

Summary

The Relationships among Harm Avoidance, Repetitive Thinking, Locus of Control and Depressive Symptoms: A Moderated Mediation Model

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Depression is a mood disorder that is characterized by loss of interest in everyday activities, loss of sleep, appetite and sexual desire as well as feelings of hopelessness, sadness, anxiety, and guilt accompanied by an inability to carry out daily activities (Davison & Neale, 1998). Depression is a common mental disorder with lifetime prevalence of 14.6% in the countries with high income level and 11.1% in the countries with low and medium income levels (Kessler & Bromet, 2013). In our country, studies conducted with university students found depression prevalence ranged between 25-27 (e.g., Aylaz, Kaya, Dere, Karaca, & Bal, 2007; Bayram & Bilgel, 2008; Bostanci et al., 2005). According to American Psychiatric Association (APA) (2013), along with being a common disorder, it includes the possibility of chronicity, the risk of suicide, and the impairment of functioning so that the prevention, identification, treatment and defining the risk factors of depression are important.

It is known that many risk factors play role in the onset of depressive symptoms (APA, 2013). For example, temperamental factors take part as the risk factors in the formation of depressive symptoms (APA, 2013). Harm avoidance (HA) temperament dimension is a hereditary predisposition to the behavioral inhibition system, with indicators such as pessimistic worries for possible future problems, fear against uncertainty, inability to be ashamed of strangers, passive behaviors such as shyness, and quick fatigue (Cloninger, 1987). In many studies, it has been reported that there is a significant and positive relationship between the degree of harm avoidance and the severity of depressive mood (e.g., Arkar, 2010; Chen, Lin, Li, Huang, & Lin, 2015; Jylhä & Isometsä, 2006). Furthermore, in some studies (e.g., Jylhä & Isometsä, 2006; Karakaş & Arkar, 2012), it has been re-

ported that harm avoidance is a temperament dimension that significantly predicts the depression.

Repetitive (negative) thinking is an attentive, persistent, and widespread cognitive activity that focuses on individuals' negative characteristics about themselves and the world (Segerstorm, Stanton, Alden, & Shortridge, 2003) and it is a transdiagnostic factor (Harvey, Watkins, Mansell, & Shafran, 2004). Worry and rumination are two of the most frequently researched types of repetitive thinking (McEvoy, Watson, Watkins, & Nathan, 2013). According to Nolen-Hoeksema (1991), ruminative responses can be defined as "behaviors and thoughts that focus one's attention on one's depressive symptoms and on the implications of these symptoms" (p. 569). In the literature, different studies showed a significant and positive correlation between rumination and depressive symptom severity (Papageorgiou & Wells, 2003; Şenormancı, Konkan, Güçlü, Şenormancı, & Sungur, 2013). In a longitudinal study conducted by Wilkinson, Croudace, and Goodyer (2013), it was stated that rumination was associated with the onset of a depressive episode and predicted future depression severity. It was found that worry was also associated with depressive symptoms (Goring & Papageorgiou, 2008). Furthermore, even individuals who were diagnosed with depression and those with generalized anxiety disorder did not differ in terms of worry scores (McEvoy et al., 2013). In this context, it is inevitable to state that repetitive thinking, which is an integrative term involving worry and rumination, is associated with depressive symptoms (Gülüm & Dağ, 2012; Mahoney, McEvoy, & Molds, 2012). On the other hand, there are studies indicating that there is a significant correlation between rumination and harm avoidance (Carter et al., 2009; Manfredi et al., 2011). Nolen-Hoeksema (2004) stated that it is more likely to develop a ruminative response style for sad-tend-

ing children and adolescents. Worry is also associated with harm avoidance (Manfredi et al., 2011). In this context, it can be stated that individuals with high levels of harm avoidance can be more inclined to repetitive thinking.

Another variable that is thought to be effective on the onset and maintenance of depression is the locus of control. Studies investigating the relationship between depression and locus of control (Hooke & Page, 2002; Lester, Castromayor, & İçli, 1991) stated that there is a significant and positive correlation between external locus of control and depression.

As noted above, the harm avoidance temperament is one of the temperament traits that significantly predicts the depressive symptoms. In addition, studies in the literature showed that two types of repetitive thinking, rumination and worry, were associated with both harm avoidance and depressive symptoms. It was determined that individuals with high harm avoidance were more likely to be inclined to ruminative thinking and worry (Manfredi et al., 2011) while worry and repetitive thinking were found to predict depressive symptoms (Yılmaz, 2015). Hence, it is considered that harm avoidance affects depressive symptoms via repetitive thinking. For this reason, the first purpose of this study was to examine if repetitive thinking has a mediating role between harm avoidance and depressive symptoms.

Locus of control is a risk factor, but its interaction with personality traits is also a significant predictor of physical and psychological disturbances. Horner (1996) reported that the neuroticism personality trait and the locus of control interaction was effective with stress in predictions of physical illnesses based on self-report. Darshani (2014) also reviewed the studies examining the relationships between type A and B personality traits, locus of control, stress, conflict and coping, and discussed the combination of type A and B personality traits and locus of control as a moderating variable affecting stress and conflicts in the model. However, to the best of our knowledge, no research has been found to examine the interaction of harm avoidance and locus of control explaining the depressive symptoms. Therefore, the other purpose in this study was to investigate the moderating role of the locus of control variable on aforementioned mediation.

Method

Participants

The sample of the study consisted of 359 university students (79.9% female) from Ege University. The age range of total sample was between 19 and 38, with the mean age of 20.48 ($SD = 1.89$). Participants who stated that they had a psychiatric diagnosis ($n = 35$) were not included in the study.

Measures

Demographic data form (DDF). DDF was developed to gather information about the participants' gender, age, marital status, department and psychiatric history.

Beck Depression Inventory (BDI). This scale was developed by Beck, Ward, Mendelson, Mock and Erbaugh (1961) to evaluate depressive symptoms and their severity with 21 items. Higher points indicate higher depressive symptoms. It has been found valid and reliable in our country by Hisli (1989). In our study, Cronbach's alpha of BDI was found to be 0.88.

Locus of Control Scale (LCS). The questionnaire has 47 items and it was developed by Dağ (2002). Cronbach alpha value was .92 and test re-test reliability was .88 (Dağ, 2002). In our study, the total score of 29 items, representing the belief about the use of external locus of control, was adopted. In this study, Cronbach's alpha of LCS was found to be 0.88.

Repetitive Thinking Questionnaire (RTQ). The RTQ was developed by McEvoy, Mahoney, and Moulds (2010) and aimed to investigate the repetitive thinking cycle which can be seen often in affective and anxiety disorders in a transdiagnostic manner. Hence, it contains items related to different forms of repetitive thinking, such as ruminative responses and worry. The questionnaire has 31 items and Turkish adaptation of the RTQ has been found valid and reliable in our country (Gülüm & Dağ, 2012). In our study, Cronbach's alpha of RTQ was found to be 0.94.

Temperament and Character Inventory-Harm Avoidance Subscale (HA). This inventory was developed by Cloninger, Przybeck, Svrakic and Wetzel (1994) to evaluate 4 temperaments (novelty seeking, harm avoidance, reward dependence, and persistence) and 3 character dimensions (self-directedness, cooperativeness, and self-transcendence) which were based on Cloninger's psychobiological model pioneered by Cloninger (1987). Psychometric studies by Köse and colleagues (2004) as well as by Arkar and colleagues (2005) displayed that TCI is valid and reliable in Turkey. In this study, we have used the Harm Avoidance temperament subscale. In our study, Cronbach's alpha of HA subscale was found to be 0.88.

Procedure

Before starting the data collection, ethical committee permission was obtained from Ege University Scientific Research and Publication Ethics Committee. The scales were applied collectively in the classroom. Initially the demographic form was given to the participants, the other 4 scales were given in varying orders by using the counterbalancing method in order to eliminate

the order effect. Participants completed the scales in approximately 20-25 minutes.

Results

The Pearson correlation coefficients were calculated for examining relationships among HA, BDI, LCS and RTQ. Accordingly, relationships between all scales were found to be significant ($p < .01$). The highest correlation coefficient was displayed between depressive symptoms and repetitive thinking ($r = .45$, $p < .01$).

A mediation analysis was used to investigate if repetitive thinking has a mediator effect on the relationship between harm avoidance and depressive symptoms. Gender was controlled in this analysis. According to the results, harm avoidance has a significant effect on depression score ($\beta = .53$, $t = 9.26$, $p < .001$, 95% CI [.42, -.64]). Furthermore, it had a significant effect on repetitive thinking ($\beta = 1.08$, $t = 6.11$, $p < .001$, 95% CI [.73, -1.42]), and also repetitive thinking was seen to have a significant effect on depressive symptoms ($\beta = .12$, $t = 7.50$, $p < .001$, 95% CI [.09, -.15]). While the total effect on depressive symptoms was significant, this effect didn't disappear but decreased when the mediator repetitive thinking was added to the model ($\beta = .40$, $t = 7.16$, $p < .001$, 95% CI [.29, -.51]). Therefore, it can be said that repetitive thinking has a partial mediating effect among harm avoidance and depressive symptoms. According to the results, the indirect effect of the repetitive thinking was significant ($\beta = .13$, $SE = .03$, 95% BCa CI [.08, -.19]).

We tested a moderated mediation model. In this analysis, we examined the relation between harm avoidance and depressive symptoms using repetitive thinking as a mediator, and locus of control as a moderator. Gender was controlled in this analysis. According to the results, the indirect effect of the harm avoidance on the depressive symptoms through repetitive thinking was found as significant for -1 standard deviation ($\beta = .05$, $SE = .02$, 95% BCa CI [.002, -.11]), mean ($\beta = .09$, $SE = .02$, 95% BCa CI [.05, -.14]) and +1 standard deviation ($\beta = .13$, $SE = .03$, 95% BCa CI [.07, -.21]). The indirect effect between 3 different levels of locus of control variable is significantly different. Similarly, the direct effect of harm avoidance on depressive symptoms was significant for -1 standard deviation ($\beta = .24$, $SE = .07$, $t = 3.39$, $p < .001$, 95% CI [.10, .38]), mean ($\beta = .38$, $SE = .05$, $t = 6.83$, $p < .001$, 95% CI [.27, .50]) and +1 standard deviation ($\beta = .53$, $SE = .08$, $t = 6.56$, $p < .001$, 95% CI [.37, .69]).

Discussion

In this study, the mediating role of the repetitive thinking between harm avoidance and depressive symptoms, and the moderating role of the locus of control on this mediation relation, were investigated. In the mediation analysis, it was determined that there was a partial mediator role of repetitive thinking between harm avoidance and depressive symptoms.

Another purpose of this research was to investigate the moderating role of locus of control between harm avoidance and depressive symptoms. According to the moderated mediation analysis results, locus of control moderated both the indirect relations between harm avoidance and depressive symptoms with repetitive thinking mediator and the direct relations between harm avoidance and depressive symptoms. It was found that repetitive thinking was a mediator between harm avoidance and depressive symptoms, and moreover, as the level of external control increased, this mediation relations became stronger. These findings suggest that cognitive vulnerability to depression may involve a cognitive style characterized by individual attribution styles.

Some clinical implications can be suggested based on the results obtained from the present study. Locus of control moderated the relationship between harm avoidance and depressive symptoms both directly and indirectly. So we can state that the meanings that are burdened on these experiences and consequences from life and events seem to be the main determinants of experiencing negative emotion. Therefore, the focal point of psychotherapy should be the individual's thoughts and beliefs. This finding once again emphasizes the place of cognitive behavioral therapy (Beck, Rush, Shaw, & Emery, 1979) in the treatment of depression.

On the other hand, we can say that repetitive thinking has an important effect on the treatment of depression when its mediating effect is considered. For this reason, depression treatment can focus on strategies specifically designed to change the ruminative responses and worry. These strategies can be incorporated into standard cognitive behavioral therapy for depression. In addition, there are intervention methods that specifically focusing on rumination. Watkins et al. (2007) developed a rumination-focused cognitive behavioral therapy program and found that in a case series, this treatment provided significant improvements in reducing depressive symptoms and rumination. Attention training technique (Wells, 1990) is another technique that can be used in the treatment of depression. In depressive disorders, attention-training techniques have been found to be effective in reducing long-term rumination, metacognition, and depressive symptoms (Papageorgiou & Wells, 2000).

In addition, Yilmaz (2015) emphasized that worry is a factor predicting depressive symptoms, so it should be considered in the treatment of depressive symptoms. The aforementioned research findings are promising and there is an emphasis on the necessity of additional studies on repetitive thinking-focused interventions. On the other hand, it can be suggested to treat ruminative reactions as a separate factor by discriminating negative automatic thoughts from rumination during the treatment of depression with cognitive behavioral approach.

The exclusion of the sample diagnosed with depression, the use of a cross-sectional study design, having only Ege University students as participants were the limitations of this study. Despite the limitations, this research is important because it is a pioneering study designed to understand the role of repetitive thinking and locus of control variables between harm avoidance and depressive symptoms. In this context, it presents important results for the onset, maintenance and the treatment of the depressive symptoms.