measurements were based on self-report. Both in Study 1 and Study 2, participants were contacted by convenience sampling. Most of the participants in both samples of the current study consisted of educated adults living in the city and use the internet. The generalizability of the study findings is limited due to the nature of the convenience sampling method.

4.2 | Clinical implications

When psychotherapy interventions developed for Prolonged Grief Disorder are reviewed, it can be observed that there was no definite understanding of how continuing bonds should be handled during the psychotherapy process. In other words, there is an ongoing debate about whether mental health professionals should encourage patients' experiences of continuing bonds. The findings showed that exploring continuing bonds in a clinical setting in conjunction with meaning reconstruction will prove beneficial. In other words, clinicians should not view continuing bonds as phenomena that they must either directly encourage or end. Labeling continuing bonds as adaptive or maladaptive without considering the culture, belief, individual characteristics, and meaning sources of individuals seems categorically impossible.

ETHICS STATEMENT

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Ethical approval was obtained from the Ethics Commission of Hacettepe University. Informed consent was obtained from all individual participants included in the study.

PEER REVIEW

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DATA AVAILABILITY STATEMENT

Data available on request from the authors.

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