http://doi.org/10.57127/kpd.26024438.1467849

Mistake Rumination Scale: Psychometric properties for the Turkish version

Ayşe Altan-Atalay[1], Burcu Kaya-Kızılöz[2], Ahmet Berk Özdemir[3]

Keywords
mistake rumination, repetitive negative thinking, reliability, validity, factor structure

Abstract
The Mistake Rumination Scale (MRS) was developed to evaluate the inclination to engage in mistake rumination (MR), a reaction to perceived mistakes in the form of intense, repetitive negative thoughts. The present study aimed to investigate the psychometric qualities of the Turkish version of the MRS in 2 studies. Data were collected from 214 participants (118 females) between the ages of 18 and 56 (*M* = 33.45, *SD* = 11.82) through measures of MR, repetitive negative thinking, perfectionism, procrastination, depression, and anxiety. The findings confirmed the original factor structure and indicated adequate reliability, convergent, and incremental validity. In the second study, the criterion-related validity of the MRS was tested using an experimental design. Participants (127 individuals aged between 18 and 28) were asked to imagine committing a series of mistakes or a regular event. Results provided support for the criterion-related validity of the MRS. In conclusion, MRS can be utilized to assess MR in Turkish individuals.

Anahtar kelimeler
hata ruminasyonu, tekrarlayıcı olumsuz düşünceler, güvenilirlik, geçerlilik, faktör yapısı

Öz
Hata Ruminasyonu Ölçeği: Türkçe versiyonunun psikometrik özellikleri
Hata Ruminasyonu Ölçeği (HRÖ), algılanan hatalara karşı yoğun, tekrarlayıcı olumsuz düşünce şeklinde verilen bir tepki olan hata ruminasyonu (HR) eğilimini değerlendirmek için geliştirilmiştir. Bu çalışma, HRÖ'nün Türkçe versiyonunun psikometrik niteliklerini 2 çalışmada araştırmayı amaçlamıştır. Yaşları 18 ile 56 arasında değişen 214 katılımcıdan (118 kadın) (*Ort.* = 33.45, *SS* = 11.82) HR, tekrarlayan olumsuz düşünce, mükemmeliyetçilik, erteleme, depresyon ve anksiyete ölçümleri yoluyla veri toplanmıştır. Bulgular orijinal faktör yapısını doğrulamış ve yeterli güvenilirlik, yakınsak ve artımsal geçerliliğe işaret etmiştir. İkinci çalışmada, HRÖ'nün ölçüt geçerliliği deneysel bir tasarım kullanılarak test edilmiştir. Katılımcılardan (yaşları 18 ile 28 arasında değişen 127 kişi) bir dizi hata veya düzenli bir olay yaptıklarını hayal etmeleri istenmiştir. Sonuçlar HRÖ'nün ölçüt geçerliliğini desteklemiştir. Sonuç olarak, HRÖ Türk bireylerde HR'yi değerlendirmek için kullanılabilir.

To cite: Altan Atalay, A., Kaya Kızılöz, B., & Özdemir, A. B. (2025). Mistake Rumination Scale: Psychometric properties for the Turkish version. *Journal of Clinical Psychology Research*, *9*(1), 14-26.

Ayşe Altan Atalay · ayse.altan@khas.edu.tr | [1]Assoc. Prof., Department of Psychology, Kadir Has University, Istanbul, Türkiye; [2]Asst. Prof., Eastern Mediterranean University, Department of Psychology, Istanbul, Türkiye; [3]Psychologist, M.A., Koc University, Department of Psychology, Istanbul, Türkiye.
Received *Apr 19, 2024,* ***Revised*** *Jun 20, 2024,* ***Accepted*** *Jun 21, 2024*

The term mistake rumination (MR) refers to a pattern of repetitive negative thinking (RNT), which involves the individual's inclination to dwell on personal errors and shortcomings from the past (Flett et al., 2020). It was first introduced to the literature by Frost and Henderson (1991) regarding the tendency to think about mistakes too frequently. It was suggested to interfere with the daily functioning of individuals in various domains, leading to increases in the individual's vulnerability to various psychological disorders. However, despite its potential importance in the etiology of several forms of psychological distress, MR received little empirical attention due to the absence of a valid and reliable questionnaire specifically focused on assessing this construct.

Flett and Hewitt (2016) conceptualized MR as a form of reactivity that presents itself as experiencing episodes of heightened repetitive negative thoughts following mistakes. According to Flett et al. (2020), MR, which is a ruminative process that is triggered by either a real or perceived mistake (McLaughlin et al., 2007), increases the intensity of negative affect by keeping the recollections of those mistakes alive in the memory. Easily accessible memories of mistakes lead to a negative self-concept and overestimating future mistakes.

A glance at the literature indicates that it has significant similarities with some other concepts involved in developing and maintaining various types of psychopathologies. For example, due to its negative and repetitive nature, mistake rumination has a significant conceptual resemblance to rumination, which is defined as compulsively thinking about negative emotional states and the events that may have given way to the emergence of such negative emotional states (Treynor et al., 2003). The previous examination of this overlap between mistake rumination and depressive rumination indicated both dimensions of rumination to have significant positive associations with mistake rumination, indicating that rumination-prone individuals also tend to engage in intense thoughts following mistakes (Flett et al., 2020). Supporting evidence regarding the significant associations of MRS with rumination was provided by Kabadayi and Mercan (2023). These findings indicate that MR can be distinguished from rumination through its specific focus on mistakes committed rather than negative life events and emotions in general (Flett et al., 2020).

Although not tested previously, MR also has conceptual similarities with constructs such as “problem-focused thoughts”, “counterfactual thinking”, “repetitive thoughts” and “anticipatory thoughts” which are assessed through the Ruminative Thinking Style Questionnaire (RTSQ, Tanner et al., 2013), as well as self-critical rumination, which refers to negative repetitive thoughts that focused on the individuals' failures, weaknesses, and deficiencies, and are extremely critical of the self (Smart et al., 2016). Despite the conceptual similarity of the MRS with especially Self-Critical Rumination Scale (SCRS), a measure of self-critical rumination, the two scales show considerable differences in item content with SCRS not specifically focused on the actual mistakes. Instead, it targets self-critical thoughts regarding the individual’s personality characteristics, habits, actions, and even self-critical thinking patterns.

According to Flett et al. (2016), ruminating about mistakes has significant associations with perfectionistic tendencies, and thus MR can be conceptualized as a form of cognitive perfectionism (Flett et al., 2020). Although this pattern is triggered by either a real or imagined mistake, the real motive behind MR is the individual's belief that they should be perfect and not commit any errors. This association of MR and perfectionism has been investigated in only one study so far, indicating MR to have strong associations with the tendency to set high standards for the self (Flett et al., 2020), which is perceived as a characteristic that constitutes the essence of perfectionism (Shafran et al., 2002). Moreover, mistake rumination also appeared to have a significant positive association with the belief that other people have high expectations of the self, which is the dimension of perfectionism that has a stronger association with psychopathology and is thus labeled as the maladaptive form of perfectionism (Flett et al., 2022).

Another construct that has a potential resemblance to MR is post-event processing, a form of rumination that is more strongly associated with social anxiety than other forms of psychological distress (Brown & Kocovski, 2014). Partially like MR, post-event processing also refers to repetitively thinking about performance negatively by paying extra attention to one’s own mistakes. However, unlike MR, post-event processing is exclusive to social performance situations and involves conducting a post-mortem analysis of the social occasion without focusing solely on the mistakes (Laposa et al., 2014). Previous studies on post-event processing indicate its significant strong correlations with maladaptive perfectionism that are characterized by the inclination to be overly concerned with making mistakes and not having a clear idea regarding the perfect way of behaving (Brown & Kocovski, 2014). According to Brown and Kocovski (2014), the association of perfectionism with this type of rumination can be explained through the perfectionist individual's tendency to emphasize mistakes and self-doubts. Due to their sensitivity regarding the chances of not appearing perfect, perfectionist individuals may engage in excessive ruminative thoughts following challenging situations. A similar relationship between perfectionism and MR can be expected based on the conceptual overlap between MR and post-event processing.

Despite the lack of empirical evidence, another construct that may have associations with MR is procrastination, which refers to delaying certain tasks despite being aware of the cost of this behavior (Steel,

2007). Although procrastination is used as a coping mechanism by most individuals (Sirois, 2004), it is likely to lead to negative mental health outcomes such as anxiety and depression (Constantin et al., 2018). Furthermore, procrastination has significant associations with different types of RNT, such as worry (Constantin et al., 2018) and rumination (Flett et al., 2016) explaining how procrastination contributes to the development and maintenance of psychological distress (Constantin et al., 2018). Furthermore, research also revealed that being overly concerned with making mistakes and having a perseverative attitude towards previous mistakes is associated with a tendency to avoid performance situations (Quested et al., 2014), one of the main characteristics of procrastination (Constantin et al., 2018). In conclusion, based on the potential overlap between procrastination and MR-related constructs, there is good reason to expect procrastination levels to be positively associated with MR intensity.

Although there is no robust evidence regarding the role MR plays in psychopathology, extant research indicated concepts that bear resemblance with MR (such as rumination, post-event processing, and worry) to have essential roles in the etiologies of social anxiety (Kocovski et al., 2005), depression and anxiety (Everaert & Joorman, 2019; Taylor & Snyder, 2021) in addition to maladaptive behavioral patterns such as procrastination (Constantin et al., 2018). Furthermore, the limited number of studies that examined the association of MR with levels of psychological distress in non-clinical participants revealed that people who report more intense rumination following mistakes tend to feel more anxious and depressed (Flett et al., 2020; Kabadayi & Mercan, 2023).

These results, when taken together, indicate that MR has the potential to be involved in developing and maintaining various forms of psychological distress as well as certain problematic behavioral patterns associated with low life satisfaction and well-being (Barabadi et al., 2024; Özdemir & Altan-Atalay, 2023). Flett et al. (2020) developed the Mistake Rumination Scale (MRS) to assess individuals' tendency to think about their past mistakes repetitively and uncontrollably. Individuals are instructed to think about the last time they made a critical mistake. Then they are asked to recite the mistake in a few words and fill out the MRS thinking of this mistake. Items are rated on a 4-point Likert scale from not at all to very much.

In conclusion, MR is a form of RNT that may play a crucial role in the etiology of various conditions (Flett et al., 2020) and MRS is the only known psychometrically sound measure of MR that can be used in both clinical and research settings. However, there is a need to conduct adaptation and standardization studies to understand whether a scale can assess certain constructs (Ziegler & Bensch, 2013). For this purpose, MRS was previously translated to Turkish by Kabadayi and Mercan (2023) and yielded satisfactory internal consistency. However, in Kabadayi and Mercan's (2023) study, all participants were university students, limiting the generalizability of the results. Furthermore, their study did not include adequate evidence for the scale's convergent, construct, and incremental validity. Finally, in Kabadayi and Mercan's (2023) study, criterion-related validity was measured only by correlations with rumination, cognitive control, and flexibility. Thus, in the current study, we aimed to reassess the psychometric characteristics of the MRS to provide further support for the scale's convergent, construct, and incremental validity and further explore its criterion-related validity by employing an experimental design. Two separate studies were conducted.

Study 1

The present study examines the psychometric characteristics of the Turkish version of the MRS. Like the original version, the Turkish version of the MRS is expected to be a good fit for a single-factor model. Furthermore, it is expected to have adequate levels of reliability, in addition to significant correlations with both disorder-specific and non-specific measures of RNT, adaptive and maladaptive forms of perfectionism, and procrastination, which will provide support for the convergent validity of the MRS. The scale is also expected to have significant correlations with anxiety and depression, supporting construct validity. Finally, MRS is expected to explain the variance in anxiety, depression, and procrastination, over and above other measures of rumination, which will support the incremental validity of the scale.

METHODS

Participants

Two hundred and fourteen participants (118 females) were recruited from the general community through snowball sampling. The ages of the participants ranged from 18 to 56 years (M = 33.45, SD = 11.82). Nearly half of the participants were single (50.5%) and 85.5% reported having at least an undergraduate degree. Finally, 24.8% of the participants reported having been diagnosed with a mental health problem (such as ADHD or major depression). Only two of the participants were currently receiving some kind of treatment (psychotherapy or pharmacotherapy) during the period of data collection.

Measures

Mistake Rumination Scale (MRS) The MRS was developed by Flett et al. (2020) to understand the tendency to think about mistakes in an uncontrollable,

negative, and repetitive manner. The scale consists of seven items evaluated on a 4-point Likert-type scale (1 = not at all, 4 = very much), and higher scores on the MRS suggest a higher likelihood of experiencing repetitive negative thoughts regarding mistakes. The original version of the scale yielded satisfactory levels of reliability (α = .85), and validity based on its moderate correlations with perfectionistic cognitions, anxiety, and depression.

Multidimensional Perfectionism Scale (MPS) The MPS (Frost et al., 1990) consists of 35 5-point Likert-type scale items, assessing the intensity of perfectionism based on six different subscales as Personal Standards (PS), Concern over Mistakes (CM), Doubts about Actions (DA), Parental Expectations (PE), Parental Criticism (PC), and Organization (O). The PS subscale reflects individuals' tendencies to set excessively high standards and self-evaluation based on their perceived performance. The CM dimension demonstrates a preoccupation with failing and a fear of being negatively evaluated by others. DA dimensions, on the other hand, correspond to the individual's uncertainty and doubt regarding the correct course of action that should be taken in certain situations. The PE and PC dimensions reflect individuals' perceptions that their parents set high goals for them and were overly critical, respectively. Finally, the O subscale demonstrates individuals' exaggerated need for orderliness. The subscale yielded Cronbach's alphas ranging between .77 and .93. The scale also has evidence for convergent validity based on its moderate to high associations with anxiety, depression, and other measures of perfectionism. The Turkish version of the MPS that was translated and adapted by Kagan (2011) has internal consistency coefficients ranging between .64 and .94. In the current study, we used only PS scores in addition to CMD, which is a composite score subsuming CM and DA subscales following the recommendations of Stoeber (1998). These scores were used since PS and CMD subscales are believed to correspond to adaptive and maladaptive perfectionism, respectively (Altan-Atalay, 2018; Stoeber, 1998).

Perseverative Thinking Questionnaire (PTQ) The PTQ measures content-independent repetitive negative thinking and is composed of 15 items rated on a scale of 0 (Never) to 4 (Almost always). It was developed by Ehring et al. (2011) and consists of one higher-order factor of ruminative negative thinking and possesses satisfactory levels of internal consistency and high correlations with measures of depression and anxiety. The Turkish version of the PTQ also yielded adequate internal consistency (α = .95) and satisfactory convergent and concurrent validity properties (Altan-Atalay & Saritas-Atalar, 2018).

Ruminative Responses Scale – Short Form (RRS-SF) It is a 10-item questionnaire developed by Treynor et al. (2003). The RRS-SF has an internal consistency value of .90, as well as good correlations with measures of depression. The Turkish version (Erdur-Baker & Bugay, 2012) of the scale used in the present study revealed an internal consistency coefficient of .85.

Post Event Processing Inventory (PEPI) The PEPI measures the level of rumination experienced by individuals following a social situation. It was developed by Blackie and Kocovski (2017) and comprises 12 items rated on a 5-point Likert-type scale. The scale has satisfactory levels of internal consistency (α = .90) and shows evidence of validity, based on its significant correlations with worry, rumination, depression, and social anxiety. The Turkish version, developed by Gençoğlu et al. (unpublieshed), also yielded satisfactory levels of internal consistency (α = .93).

Tuckman Procrastination Scale (TPS) The TPS was developed by Tuckman (1991) to assess procrastination behavior in university populations. The scale is composed of 16 items rated on a scale from 1 to 4, with elevated scores indicative of more intense procrastination tendencies. The scale has a high internal consistency (α = 91, Tuckman, 2007). The Turkish version also yielded satisfactory levels of reliability (α = .90) and evidence for validity through its correlations with academic self-efficacy and self-esteem (Özer et al., 2013).

Patient Health Questionnaire (PHQ-9) Developed by Kroenke et al. (2001), the PHQ-9 consists of 9 questions that assess the severity of depression symptoms for the two weeks before answering the questionnaire. Scores for each question in the PHQ-9 range from 0 (Not at all) to 3 (Nearly every day). Higher scores on the questionnaire suggest elevated manifestations of depressive symptoms. The Turkish translation of the PHQ-9 was performed by Sari et al. (2016). The English and Turkish versions of the PHQ-9 had excellent levels of internal consistency (α = .89 and .84, respectively), besides evidence of construct validity.

Generalized Anxiety Disorder (GAD-7) It is a 7-item (4-point Likert type) self-report questionnaire developed by Spitzer et al. (2006) aimed to assess the extent to which participants have been bothered by symptoms characteristic of generalized anxiety during the past two weeks. The GAD-7 has been demonstrated as a valid and reliable (α = .92) measure for the assessment of anxiety. GAD-7 was translated into Turkish by Konkan et al. (2013) and showed satisfactory reliability (α = .85) and validity.

Procedure

Translation

Two bilingual researchers with a psychology background independently translated the MRS items into Turkish. The initial Turkish version was settled after comparing the two Turkish translations. This was followed by the back translation of the items by a bilingual Ph.D. student and its comparison with the original scale to evaluate the consistency of the semantic content of the items. Finally, the final form of the Turkish version of the MRS was set, following the comparison of the original MRS and back translation. No changes were made to the items.

The data collection process started after we obtained ethical approval from the Institutional Review Board of Koç University (2021.094.IRB3.055). The participants were recruited through the texts (involving the Qualtrics link of the survey) posted to online forums and social media websites such as Twitter, WhatsApp, and Facebook. It took 30 minutes, on average, for participants to answer all the questions. The participants did not receive any compensation in return for participating in the study.

Analysis

The factor structure of the Turkish version of the MRS was evaluated with Confirmatory Factor Analysis (CFA) performed using AMOS (Byrne, 2016). To evaluate the model fit we used the following criteria: (1) a chi-square/df ratio (CMIN/DF) below 3, (2) a goodness of fit index (GFI) above .95, (3) comparative fit index (CFI) coefficient above .96, (4) a root-mean-square error of approximation (RMSEA) below .05, and (5) a standardized root means square (SRMR) below .08, which are accepted as the indicators of a good fit (Hu & Bentler, 1999; Schermelleh-Engel et al., 2003; Tabachnick & Fidell, 2007). We used SPSS 24.0 to evaluate other psychometric characteristics such as internal consistency, convergent validity, and incremental validity.

RESULTS

The skewness and kurtosis values of the data set were within the acceptable limits (Tabachnick and Fidell, 2017), and there were no univariate outliers. The multivariate outliers were examined using Mahalanobis distance. The data from one participant was deleted for being a multivariate outlier.

Confirmatory Factor Analysis (CFA)

A CFA testing the single factor model suggested by Flett et al. (2020) was conducted via AMOS using the maximum likelihood model. The fit statistics indicated 20.47 (14) an X^2/df ratio of 1.46, p = .12. An examination of fit indices revealed a GFI of .98, a TLI of .98, and a CFI of .99 as well as RMSEA of .04, 90% CI (.01, .08), in addition to SRMR of .03, which are indicative of a good fit. Furthermore, the factor loadings of all items are above .50 (as presented in Table 1).

Convergent Validity

Results of the correlation analyses revealed that the MRS scores were significantly positively correlated with both depression-specific (RRS-SF) and disorder-non-specific (PTQ) forms of RNT, in addition to maladaptive perfectionism (CMD) and procrastination (TPS). The results also revealed that MR scores were positively correlated with the PS dimension of perfectionism. The correlations of the MRS were not significantly associated with age or gender.

Construct Validity

The significant positive correlation of MRS scores with the scores of both anxiety and depression (see Table 2) provides evidence for the construct validity of the MRS, indicating that elevated levels of MRS are also associated with higher levels of depression and anxiety.

Incremental Validity

Incremental validity analyses involved a series of hierarchical regression analyses that involved anxiety, depression, and procrastination serving as the dependent variables, respectively. In all three analyses, the MRS scores were entered in the first step, followed by the PTQ in the second. As presented in Table 3, the results indicate that MRS remained significantly associated with anxiety and depression even when the level of disorder non-specific RNT was controlled. However, it did not significantly predict individual differences in procrastination over and above the variance explained by RNT.

Reliability

The results of the internal consistency analysis indicated that MRS had a Cronbach's α of .86. Furthermore, its Spearman-Brown split-half reliability was .83.

DISCUSSION

The first study aimed to examine the factor structure and internal consistency of the Turkish version of the MRS and provide evidence for its convergent, construct, and incremental validity. The current results confirmed the single-factor structure for the MRS, which was also proposed by Flett et al. (2020), with all items having loadings above .50 on the single factor

JCPR 2025;9(1):14-26

Table 1. Standardized Coefficients

Items	Factor Loadings
1. To what extent did you think "How could I be so stupid?" *Ne ölçüde "Nasıl bu kadar aptal olabildim?" diye düşündünüz.*	.52
2. To what extent did you think "Why can't I stop making mistakes like this?" *Ne ölçüde "Neden bunun gibi hataları yapmayı durduramıyorum?" diye düşündünüz*	.70
3. To what extent do you still think about the mistake and wish it had gone better? *Hata hakkında ne ölçüde hala düşünmeye ve işlerin yolunda gitmiş olmasını dilemeye devam ediyorsunuz?*	.67
4. To what extent did you think "Why do I make mistakes that other people don't make?" *Ne ölçüde "Neden diğer insanların yapmadığı hataları yapıyorum?" diye düşündünüz.*	.77
5. To what extent did you think about other mistakes you have made? *Yapmış olduğunuz başka hataları ne ölçüde düşündünüz.*	.71
6. To what extent did you think "Why couldn't I have seen this coming and have found some way to avoid it?" *Ne ölçüde "Neden bunun geldiğini fark edemedim ve bundan kaçınmanın bir yolunu bulamadım?" diye düşündünüz.*	.77
7. To what extent did you think "I am not going to let other people know about this? *Ne ölçüde "Diğer insanların bunu öğrenmesine izin vermeyeceğim" diye düşündünüz*	.65

Table 2. Descriptive Statistics, Cronbach's Alphas, and Correlation Coefficients of the Study Variables

Variable	*M*	*SD*	*α*	sex	age	MRS	CMD	PS	RRS	PEPI	PTQ	TPS	PHQ
Age	29.48	10.28		.39**	--								
MRS	16.79	5.30		-.04	-.10	--							
CMD	32.33	12.10	.91	-.01	-.15	.54**	--						
PS	22.08	5.99	.79	.05	-.22*	.25**	.65**	--					
RRS	21.06	5.39	.86	-.10	-.31**	.62**	.54**	.26**	--				
PEPI	37.51	9.85	.93	-.08	-.21*	.55**	.54**	.27**	.57**	--			
PTQ	41.03	13.94	.96	-.07	-.28**	.64**	.57**	.28**	.72**	.71**	--		
TPS	31.45	10.14	.93	.07	-.19*	.36**	.39**	.09	.36**	.32**	.50**	--	
PHQ	17.83	6.11	.88	.01	-.18	.49**	.44**	.16*	.61**	.49**	.63**	.49**	--
GAD	13.55	5.34	.92	-.06	-.26**	.52**	.48**	.30**	.66**	.55**	.64**	.40**	.79**

Note 1. *$p < .05$. **$p < .01$.

Note 2. CMD = Concern over Mistakes and Doubts, GAD = Generalized Anxiety Disorder, MRS = Mistake Rumination Scale, PEPI = Post-Event Processing Inventory, PHQ = Patient Health Questionnaire, PS = Personal Standards, PTQ = Perseverative Thinking Questionnaire, RRS = Ruminative Responses Scale, TPS = Tuckman Procrastination Scale.

Table 3. Hierarchical Regression Analyses

Variables	Anxiety				
	R^2	ΔR^2	*b*	*t*	*p*
Step 1	.27				
MRS			.52	8.13	< .001
Step 2	.43	.16			
MRS			.20	2.75	.007
PTQ			.51	6.96	< .001
	Depression				
	R^2	ΔR^2	*b*	*t*	*p*
Step 1	.25				
MRS			.50	7.58	< .001
Step 2	.41	.16			
MRS			.16	2.15	.033
PTQ			.52	6.93	< .001
	Procrastination				
	R^2	ΔR^2	*b*	*t*	*p*
Step 1	.14				
MRS			.37	5.35	< .001
Step 2	.25	.11			
MRS			.09	1.04	.301
PTQ			.44	5.27	< .001

Note. MRS = Mistake Rumination Scale, PTQ = Perseverative Thinking Questionnaire.

(Hair et al., 2006). The current findings are also in line with the results obtained by Kabadayi and Mercan (2023), who also replicated the original factor structure. Furthermore, MRS yielded a satisfactory internal consistency indicating that it is a reliable measure of mistake rumination.

The MRS also showed significant associations with other measures of RNT. More specifically, individuals with higher MRS scores reported experiencing more intense levels of both disorder-specific (as measured by the RRS and PEPI) and non-specific (as measured by the PTQ) forms of RNT, providing support for its construct validity. Furthermore, in line with the expectations, the results indicated that the tendency to think about past mistakes repetitively and uncontrollably has significant associations with the tendency to think about past social experiences (as measured by the PEPI) and current negative mood (as measured by the RRS), in addition to the tendency to experience perseverative thoughts which are uncontrollable and negative in content (as measured by the PTQ). Such findings reveal that MR significantly overlaps with different forms of RNT, in line with its conceptualization.

Moreover, in line with the expectations, high MR was associated with maladaptive perfectionistic tendencies characterized by being overly concerned with previous mistakes and finding it difficult to decide how to act in situations requiring performance. In addition to maladaptive perfectionism, the current results indicate that individuals inclined to set high goals are likelier to experience ruminative thoughts following mistakes. Notably, individuals with perfectionistic traits (both the adaptive and maladaptive forms) are more likely to suffer from fear of failure (Smith et al., 2022) and thus may be likely to engage in mistake rumination. Since mistake rumination can also be used to understand current mistakes better so that the individual will not commit the same mistakes in the future (Smith et al., 2022). The current results also align with Frost et al. (1995), who reported that individuals high in maladaptive perfectionism are more sensitive to mistakes and tend to experience greater distress once they realize they have made an error (Flett et al., 2016). Confirming the hypotheses, MR tendencies also appeared to be associated with an inclination to procrastinate the tasks or duties perceived as complex or anxiety-provoking. The moderate correlations between MR and procrastination indicate that mistake rumination has significant connections with the tendency to postpone starting and/or finishing tasks that appear dull, unpleasant, or anxiety-provoking. Especially regarding anxiety-provoking tasks, the tendency to engage in MR may lead to the overestimation of future failures interfering with the individual's motivation to delay or avoid the task rather than work on it, which explains the association between MR and procrastination.

The current results also revealed similar correlations between MRS scores and the scores from measures of depression and anxiety, providing evidence for the construct validity of the MRS. The findings regarding the significant positive associations with depression and anxiety are in line with the results of Flett et al. (2020) and Abdollahi et al. (2021). Despite the impossibility of making causal inferences due to the cross-sectional nature of the study, the results indicate that MR episodes are likely to make the individuals remain overly focused on their either real or imagined mistakes, increasing the overall negative affectivity and thus, leading to increases in anxiety and depression.

Incremental validity analysis results further indicate that the association of MR with depression, anxiety, and procrastination remains significant even when the variance explained by a social anxiety-related form of RNT is controlled. In other words, MR can explain additional variance in psychological distress, which suggests that MR is essentially a different construct from general RNT. Overall, the current results show that more intense MR has associations with anxiety and distress, which may indicate that MR, like other forms of RNT (rumination and worry), can act as a risk factor for both anxiety and depression. However, again, the cross-sectional nature of the current study does not allow for such predictions.

Study 2

The second study aims to examine MRS's sensitivity

for assessing situational changes in the intensity of mistake rumination to provide further evidence for the criterion-related validity of the Turkish version of the MRS. Although Flett et al. (2020) introduced MR as a trait characteristic, such RNT patterns are likely to be triggered by relevant life events (Marchetti et al., 2018). Although studies (e.g., Besser et al., 2004) showed that trait perfectionism, stress, and reports of mistake rumination are related, Flett et al. (2020), suggested that mistake rumination may be related to state reactions rather than trait characteristics. Thus, investigation of momentary changes in the levels of MR is quite essential since the intensity of ruminative thoughts may increase following the perceived mistakes and the level of such increases may show individual differences.

To assess the impact of situational factors, in the current study, the participants were assigned to two different groups, the first of which was made to imagine a situation where they failed to study for an exam due to their own poor decisions. Participants assigned to the second group were exposed to neutral stimuli (a casual meeting with a friend) that was not expected to trigger a mistake rumination episode. Furthermore, only university students were recruited as participants to ensure that the scenario used to induce mistake rumination was more relevant. Furthermore, we aimed to control the influence of depression, anxiety, and post-event processing since they have the potential to account for individual differences in pre-manipulation rumination levels. In conclusion, we hypothesized that the MRS scores of the first (mistake) group would be significantly higher than the second (neutral) group, even when the levels of depression and post-event rumination scores were controlled.

METHODS

Participants

The participants were 127 university students (91 females) between the ages of 18 and 28 years (M = 21.14, SD = 2.02). Participants were randomly assigned to mistake (N = 63) or neutral event (N = 64) groups.

Materials

Measures

Participants were administered the Turkish versions of the PEPI, GAD-7, and PHQ-9, also used in Study 1. Furthermore, the level of negative affect experienced by the participants was assessed through a visual analog scale that required them to rate the intensity of different negative emotions (distressed, upset, guilty, scared, ashamed, nervous, jittery, and afraid) on a scale of 1-to-5 with higher scores indicating elevated levels of negative affect. Finally, the items were presented to the participants twice, before (time 1) and after (time 2) the presentation of the scenarios.

Vignettes

Before data collection, two vignettes were tested with a separate group of participants for manipulation check to see their effectiveness in modifying the mood states. The data for the online pilot study were collected from 62 (33 females) university students between the ages of 18 and 24 years (M = 20.51, SD = 1.39). The participants were randomly assigned to either the mistake or neutral event groups. Both groups, following the presentation of a neutralizing video (Samson et al., 2016), were asked to rate the intensity of several emotions (distressed, upset, guilty, scared, ashamed, nervous, jittery, and afraid) on a scale of 1 -to-5 with elevated scores indicating more intense emotions followed by the presentation of the vignettes via videos (See online supplemental material 1 and 2). The participants were instructed to imagine themselves in the situation described as vividly as possible. The participants were then presented with Self-Assessment Manikin (SAM, Bradley & Lang, 1994) a second time to assess the intensity of their emotions.

Furthermore, state valence and arousal levels following exposure to the vignettes were assessed via the SAM. Finally, the participants were presented with three questions about the vignette (i.e., whether the situation described in the vignette is realistic, whether the participant was able to form vivid images of the situation, and whether the situation described led to any significant increases in the intensity of negative emotions) each one rated on a 0 to 100 scale. The process was terminated after the participants watched a pleasant movie clip selected based on the findings of Arıkan-İyilikci et al. (2023) to enhance their mood state.

Procedure

We utilized the Koc University participant pool for participant recruitment. All participants read the informed consent form and were presented with the questionnaires only after consent. During the first phase, all participants answered the PHQ-9, GAD-7, and PEPI, followed by the presentation of a set of neutral movie clips that lasted around 5 minutes (Samson et al. 2016) based on the procedure described by Marchetti et al. (2018) to neutralize the current mood state. This was followed by the momentary assessment of negative emotions through visual analog scales. Then the participants were randomly assigned to either the mistake situation or control group. The participants assigned to the mistake situation group were presented with a vignette describing a series of poor decisions made by the individual leading to a situation in which they failed to study for an exam (see online supp-

lemental material 1). However, the control group participants were given a vignette describing an ordinary and neutral event (see online supplemental material 2). Both vignettes were equal in length, and the participants were asked to imagine themselves in the described situation while reading them. The presentation of the vignettes took around 30 minutes.

Both groups were asked to fill out the MRS and VAS for a second time. During the next phase, all participants were presented with a series of positively valenced movie clips to increase positive mood and erase the negative effects of the experimental manipulation. All participants, including those excluded at the beginning of the process, received course credit in return for their participation.

Statistical Analysis

IBM SPSS version 26 was used in all the analyses. A series of mixed ANCOVA's were conducted to examine the differences between the two groups regarding their responses to the manipulation. Furthermore, a final ANCOVA was performed to compare the two groups in terms of their MRS scores following the manipulation. In all analyses, depression and anxiety scores were added as covariates.

RESULTS

Manipulation Check

To test whether our manipulation would work, we conducted a pilot study on a different group of participants, as stated above. The results of the independent samples t-test showed that participants in both groups (mistake vs. neutral event) rated both scenarios as equally realistic and likely to happen (p values are > .382). However, the negative mood of the participants in the mistake group (M = 62.13, SD = 28.92) showed a significant increase after the manipulation, which was not observed in the neutral event group (M = 19.93, SD = 28.88), $t(59) = 5.97$, $p < .001$, following the manipulation. Furthermore, participants in the mistake group (M = 3.34, SD = 2.04) rated the valence of their emotional state after reading the scenario as less positive than the neutral event group (M = 5.83, SD = 1.85), $t(59) = 4.96$, $p < .001$. Finally, regarding the arousal ratings for the emotion they felt after reading the scenarios, participants in the mistake group (M = 5.84, SD = 2.50) provided higher ratings than participants in the neutral event group (M = 3.90, SD = 2.37), $t(59) = 3.12$, $p < .003$.

We also performed a series of 2 (time) x 2 (group) Mixed ANOVAs to compare the negative emotions (a composite score based on the ratings of negative emotions) reported before and after exposure to vignettes in two groups. The results indicated significant main effects of both group $F_{(1, 59)} = 25, 93$, $p < .001$, $\eta_p^2 =$ .31 and time $F_{(1, 59)} = 16.53$, $p < .001$, $\eta_p^2 = .22$, in addition to the significant interaction of time and negative affect $F_{(1, 59)} = 39.30$, $p < .001$, $\eta_p^2 = .40$. The examination of significant interaction revealed that the participants in the neutral (M = 1.84, SD = .15) and emotional (M = 1.79, SD = .14) groups were not different from each other at time 1, $p = .807$. However, after the manipulation, neutral (M = 1.68, SD = .19) and emotional (M = 3.32, SD = .18) groups showed significant differences in negative affect, $F_{(1, 59)} = 38.55$, $p < .001$, $\eta_p^2 = .40$. Together these results suggest that the mistake scenario was found to be comparable to the neutral scenario in terms of how realistic and likely it is while resulting in a more negative and arousing mood.

Group Comparisons

To see whether the two groups were comparable in terms of demographics and participant characteristics before the manipulation, a series of between-subject t-tests were conducted for age, depression, anxiety, post-event processing, how realistic they thought the scenario was, and how likely it was for them to experience the event in the scenario (means and standard deviations can be seen in Table 4). The groups were different only for the likelihood of event ratings, $t(123) = 4.84$, $p < .001$, all other p values are > .098. In addition, a chi-square test showed that groups were not different from each other in terms of gender distribution, $p = .298$.

Negative Affect

To examine the impact of our manipulation on negative affect, we examined the participants' pre- and post-manipulation negative affect scores. Since there were outliers in the pre-manipulation scores, scores of 6 participants were removed from this analysis. A 2x2 Mixed Design ANOVA revealed a main effect of manipulation, $F_{(1, 119)} = 170.79$, $MSe = 19.60$, $p < .001$, $\eta_p^2 = .59$. Negative affect scores before manipulation (M = 11.96, SD = 3.80) were lower than after manipulation scores (M = 19.61, SD = 10.51). There was also a main effect of condition, $F_{(1, 119)} = 161.83$, $MSe = 28.18$, $p < .001$, $\eta_p^2 = .58$. Participants in the experimental group (M = 20.02, SD = .477) scored higher than participants in the control group (M = 11.34, SD = .49). There was also an interaction, $F_{(1, 119)} = 242.81$, $MSe = 19.60$, $p < .001$, $\eta_p^2 = .67$. Pairwise comparisons with Bonferroni corrections revealed that the pre- (M = 12.05, SD = 3.64) and post-manipulation scores (M = 10.62, SD = 3.95) of the control group were not significantly different from each other ($p = .796$) whereas, for the experimental group, post manipulation scores (M = 28.18, SD = 7.07) were significantly higher than pre-manipulation scores (M = 11.87, SD = 3.98; see Figure 1).

Table 4. Participant Characteristics Prior to Manipulation

	Mistake Group		Neutral Event Group		
Variable	*M*	*SD*	*M*	*SD*	*p*
Age	20.94	1.80	21.34	2.21	.258
PHQ-9	18.37	5.20	20.05	6.13	.098
GAD-7	14.32	5.21	15.39	5.21	.248
PEPI	42.71	8.86	42.05	8.07	.658
Reality	83.59	19.83	83.70	20.89	.974
Likelihood	53.79	31.21	78.42	25.51	**.000**

Note. GAD = Generalized Anxiety Disorder, PEPI = Post-Event Processing Inventory, PHQ = Patient Health Questionnaire

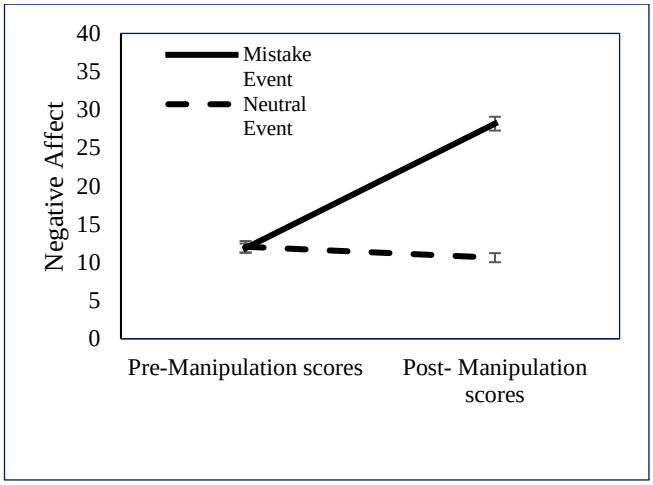

Figure 1. Negative Affect Scores Before and After Manipulation According to Condition

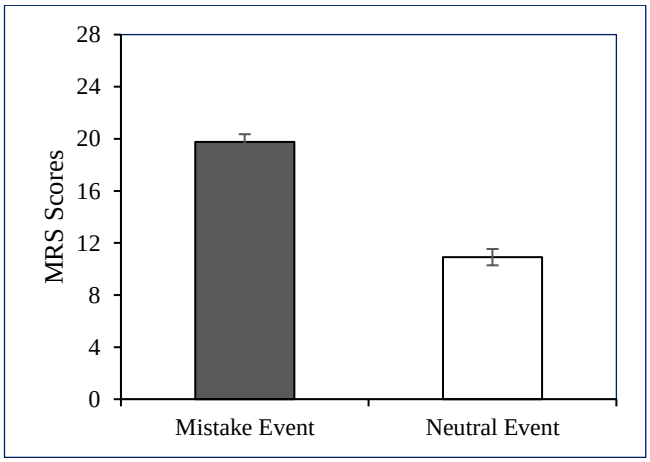

Figure 2. Mistake Rumination Scores After Manipulation According to the Condition

Mistake Rumination

A univariate ANCOVA with depression, anxiety, and post-event processing scores as covariates were conducted to examine the effect of the manipulation on mistake rumination scores. Results showed a main effect of manipulation, $F_{(1, 122)} = 132.13$, $MSe = 19.50$, $p < .001$, $\eta_p^2 = .52$. Scores of the participants in the mistake rumination condition ($M = 19.76$, $SD = 4.70$) were higher than the participants in the control condition ($M = 10.91$, $SD = 5.01$). Among the covariates, only post-event processing scores were significant, $F_{(1, 122)} = 7.12$, $MSe = 19.50$, $p = .009$, $\eta_p^2 = .06$ (see Figure 2). All other p values are > .100.

DISCUSSION

The results of the pilot study provided support for the effectiveness of the manipulation. Furthermore, although participants found the neutral event scenario more likely than the mistake scenario in the study group, both scenarios were rated as equally realistic. One reason for this difference in the likelihood ratings may be the sample characteristics. All participants were recruited from one of the top universities in Türkiye, and they are very achievement-oriented. Therefore, they may have thought that a scenario in which they did not study for an exam because of their poor planning is improbable. However, even if they rated the mistake scenario as less likely than the neutral scenario, the mistake scenario still increased their MRS scores. The findings of Study 2 showed that, in addition to their higher negative affect scores, the MRS scores of the participants who were exposed to the mistake scenario were higher than participants who were exposed to a neutral scenario, even when the depression and anxiety levels were controlled. These results support the criterion-related validity of the Turkish version of the MRS.

GENERAL DISCUSSION

The two studies reported in this article primarily aimed to examine the psychometric characteristics of the Turkish version of the MRS (Flett et al., 2020), which was developed to measure the individual differences in mistake rumination. Our results supported the reliability and validity of the Turkish version of the MRS.

The current results indicated that all seven items of the MRS are loaded onto a single factor, which is identical to the results of the original study (Flett et al., 2020). The MRS also yielded quite satisfactory levels of internal consistency. Furthermore, the findings of both studies provide evidence for the convergent, construct, incremental, and criterion-related validity of the MRS. More specifically, the MRS scores yielded significant positive correlations with the RRS, PEPI, and PTQ, all of which are measures assessing different forms of RNT supporting its convergent validity. The significant correlations between MRS and depression and anxiety scores supported the construct validity of the MRS. MRS can also explain the variance in anxi-

ety and depression over and above the variance explained by disorder non-specific forms of RNT, providing evidence for the incremental validity. The results of the correlation analyses also indicated that mistake rumination is higher among individuals who are high in both adaptive and maladaptive forms of perfectionism, indicating that both the tendency to set high standards for the self and the inclination to experience higher preoccupation and hesitation regarding achievement (Stoeber, 1998) are associated with a greater likelihood for engaging in ruminative episodes following mistakes.

Furthermore, the results of study 2 showed that MSR was capable of measuring the changes in participants' mistake rumination levels, providing further evidence for the criterion-related validity of the Turkish version of the MRS. These findings indicate that the Turkish version of the MRS is comparable to the original version in terms of factor structure and other psychometric properties and thus can be used to measure mistake rumination.

When the current study is compared with the previous study by Kabadayi and Mercan (2023), several advantages can be observed. In Kabadayi and Mercan's study, all participants were university students with ages between 17-39, and the gender distribution was imbalanced limiting the generalizability of the results. In the present study, the data is collected from the general population with ages between 18-56 and the gender distribution is balanced, making our results more generalizable. Furthermore, their study did include evidence for the scale's reliability, concurrent, and criterion-related validity whereas we provided evidence for convergent, construct, and incremental validity as well. Also, the reliability score was higher in the current study than in the previous study. Finally, in Kabadayi and Mercan's (2023) study, criterion-related validity was measured only by correlations with rumination, cognitive control, and flexibility. In the present study, the criterion-related validity of the scale was measured by using experimental manipulation to increase mistake rumination. Taken together, these points support the need for a second study aimed at adapting the scale into Turkish.

Although the current study has some novel findings, it is also essential to highlight its limitations. First, self-report measures were used in studies 1 and 2, which may inflate the self-report and single-method biases. The participants' characteristics can also be seen as a source of limitation since the majority are women and all the participants of Study 2 are undergraduate students, both of which will threaten the generalizability of the findings. Furthermore, post-event processing was assessed via PEPI, the original version with quite solid psychometric properties. However, the psychometric properties of the Turkish version (though promising) have yet to be published. Finally, although both study 1 and 2 utilized various measures of RNT, a glance at these measures indicates that they all focus on the past (RRS, PEPI), failing to examine the association between MRS and more future-oriented forms of RNT, such as worry. Also, other types of rumination that involve thinking about one's flaws and imperfections in a repetitive manner (i.e., self-critical rumination) were not investigated in the current study despite their possible conceptual overlap.

Further studies may target collecting data from more representative populations to eliminate these limitations. Also, further studies may target data collection from clinical samples to observe the contribution of mistake rumination in developing and maintaining clinically significant levels of psychological distress. Finally, even though high levels of mistake rumination involve being stuck in a mistake committed in the past these may have implications for the individuals' concerns regarding the future. Thus, a measure of worry or self-critical rumination could have been added to provide more evidence for the convergent and incremental validity of the scale.

Conclusions

In conclusion, the current study indicated that the Turkish version of the MRS has acceptable psychometric characteristics and is suitable for use with Turkish individuals to assess individual differences in mistake rumination in research settings. Moreover, the MRS can also be used in clinical settings since being excessively focused on one's shortcomings and mistakes is a crucial part of various psychological disorders such as depression and social anxiety disorders (Stoeber, 1998). The MRS can be used to assess the intensity and dominance of MR more specifically in clients that may help treatment planning. The MRS can also be used in the further phases of the intervention to monitor progress in this domain. However, further research is needed to evaluate its suitability for clinical settings.

DECLARATIONS

Ethics Committee Approval This study was approved by Institutional Review Board of Koç University (2021.094. IRB3.055).

Conflict of Interest Authors declare that they have no conflicts of interest in the publication of this work.

Informed Consent Before participation in the study, all participants provided informed consent.

Project/Funding Information This research did not receive any specific grant from funding agencies in the public, or not-for-profit sector.

Data Sharing/Availability Data is available upon reasonable request.

Authors' Contributions AAA contributed to the conceptualization and design of the study, performed the methodology, gathered data, and conducted data analysis. AAA also contributed to the writing of the introduction and conclusion sections of the study. BKA contributed to the data analysis and the writing of the introduction and conclusion sections. ABÖ contributed to the study design and data collection process. All authors reviewed and approved the final manuscript.

REFERENCES

Abdollahi, A., Taheri, A., Khobroo, M., & Shadloo, D. (2021). Psychometric properties of the Mistake Rumination Scale. *Psychological Science*, *20*(103), 1117-1130.

Altan-Atalay, A. (2018). Interactive effects of looming cognitive style and maladaptive perfectionism on trait anxiety. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *36*(4), 333-342.

Altan-Atalay, A., & Saritas-Atalar, D. (2018). Psychometric qualities of the Turkish version of Perseverative Thinking Questionnaire (PTQ). *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *36*(3), 252-266.

Arıkan-İyilikci, E., Boğa, M., Yüvrük, E., Özkılıç, Y., İyilikci, O., & Amado, S. (2023). An extended emotion-eliciting film clips set (EGEFILM): Assessment of emotion ratings for 104 film clips in a Turkish sample. *Behavior Research Methods*, 1-34.

Barabadi, E., Flett, G. L., Hewitt, P. L., Razmjoo, S. A., Rahmani Tabar, M., & Chasetareh, F. (2024). Trait perfectionism, L2 anxiety, and willingness to communicate among adolescents: Evaluating the roles of worrying about mistakes and mistake rumination. *Journal of Psychoeducational Assessment*, *42*(6), 668-684.

Besser, A., Flett, G. L., & Hewitt, P. L. (2004). Perfectionism, cognition, and affect in response to performance failure vs. success. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, *22*, 297-324.

Blackie, R. A., & Kocovski, N. L. (2017). Development and validation of the trait and state versions of the Post-event Processing Inventory. *Anxiety, Stress, & Coping*, *30*(2), 202-218.

Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: The self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry*, *25*(1), 49-59.

Brown, J. R., & Kocovski, N. L. (2014). Perfectionism as a predictor of post-event rumination in a socially anxious sample. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *32*(2), 150-163.

Byrne, B. M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications and programming* (3rd ed.). Routledge.

Constantin, K., English, M. M., & Mazmanian, D. (2018). Anxiety, depression, and procrastination among students: Rumination plays a larger mediating role than worry. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *36*, 15-27.

Ehring, T., Zetsche, U., Weidacker, K., Wahl, K., Schönfeld, S., & Ehlers, A. (2011). The Perseverative Thinking Questionnaire (PTQ): Validation of a content-independent measure of repetitive negative thinking. *Journal of Behavior Therapy and Experimental Psychiatry*, *42*(2), 225-232.

Erdur Baker, Ö., & Bugay, A. (2012). The Turkish version of the Ruminative Response Scale: An examination of its reliability and validity. *International Journal of Educational and Psychological Assessment*, *10*(2), 1-16.

Everaert, J., & Joormann, J. (2019). Emotion regulation difficulties related to depression and anxiety: A network approach to model relations among symptoms, positive reappraisal, and repetitive negative thinking. *Clinical Psychological Science*, *7*(6), 1304-1318.

Flett, G. L., & Hewitt, P. L. (2016). Reflections on perfection and the pressure to be perfect in athletes, dancers, and exercisers: A focus on perfectionistic reactivity in key situations and life contexts. In *The psychology of perfectionism in sport, dance and exercise* (pp. 312-336). Routledge.

Flett, G. L., Hewitt, P. L., Nepon, T., Sherry, S. B., & Smith, M. (2022). The destructiveness and public health significance of socially prescribed perfectionism: A review, analysis, and conceptual extension. *Clinical Psychology Review*, *93*, 102130.

Flett, G. L., Nepon, T., & Hewitt, P. L. (2016). Perfectionism, worry, and rumination in health and mental health: A review and a conceptual framework for a cognitive theory of perfectionism. In F. M. Sirois & D. S. Molnar (Eds.), *Perfectionism, health and well-being* (pp. 69-100). Springer.

Flett, G. L., Nepon, T., Hewitt, P. L., Zaki-Azat, J., Rose, A. L., & Swiderski, K. (2020). The Mistake Rumination Scale: Development, validation, and utility of a measure of cognitive perfectionism. *Journal of Psychoeducational Assessment*, *38*(1), 84-98.

Frost, R. O., & Henderson, K. J. (1991). Perfectionism and reactions to athletic competition. *Journal of Sport and Exercise Psychology*, *13*(4), 323-335.

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, *14*, 449-468.

Frost, R. O., Turcotte, T. A., Heimberg, R. G., Mattia, J. I., Holt, C. S., & Hope, D. A. (1995). Reactions to mistakes among subjects high and low in perfectionistic concern over mistakes. *Cognitive Therapy and Research, 19*(2), 195-205.

Gençoğlu, İ., Potoğlu, D., & Altan-Atalay, A. (unpublished manuscript). Examining the psychometric characteristics of Post-Event Processing Inventory: Turkish version.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Pearson Prentice Hall.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1-55.

Kabadayi, F., & Mercan, O. (2023). Reliability and validation of the Turkish adaptation of the Mistake Rumination Scale. *Current Psychology*, *42*(8), 6429-6438.

Kagan, M. (2011). Psychometric properties of the Turkish version of the Frost Multidimensional Perfectionism Scale. *Anadolu Psikiyatri Dergisi*, *12*(3), 192-197.

Kocovski, N. L., Endler, N. S., Rector, N. A., & Flett, G. L. (2005). Ruminative coping and post-event processing in social anxiety. *Behaviour Research and Therapy*, *43*(8), 971-984.

Konkan, R., Senormanci, O., Guclu, O., Aydin, E., & Sungur, M. Z. (2013). Validity and reliability study for the Turkish adaptation of the Generalized Anxiety Disorder-7 (GAD-7) Scale. *Archives of Neuropsychiatry*, *50*(1), 53-59.

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606-613.

Laposa, J. M., Collimore, K. C., & Rector, N. A. (2014). Is post-event processing a social anxiety specific or transdiagnostic cognitive process in the anxiety spectrum? *Behavioural and Cognitive Psychotherapy*, *42*(6), 706-717.

Marchetti, I., Mor, N., Chiorri, C., & Koster, E. H. (2018). The Brief State Rumination Inventory (BSRI): Validation and psychometric evaluation. *Cognitive Therapy and Research*, *42*, 447-460.

McLaughlin, K. A., Borkovec, T. D., & Sibrava, N. J. (2007). The effects of worry and rumination on affect states and cognitive activity. *Behavior Therapy*, *38*(1), 23-38.

Quested, E., Cumming, J., & Duda, J. L. (2014). Profiles of perfectionism, motivation, and self-evaluations among dancers: An extended analysis of Cumming and Duda (2012). *International Journal of Sports Psychology*, *45*, 349-368.

Özdemir, A. B. & Altan-Atalay, A. (2023, October 4-7). *The mediator role of emotion regulation difficulties in mistake rumination — Social anxiety relationship.* The 48th Annual Congress of the European Association for Behavioural and Cognitive Therapies, Antalya, Türkiye.

Özer, B. U., Saçkes, M., & Tuckman, B. W. (2013). Psychometric properties of the Tuckman Procrastination Scale in a Turkish sample. *Psychological Reports*, *113*(3), 874-884.

Samson, A. C., Kreibig, S. D., Soderstrom, B., Wade, A. A., & Gross, J. J. (2016). Eliciting positive, negative and mixed emotional states: A film library for affective scientists. *Cognition and Emotion*, *30*(5), 827-856.

Sari, Y. E., Kokoglu, B., Balcioglu, H., Bilge, U., Colak, E., & Unluoglu, I. (2016). Turkish reliability of the Patient Health Questionnaire-9. *Biomedical Research-India*, *27*, S460-S462.

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, *8*(2), 23-74.

Shafran, R., Cooper, Z., & Fairburn, C. G. (2002). Clinical perfectionism: A cognitive–behavioural analysis. *Behaviour Research and Therapy*, *40*(7), 773-791.

Sirois, F. M. (2004). Procrastination and intentions to perform health behaviors: The role of self-efficacy and the consideration of future consequences. *Personality and Individual Differences*, *37*(1), 115-128.

Smart, L. M., Peters, J. R., & Baer, R. A. (2016). Development and validation of a measure of self-critical rumination. *Assessment*, *23*(3), 321-332.

Smith, M. M., Sherry, S. B., Ge, S. Y., Hewitt, P. L., Flett, G. L., & Baggley, D. L. (2022). Multidimensional perfectionism turns 30: A review of known knowns and known unknowns. *Canadian Psychology*, *63*(1), 16-31.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, *166*(10), 1092-1097.

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin*, *133*(1), 65-94.

Stoeber, J. (1998). The Frost Multidimensional Perfectionism Scale revisited: More perfect with four (instead of six) dimensions. *Personality and Individual Differences*, *24*(4), 481-491.

Tabachnick, B. G. & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Allyn and Bacon.

Tanner, A., Voon, D., Hasking, P., & Martin, G. (2013). Underlying structure of ruminative thinking: Factor analysis of the Ruminative Thought Style Questionnaire. *Cognitive Therapy and Research*, *37*, 633-646.

Taylor, M. M., & Snyder, H. R. (2021). Repetitive negative thinking shared across rumination and worry predicts symptoms of depression and anxiety. *Journal of Psychopathology and Behavioral Assessment*, *43*(4), 904-915.

Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, *27*(3), 247-259.

Tuckman, B. W. (1991). The development and concurrent validity of the Procrastination Scale. *Educational and Psychological Measurement*, *51*(2), 473-480.

Tuckman, B. W. (2007). The effect of motivational scaffolding on procrastinators' distance learning outcomes. *Computers & Education*, *49*(2), 414-422.

Ziegler, M., & Bensch, D. (2013). Lost in translation: Thoughts regarding the translation of existing psychological measures into other languages [Editorial]. *European Journal of Psychological Assessment, 29*(2), 81-83.