

Investigating the Psychometric Properties of the Turkish Form of the Grief and Meaning Reconstruction Inventory

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ABSTRACT

Investigating the psychometric properties of the Turkish form of the Grief and Meaning Reconstruction Inventory

Objective: The aim of this study is to adapt the Grief and Meaning Reconstruction Inventory (GMRI) to Turkish.

Method: Three hundred and six adults who lost their spouse or one of their parents or siblings due to death in a period between 6 months and 10 years previously were included in the study. The participants were asked to complete a questionnaire set including GMRI, Beck Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI), and a demographic information form that was generated by the researchers. To investigate the psychometric properties of the Turkish form of the scale, exploratory factor analyses, parallel analysis, reliability analyses (Cronbach's alpha), correlation analyses, and regression analyses were conducted.

Results: Exploratory Factor Analysis (EFA) showed that the Turkish form of the GMRI consisted of 27 items and 4 subscales. Parallel analysis also supported a four-factor structure. Cronbach's alpha values for the Turkish form of the GMRI were found to be similar to the original scale. Correlation analyses showed that the GMRI scores were strongly negatively correlated with both depressive symptoms and anxiety symptoms. In addition, after controlling for the time elapsed since the loss, age of the bereaved, education level of the bereaved, and age of the deceased person, GMRI scores were found to be a significant negative predictor of BDI and STAI scores.

Conclusion: This study showed that the Turkish version of the GMRI can be used in Turkish culture as a valid and reliable measurement tool.

Keywords: Bereavement, complicated grief, meaning reconstruction

ÖZ

Yas ve Anlamı Yeniden Yapılandırma Envanteri'nin Türkçe Formunun psikometrik özelliklerinin incelenmesi

Amaç: Bu araştırmanın amacı, Yas ve Anlamı Yeniden Yapılandırma Envanteri'ni (YAYYE) Türkçeye uyarlamaktır.

Yöntem: Araştırmada, en az son 6 ay, en fazla son 10 yıl içinde anne, baba, eş veya kardeşini ölüme bağlı olarak kaybetmiş 306 yetişkin yer almıştır. Katılımcılardan YAYYE, Durumluk Sürekli Kaygı Envanteri (DSKE), Beck Depresyon Ölçeği (BDÖ) ve araştırmacı tarafından oluşturulan bir demografik bilgi formundan oluşan anket setini doldurmaları istenmiştir. Ölçeğin Türkçe formunun psikometrik özelliklerini değerlendirmek için açımlayıcı faktör analizi, paralel analiz, güvenilirlik analizi (Cronbach alfa), korelasyon analizi ve regresyon analizi yapılmıştır.

Bulgular: Açımlayıcı Faktör Analizi (AFA) sonuçları ölçeğin Türkçe formunun 27 maddelik 4 alt boyutlu yapıda olduğunu göstermiştir. Paralel analiz sonuçları da 4 alt boyutlu yapıyı desteklemiştir. Ayrıca YAYYE'nin Türkçe formunun iç tutarlık katsayıları orijinal ölçekle kıyaslanabilir düzeyde bulunmuştur. Korelasyon analizleri, YAYYE puanlarının hem depresif belirtiler, hem de kaygı belirtileri ile güçlü negatif ilişkisi olduğunu göstermiştir. Ayrıca kaybedilen kişinin yaşı, kayıp yaşayan kişinin yaşı, eğitim düzeyi, kaybın ardından geçen süre gibi değişkenler kontrol edildikten sonra YAYYE puanlarının BDÖ ve DSKE puanlarını negatif bir şekilde yordadığı bulunmuştur.

Sonuç: Bu çalışma YAYYE'nin kültürümüzde geçerli ve güvenilir bir ölçüm aracı olarak kullanılabileceğini göstermiştir.

Anahtar kelimeler: Kayıp, karmaşık yas, anlamı yapılandırma



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INTRODUCTION

In the experience of most humans, the death of a beloved next of kin is an extremely upsetting and stressful life event to which people may develop somatic, cognitive, emotional, or behavioral responses. These reactions, a natural element of the grieving process, are found to continue over time with decreasing intensity (1,2). A significant section of the population is able to regain their functionality over time, adapt to change, and continue with their daily lives despite the severity of the loss. It is also known that some people are unable to adapt and their symptoms after loss do not decrease, leading to a chronic grieving process (3,4). Chronification of grief can prevent people from dealing with their day-to-day chores and lead to a loss of physical and psychological wellbeing (3-5).

There are numerous studies investigating why some people readapt to their everyday lives after completing the process of grief while others develop a chronic presentation (2,6). Those studies found certain risk factors for the chronification of the grieving process (e.g., traumatic circumstances of loss, the loss being unexpected, losing a young person, as well as individual characteristics and the psychiatric history of the bereaved person). The relevant literature emphasizes particularly the reconstruction of meaning as one of the most important factors for the chronification of the grieving process (7-9).

Giving Meaning to Loss

According to Janoff-Bulman (10), human beings entertain a number of assumptions about themselves, the world, and other people. Those assumptions are based on the expectation that we are at least to some degree relevant, the world is predictable and safe, and other humans are good and helpful. Janoff-Bulman asserts that these assumptions are of greatest importance for the sustainability of everyday life. Similarly, Park states that each person possesses an inherent world of meaning (11). According to Park, everyone has beliefs about themselves, their future,

and the world. People's perception of their purposes, roles, and their place in the world constitutes their personal world of meaning. Thoughts about justice, goodness, or faith create meaning for the world. Expectations and predictions of future events give meaning to the future. As Park says, people perceive all their life events by placing them within this world of meaning. The unexpected death of a beloved person can shake or even demolish a person's world of meaning and the related assumptions (10,12). As a traumatic experience, the death of a beloved next of kin can profoundly upset a person, as it does not have a place in his or her world of meaning. The bereaved person may feel help- and powerless, see the world as unpredictable and unjust, and feel hopeless in the face of a dark future (10-13). For a person to get over the grieving process and tune back into the rhythm of their daily life, the reconstruction of their world of meaning is considered necessary (7-9).

Gillies and Neimeyer reported three main factors for the reconstruction of meaning after a loss, the first of which they describe as "sense making," corresponding to the bereaved person's struggle to understand why the death happened and why their beloved relative rather than any other person died (7,8). In the sense-making process, the bereaved finds an explanation or a reason for the death. The second factor in the process of reconstructing meaning is called "benefit finding," defined as the ability to see some light of hope in life despite the disruptiveness and negativity of death. This may include elements such as changing priorities in life, being closer to family members, acknowledging help from other people and one's own importance, or making plans to reorganize one's life (9,12). Finally, the last factor is "identity change," which includes an ability to understand the value of certain things better after a loss, creating closer relationships with other people, overcome procrastination, discover new roles in life, and becoming a more empathetic person.

Several studies identify the reconstruction of meaning after a loss as a protective factor against chronic grief (8,9,14). E.g., a longitudinal study by Davis et al. (15) found that an increase in variables for

reconstruction of meaning after loss correlated with a decrease of symptoms in the following months. Furthermore, there are numerous results affirming the efficacy of interventional studies aimed at the reconstruction of meaning in persons with symptoms of chronic grief (16).

Measuring the Reconstruction of Meaning After Loss

Neimeyer (16) writes that until today, a significant number of studies measured the variable of reconstruction of meaning with a single, open-ended question that was analyzed qualitatively. He pointed out that a more detailed examination of the reconstruction of meaning, being one of the most important determinants for the grieving process, required the development of an instrument that was valid and reliable from the perspective of studying mediating and moderating variables and establishing relations with other variables.

The relevant literature includes three different quantitative measures for the reconstruction of meaning after loss. One of these is the Integration of Stressful Life Experiences Scale, assessing in how far people can integrate the event they have experienced into their world of meaning (17). Another scale is the Inventory of Complicated Spiritual Grief (18). It assesses in how far people are able to find meaning after loss through faith and spirituality. It has been shown that these two scales do not sufficiently reflect the multidimensional structure of the reconstruction of meaning and the width of thematic fields involved in finding meaning (16). The Grief and Meaning Reconstruction Inventory (GMRI) developed by Gillies et al. (13) has helped overcoming these shortcomings regarding the multidimensional structure and the comprehensiveness of content, assessing the various ways of reconstructing meaning with an exhaustive, multidimensional instrument (13,16).

In addition to the instruments listed above, some other scales have been used to measure negative life events, including the Post-Traumatic Growth Inventory (PTGI) (19) and the Core Beliefs Inventory (CBI) (18).

PTGI measures positive experiences after a traumatic life event, such as positive change in interpersonal relations, feeling of personal strength, change in spirituality, or discovery of new opportunities in and appreciation of life (19). Administration of the PTGI presupposes that the person has undergone a traumatic life event. By contrast, the GMRI used in our study has been developed specifically for losses caused by death and can be administered even when the death has not happened in a traumatic way. In addition, it also includes specific areas not found in the PTGI, such as emptiness and meaninglessness and continuing bonds with the deceased person. The CBI assesses in how far persons after a negative life event are questioning beliefs about themselves, other people and the world, the meaning of life, and faith. A higher CBI score indicates a high level of questioning basic beliefs that have been shaken (20). The GMRI measures in how far this shaken world of belief can be reconstructed. In comparison with other instruments in the relevant literature, the GMRI, while it can only be used after the death of a loved one, no matter if the loss was traumatic or not, allows to measure subdimensions not included in other instruments, which means that it has a high original value.

In the Turkish literature on loss and bereavement, we could not find any empirical studies or scales assessing the process of reconstructing meaning after loss. To improve this situation, our study adapts the GMRI to Turkish culture and analyzes the psychometric properties of the scale. Adapting an up-to-date instrument that is frequently used in loss and grief studies is an important contribution to the national literature and can also stimulate research into reconstruction of meaning in the context of emerging loss and grief studies in Turkey.

METHOD

For this study, convenient sampling was used to select 306 adults of the age range 18-65 years (mean=35, SD=11.3) who had lost mother, father, spouse, or a sibling due to death at least six months and at most ten years earlier. All participants

volunteered to contribute to the study and signed a voluntary consent form. Ethics approval was received from the ethics committee of Hacettepe University.

Enrolled in the study were 234 women (76.5%) and 72 men (23.5%). Seventeen of the participants (5.6%) were primary school graduates, 6 (2.0%) had finished middle school, 64 (20.9%) high school, 110 (35.9%) had a university degree and 109 (35.6%) had completed postgraduate education. While 86.0% reported no psychiatric disorders, 14.0% had received treatment for conditions like depression or anxiety. During the past ten years, 235 of the participants (76.8%) had lost one relative, 71 of them (23.2%) more than one. The latter group completed the survey with regard to the loss that had affected them the most.

The age of the relatives that the participants had lost ranged from 15 to 90 years (mean=54.4, SD=17.2). The mean period elapsed since the loss for the whole sample was 42 months. Of the deceased relatives, 152 (49.7%) had died of cancer, 83 (27.1%) of heart attack or brain hemorrhage, 16 (5.2%) due to traffic accidents, 6 (2.0%) had committed suicide, 4 (1.3%) had been victims of occupational accidents, 4 (1.3%) of natural disasters, 4 (1.3%) of terror attacks, 2 (0.7%) of murder, and 35 (11.4%) had died naturally of old age.

Measures

Demographic Data Form: This form had been developed by the researchers; it contains questions about characteristics of the participants, the deceased persons, and circumstances of their loss.

Grief and Meaning Reconstruction Inventory (GMRI): The GMRI is a scale assessing if a person after a loss has been able to find new meaning in the world and if they learned from the loss, achieving personal growth and adaptation. The original form was developed by Gillies et al. (13). It consists of 29 items in 5 subdimensions, scored on a 5-point Likert-type scale. The subdimensions are “continuing bonds,” “personal growth,” “emptiness and meaninglessness,” “sense of peace,” and “valuing life.” Either the total

score or scores from the subdimensions can be used. Items belonging to the emptiness and meaninglessness subscale (2, 6, 9, 16, 20, and 27) are reverse-scored.

The subdimension “continuing bonds” includes items 1, 5, 11, 14, 18, 21, and 26, “personal growth” items 3, 8, 13, 19, 22, 25, and 29, “sense of peace” items 7, 10, 15, 17, and 23, “emptiness and meaninglessness” 2, 6, 9, 16, 20, and 27, and “valuing life” items 4, 12, 24, and 28 (13). With increasing score, the level of reconstruction of meaning becomes higher. For the original scale, a test-retest reliability of 0.71 was found. The internal consistency coefficient for the total scale worked out at 0.84. For the subscales, the consistency coefficients ranged between 0.76 and 0.85. A correlation of -0.39 was found between the GMRI and the Complicated Grief Inventory and a correlation of -0.25 between the GMRI and the Behavior and Symptom Identification Scale (BASIS-32) (13).

Beck Depression Inventory (BDI): The BDI is an instrument consisting of 21 items scored on a 4-point Likert-type scale (0-3 points) assessing cognitive, emotional, and behavioral symptoms of depression. With increasing depression symptoms, the score on the scale rises. The original instrument was developed by Beck et al. (21). There are different versions of adaptations to Turkish culture. In our study, we used the version adapted by Tegin (22), which had a test-retest reliability of 0.65, a split-half reliability of 0.78, and an internal consistency coefficient of 0.80.

State-Trait Anxiety Inventory (STAI). The STAI consists of 40 items scored on a 4-point Likert-type scale. Of the items, 20 are measuring state anxiety and 20 trait anxiety. The higher the anxiety level, the higher is the score participants reach. The original instrument was developed by Spielberger et al. (23), an adaptation to Turkish culture was carried out by Oner and Le Compte (24).

Procedure

The required permission to adapt the GMRI to Turkish was obtained from the authors. Then the scale

items were prepared using the translation/back-translation procedure (25). The translations were carried out by researchers with a doctorate in psychology who are proficient in both languages and a professional translator.

Participants were enrolled using a convenient sampling method via announcements on the internet and by e-mail looking for voluntary participants. The survey set was completed online by 196 respondents and on paper forms by 110 persons. For the online participants, factors like the duration of completing the survey, multiple participation from the same IP address, and avoiding multiple completion of the survey were assessed. The participants who were completing the survey with pen on paper, the forms were handed out and again collected in sealed envelopes. All participants filled in the survey in their own home environment.

In the evaluation, as a first step SPSS 18.0 (Statistical Package for Social Sciences) was used to carry out an exploratory factor analysis in order to establish the factor structure of the scale and the distribution of the items according to these factors. In the next step, the factor structure of the scale was examined using parallel analysis. Then internal consistency, convergent validity, and predictive validity analyses were carried out.

RESULTS

Determining the Factor Structure of GMRI

Principal component analysis using oblimin rotation was applied to determine the factor structure of the Turkish GMRI form and the location of the items within the factors. A Kaiser-Meyer-Olkin (KMO) value of 0.84 and the results of the Bartlett's sphericity test ($\chi^2=3310$, $SD=41$, $p<0.001$) showed that the collected data were suitable for exploratory factor analysis.

In order to determine the number of factors for the Turkish GMRI form, factors with an eigenvalue above 1 and elbows in the scree plot were examined. These two indicators suggested a 4-factor structure for the Turkish form (personal growth, emptiness and meaninglessness, continuing bonds, and sense of

peace). The variance explained by this 4-factor structure was 50.0% (Table 1). Before deciding upon a 4-factor structure, parallel analysis was performed using the script developed by O'Connor (26). Eigenvalues obtained as a result of parallel analysis are compared with eigenvalues found by exploratory factor analysis. The result confirmed a 4-factor structure for the scale (Table 2).

When we look at Table 1, we notice that the continuous bonds coincide one-to-one with the items in the subdimensions. Items 4, 12, 24, and 28, which in the original scale made up the subdimension of valuing life, in the Turkish form were located in the subdimension personal growth. Assessing the content of these 4 items, themes that stand out are the understanding that life is short and valuable, greater importance given to family, or the realization of new opportunities. The literature on post-traumatic growth sees the emergence of this state as something that can be assessed as personal growth (27). Thus, considering the factor loadings and contents of these four items, we decided to unite them with the personal growth subdimension.

With the exception of items 3 and 7, items from the emptiness and meaningless and peace subdimensions coincided with those in the original scale. In the original GMRI, item 3 was in subscale "personal growth," while 7 was in subscale "sense of peace"; in the Turkish form, both fell under the subscale "emptiness and meaninglessness" (Table 1). Regarding the factor loading, including these items under emptiness and meaninglessness seemed appropriate, but considering their content, it was seen that they clashed with the other items in this subscale in their meaning, and therefore we decided to remove them from the instrument.

Construct Validity of the GMRI

At this point, correlation values between the individual GMRI subscales and with the total GMRI scores were calculated. In addition, correlations between GMRI and BDI or STAI were considered (Table 2).

As we will see in Table 2, correlations between GMRI subdimensions and total score vary between

Table 1: Results of the exploratory factor analysis for GMRI

Items and Subdimensions	Factor 1	Factor 2	Factor 3	Factor 4
Personal Growth				
13-Since this loss, I've changed my lifestyle for the better.	0.83			
12-I value and appreciate life more.	0.79			
24-Whenever I can, I seize the day. I live life to the fullest.	0.75			
25-Since this loss, I'm a more responsible person.	0.67			
22-Since this loss, I value friendship and social support more.	0.62			
29-Since this loss, I've pursued new avenues of knowledge and learning.	0.62			
8-Since this loss, I'm a stronger person.	0.61			
4-I value family more.	0.58			
19-Since this loss, I make more efforts to help others.	0.54		0.32	
28-I've come to understand that life is short and it gives us no guarantees.	0.48	0.32		
Emptiness and Meaninglessness				
20-I feel empty and lost.		0.83		
27-I feel pain from regrets I have in regard to this loss.		0.74		
6-Since this loss, I find myself more alone and isolated.		0.69		
9-I can't understand this loss.		0.65		
16-I've lost my innocence.		0.61		
7-I've been able to make sense of this loss.		0.57		
3-Since this loss, I'm more self-reflective.		0.49		
2-I do not see any good that has come from this loss.		0.41		
Continuing Bonds				
21-I cherish the memory of my loved one.			0.69	
14-Memories of my loved one bring me a sense of peace and solace.			0.67	
1-The time I spent with my loved one was a blessing.			0.65	
18-I miss my loved one.			0.63	
26-I believe my loved one is in a better place.			0.62	0.38
11-My loved one was a good person; he/she lived a good life.			0.60	
5-I will see my loved one again.			0.55	
Sense of Peace				
17-This death ended my loved one's suffering.				0.85
15-This death brought my loved one peace.				0.80
23-My loved one was prepared to die.				0.68
10-I was prepared for my loved one to die.				0.57

0.48 and 0.82. These values are consistent with the ones found in the original study introducing the scale. On the other hand, correlation coefficients between personal growth and emptiness and meaninglessness subscale, emptiness and meaninglessness and continuous bonds subscale, and continuous bonds and sense of peace subscales were found to be not significant. These findings, while showing similarity with the original study, indicate that the subscales of the instrument might evaluate different structures (13). The relevant literature specifies that sense-making or reconstructing meaning after a loss improves a person's functionality and reduces their psychiatric symptoms (9,13). In line with this data, the Turkish version of the GMRI form showed a very high

negative correlation with depression and anxiety scores (Table 2). In conclusion, the correlation values shown in Table 2 are adequate to demonstrate the construct validity of the Turkish GMRI form.

Predictive Validity

In order to confirm the predictive validity of the GMRI, two separate hierarchical regression analyses were carried out using depression and anxiety scores as predictor variable. In the first step, age of the lost person, education level, time elapsed since the loss, and age of the bereaved person were entered as demographic variables in these analyses. In the second step, the total GMRI score was entered.

Table 2: Eigenvalues obtained by exploratory factor analysis and parallel analysis

Factors	Eigenvalue obtained by exploratory factor analysis	Eigenvalue obtained by parallel analysis	Decision
Personal growth (Factor 1)	5.69	1.62	Accepted
Emptiness and meaninglessness (Factor 2)	4.36	1.53	Accepted
Continuing bond (Factor 3)	2.12	1.46	Accepted
Sense of peace (Factor 4)	1.78	1.43	Accepted
Factor 5	1.39	1.34	Rejected

Table 3: Correlations between GMRI subdimensions and with other symptom scales

	1	2	3	4	5	6	7	8
1-GMRI Total		0.82** (0.51**)	0.48** (0.56**)	0.62** (0.71**)	0.50** (0.54**)	-0.50**	-0.47**	-0.47**
2-Personal growth subscale			0.11 (-0.15)	0.53** (0.27**)	0.13* (-0.08)	-0.33**	-0.30**	-0.30**
3-Emptiness and meaninglessness subscale				0.09 (0.15)	0.22** (0.28**)	-0.61**	-0.51**	-0.56**
4-Continuing bond subscale					0.09 (0.22*)	-0.09	-0.13**	-0.12**
5-Sense of peace subscale						-0.24**	-0.22**	-0.22**
6-BDI							0.74**	0.67**
7-Trait anxiety								
8-State anxiety								

*p<0.05, **p<0.001. GMRI Total: Grief and Meaning Reconstruction Inventory total score. BDI: Beck Depression Inventory total score. Trait anxiety: State-Trait Anxiety Inventory trait anxiety subscale total score. State anxiety: State-Trait Anxiety Inventory state anxiety subscale total score. Values given in brackets are the correlation values found in the validity and reliability study for the original version by Gillies et al. (13). Values shown in bold are the correlation values calculated in our study for the Turkish form.

In the hierarchical regression analysis using depression as the predictor variable, the demographic factors entered in the first step were seen to explain 10% of the change in depression score ($R^2=0.10$, $F[4,298]=8.44$, $p<0.001$). When entering the GMRI score into the equation in the second step, the variance explaining the depression score increased to 29% ($R^2=0.29$, $F_{\text{change}} [1,297]=77.95$, $p<0.001$). As we can see in table 3, after controlling for age of the bereaved person, level of education, timespan since loss, and age of the lost person, the GMRI score explains the depression score.

In the hierarchical regression analysis using the total STAI score as predictor variable, predictor variables as in Table 3 were entered in the 1st and 2nd step. The demographic factors entered in the first step explained 12% of the change in anxiety score ($R^2=0.12$, $F[4,298]=9.97$, $p<0.001$). When entering the GMRI score into the equation in the second step, the variance explaining the depression score increased to

27% ($R^2=0.27$, $F_{\text{change}} [1,297]=62.27$, $p<0.001$). Thus, after controlling for age of the bereaved person, level of education, timespan since loss, and age of the person lost, the GMRI score predicted the anxiety score (Table 4).

Reliability

To establish the internal consistency for the overall GMRI form in Turkish and for the subscales, separate Cronbach's alpha values were calculated. These analyses found internal consistency coefficients of 0.82 for the total scale, for the personal growth subscale 0.80, emptiness & meaninglessness 0.77, continuous bonds 0.77, and for the sense of peace subscale of 0.80. For the original instrument, these values varied between 0.76 and 0.80 (13). Thus, from the perspective of internal consistency values the Turkish form of the GMRI is highly consistent with the original form.

Table 4: Hierarchic regression analysis with variables predicting depression score

	Non-standardized β value	t	R	R ²	F
1. Step			0.32	0.10	8.44
Age of bereaved person	-0.16	-2.47**			
Educational level of bereaved person	-1.33	-2.70**			
Time since loss (months)	-1.99	-2.43**			
Age of deceased person	-0.09	-1.71*			
2. Step			0.54	0.29	77.95
GMRI	-0.34	-8.82***			

*p<0.05, **p<0.01, ***p<0.001, GMRI: Grief and Meaning Reconstruction Inventory

Table 5: Hierarchic regression analysis with variables predicting anxiety score

	Non-standardized β value	t	R	R ²	F
1. Step			0.34	0.12	9.97
Age of bereaved person	-0.15	-2.50**			
Educational level of bereaved person	-1.22	-2.77**			
Elapsed time since loss (months)	-1.85	-2.53**			
Age of deceased person	-0.09	-2.26**			
2. Step			0.52	0.27	62.27
GMRI	-0.28	-7.89***			

*p<0.05, **p<0.01, ***p<0.001, GMRI: Grief and Meaning Reconstruction Inventory

DISCUSSION

In this study, the adaptation of the GMRI for Turkish has been carried out, finding validity and reliability values to be similar to those of the original instrument.

Results of exploratory factor analysis and parallel analyses confirm for the Turkish form a structure with 27 items and 4 subdimensions. These subdimensions are continuous bonds, personal growth, emptiness & meaninglessness, and sense of peace. Subdimensions and item distribution show a great similarity between the original and the Turkish form. Exploratory factor analysis showed that the items in the continuous bonds subscale coincide one-to-one with the original scale. Similarly, personal growth, sense of peace, and emptiness & meaninglessness subscale items (with the exception of items 3 and 7) coincide with the original scale. The 3rd item (Since this loss, I'm more self-reflective), which in the original scale was placed in the "personal

growth" subdimension, and the 7th item (I've been able to make sense of this loss) that was in the 'sense of peace' subdimension, in the Turkish form fell under the subdimension emptiness & meaninglessness. While it seemed statistically appropriate to include these two items under the emptiness & meaninglessness subdimension, they did not fit in with the content of the other items in this subdimension. The items in the emptiness & meaninglessness subdimension emphasized a feeling of emptiness, the inability to make sense of the loss or to find anything positive, or themes of meaninglessness. These topics do not at all chime with the statement in item 7, "I've been able to make sense of this loss." A possible explanation may be that the content of this item was not fully understood in our culture. Similarly, the expression "Since this loss, I'm more self-reflective." in item 3 does not quite fit in with the theme of emptiness & senselessness. The thoughts of a person after a loss need not be related with senselessness; rather, they may be more

positive, reflecting development, which makes us think that this item might not really assess the structure of emptiness and meaninglessness. Again, a possible explanation may be that this item is not understandable in our culture. Savasir points out that adapting a scale is different from translating the form, given that from culture to culture, the meaning expressed in a given item may change, which may require the removal of some items in the adaptation process (22). In this sense, as items 3 and 7 were not suitable for the emptiness & meaninglessness themes, we assumed that they did not work in our culture and thus decided to remove them from the Turkish form.

Finally, items 4, 12, 24, and 28, which in the original scale were located in the subscale valuing life, in the Turkish form came under the personal growth subscale. It is striking to look at their content: realizing life to be short and valuable and knowing its value (items 12 and 28), valuing family more after a loss (item 4), living life to the fullest and trying to seize the day (item 24). When Tedeschi and Calhoun defined the concept of 'post-traumatic growth,' they stressed that people sometimes after a traumatic life event were better able to understand the value of life, changed their priorities in life, were keener on enjoying the present, and developed more positive relations with other people (19,27). Considering both this information and the factor loadings, we assumed that these items were more suitable to be included in the personal growth subscale.

The reliability of the Turkish GMRI form was tested calculating Cronbach's alpha values. These analyses found reliability values between 0.77 and 0.82 for the entire measure and its subdimensions. Similar to these findings, for the original form reliability coefficients varied between 0.76 and 0.80 (13). This similarity in coefficients shows that the reliability of the Turkish form is comparable with the original version.

The Turkish GMRI form showed a high correlation with measuring instruments for depression and anxiety. In addition, when controlled for important predictors like timespan since loss, age of the bereaved person, level of education, and age of deceased person, the GMRI scores positively predicted both depression

and anxiety scores. In the literature, there are many studies showing a negative correlation between reconstruction of meaning after loss and symptom scales. Thus, our results support the construct validity of the GMRI.

One of the basic limitations of this study is the time since loss. In our study, the mean period elapsed since the loss was 42 months. The process of a person's reconstruction of his or her assumptions and world of meaning after a loss can be observed more intensely in the first months or years after the event. With the passing of time, other life events may affect the process of sense-making. Another limitation is the indiscriminate inclusion of adults having lost mother, father, a sibling, or their spouse in the sample, as the relation with the lost person may affect the reconstruction of meaning after the loss. Similarly, the sense-making process may be different depending on if the person was lost in an accident or due to a sudden/violent death or if the death had been more predictable. It will be useful for subsequent studies to assess the process of reconstruction of meaning according to the mode of loss and the relation between bereaved and deceased person in samples with a shorter period since loss. Finally, one limitation may be that the study was carried out in a cross-sectional format based on self-reporting.

This study has shown that the Turkish adaptation of the GMRI, which had been developed to assess constructs in grieving persons such as giving meaning to loss, seeing a light of hope in life, or achieving personal growth through positive change in personality, has psychometric properties similar to those of the original form and can be used in our culture as a valid and reliable measuring instrument. This study has also confirmed that reconstruction of meaning after a loss is closely correlated to a reduction in psychiatric symptoms and reintegration of the person into everyday life. Therefore, we can say that it is very important for research as well as for clinical applications to have introduced a measure to our culture that can be used to establish if persons having suffered a loss are in a process of adaptation.

Contribution Categories		Author Initials
Category 1	Concept/Design	E.K., S.I.
	Data acquisition	E.K., S.I.
	Data analysis/Interpretation	E.K.
Category 2	Drafting manuscript	E.K., S.I.
	Critical revision of manuscript	E.K., S.I.
Category 3	Final approval and accountability	E.K., S.I.
Other	Technical or material support	S.I.
	Supervision	S.I.
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