

The Mediator Role of Cognitive Features in the Relationship Between Adult Attachment Patterns and Psychopathology Symptoms: Cognitive Flexibility



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Summary

Objective: The principle aim of the study is to investigate the mediator role of cognitive flexibility in the known relationship between adult attachment patterns and psychopathology symptoms, including depression, Obsessive Compulsive Disorder (OCD), and social anxiety. Additionally, this study aims to generate integrative data regarding the relationship between early life experiences and psychopathology using a cognitive framework.

Method: There were 992 participants (661 women, 331 men) from 14 different colleges across 9 different provinces and. participants were evaluated using the Cognitive Flexibility Inventory, the Experiences in Close Relationship Scale-II, Beck Depression Inventory, the Maudsley Obsessive Compulsive Inventory and the Liebowitz Social Anxiety Scale. Structural Equation Modeling and mediator analysis were applied to the data.

Results: The results showed that there are some partial and full mediator roles of the cognitive flexibility-control in the relationship between attachment anxiety and depression, OCD and social anxiety for both women and men. Cognitive flexibility- control does not mediate the relationship between avoidant attachment and psychopathology symptoms for men, but cognitive flexibility-control has a partial mediator role in the relationship between avoidant attachment and both depression and social anxiety for women.

Conclusion: The present study demonstrates that cognitive flexibility- control is an important variable in the relationship between attachment patterns and psychopathology symptoms in both women and men.

Keywords: Attachment, Psychopathology, Cognitive flexibility

INTRODUCTION

Attachment patterns are formed in childhood and affect expectations, beliefs, social behavior, and emotion regulation strategies in adulthood (Bowlby, 1969, 1973, Ainsworth, 1989). This process is resistant to change (Bretherton, 1995). According to Bowlby (1973), the formation of attachment patterns is dependent on the nature of childhood interactions with primary caregivers and this system is tend to remain stable “from cradle to grave”. Numerous studies have demonstrated the relationship between attachment patterns and psychopathology (e.g. Myhr, Sookman&Pinard, 2004, Sabuncuoğlu&Berkem, 2006, Liu, Nagata, Shono&Kitamuro, 2009, Sümer *et al.*, 2009).

Despite many studies demonstrating this relationship in context of attachment theory, there are very few studies that evaluating mediating variables in this relationship. For example, according to the cognitive model, the underlying common factor in all psychological disorders is distorted or dysfunctional thoughts that affect the patient’s mental state and behavior (Beck, 1995). With reference to this, studying the role of distorted, dysfunctional or protective thoughts in the relationship between attachment patterns shaped in early life and psychological disorders in adulthood is very important for both theoretical and practical understanding of psychopathology.

Received: 11.09.2012 - Accepted: 13.03.2013

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In this context, we studied mediator roles of cognitive features including cognitive flexibility, locus of control, and the repetitive thinking in the relationship between attachment patterns and psychopathological symptoms. However, this paper will specifically address the effect of cognitive flexibility. Other variables will be evaluated by future studies.

Cognitive flexibility is a variable that represents how individual people respond to different situations based on the cognitive model. Cognitive flexibility is the ability to switch cognitions to adapt to changing environmental conditions. It has three basic components: (1) the disposition to perceive difficult situations as controllable; (2) the ability to perceive multiple alternative explanations for life situations and human behaviors; and (3) the ability to generate multiple alternative solutions to difficult situations (Dennis & Vander Wal, 2010, p.241).

Psychopathologies arise in individuals who cannot manipulate their cognitions according to the situation, known as cognitive inflexibility. Some studies have investigated the relationship between cognitive inflexibility and depression (Teasdale *et al.*, 2001; Deveney&Deldin, 2006), and with obsessive compulsive disorder (Fineberg, Blackwell, Robbins & Sahakian, 2006). The mediator role of cognitive flexibility in the relationship between attachment patterns and psychopathology symptoms is poorly understood.

Objective

The main aim of the study is to investigate the mediator role of cognitive flexibility in the relationship between attachment patterns and psychopathology. In this context, the second aim of this study is to generate an integrative perspective regarding the relationship between psychopathologies and early life experiences.

METHOD

Participants

There were 992 participants (661 women, 331 men) from 9 different provinces, including students from 14 different colleges. The participant's demographic characteristics are shown in the Table 1.

Cognitive Flexibility Inventory (CFI): The CFI was developed by Dennis & Vander Wal (2010) in order to evaluate the ability to produce alternative, adaptive, appropriate, and stable thoughts under difficult situations. The Inventory has total of 20 items and two subscales termed "alternative" and "control". A Turkish adaptation of the CFI was compiled by Gülüm and Dağ (2012). In this study, the overall, alternative and control subscale Cronbach alpha values were 0.90, 0.89 and 0.85 respectively.

Experiences in Close Relationships Scale – Revised (ECR-R): This scale was developed by Fraley & Shaver (2000) and a Turkish reliability and validity study was completed by Selçuk *et al.* (2005). There are 18 anxiety and 18 avoidance items. Each item is scored between 0-6. Cronbach alpha values for each subscale were 0.86 and 0.90 respectively, and the test-retest reliability of the anxiety and avoidance subscales were 0.82 and 0.81 (Selçuk *et al.*, 2005).

Beck Depression Inventory (BDI): The original inventory was developed by Beck (1961; cited in Hisli, 1988) to investigate the risk of depression, and the level and severity of depressive symptoms' in adults. The purpose of the BDI is to quantify depressive symptoms and not to diagnose depression. A Turkish reliability and validity study was done by Hisli (1988, 1989). The BDI is a 21 item self-report questionnaire and each item is scored between 0 and 3 and higher score is indicative of increased depressive symptoms. The range of score is 0-63. The Cronbach alpha value was 0.90 (Arkar&Şafak, 2004).

Maudsley Obsessive-Compulsive Symptom Checklist (MOCSL): The MOCSL is a true/false self-report scale developed to investigate obsessive-compulsive symptoms and to differentiate obsessive patients from other neurotic patients (Sanavio&Vidotto, 1985). A Turkish adaptation study was completed by Erol&Savaşır (1988; cited by, Özsoylar *et al.*, 2008). The scale has appropriate validity and reliability values for research and clinical use.

Liebowitz Social Anxiety Scale (LSAS): The LSAS includes 24 items designed to assess both fear and avoidance of social and performance situations (e.g., taking a test, giving a report to a group) occurring within the last 7 days. A reliability and validity study of the LSAS was conducted by Heimberg *et al.* (1999). A Turkish adaptation was completed by Soykan *et al.* (2003), and Cronbach alpha values for the general scale, and fear and avoidance subscales were 0.98, 0.96 and 0.95, respectively. A reliability and validity study conducted by Bayramkaya (2009) to examine the scale as a self-reporting measure. Cronbach alpha values for the general scale, and fear and avoidance subscales were 0.94, 0.90 and 0.89 respectively.

Procedure

This study was part of a larger research project (111K016) funded by TÜBİTAK. The research project was approved by the Hacettepe University Ethical Board. After collecting written consents of participating colleges', scale booklets, presenting individual scales in a randomized order, were administered by an assistant of the researcher during group sessions. Informed consents of the volunteer participants were taken before completion of the scales by participants, a process lasting 30-40 minutes. The data were collected during the academic year of 2011-2012.

Statistical Analysis: Before starting the analysis, the data set was evaluated for multivariate statistics assumptions (e.g. normality, linearity, and variance homogeneity). Normal distribution was determined in all cases. Data analysis was conducted via SPSS 20.0 and AMOS 20.0 software. Descriptive statistics of variable are shown in Table 2 and correlations between them are shown in Table 3.

RESULTS

We applied structural equation modeling to investigate the mediator role of cognitive flexibility in the relationship between attachment patterns and depression, OCD, and social anxiety. We analyzed cognitive flexibility subscales one by one and in combination, finding that the role of the alternative subscale in the model was insignificant. We continued our analysis without the inclusion of the alternative subscale, which had no apparent relationship with psychopathological symptoms. We produced three indicator variables for each latent variable using the parcel method (for social anxiety, we used two indicator variables, which were subscales of the LSAS). Some studies have emphasized sex differences in attachment patterns (Schmitt *et al.*, 2003, Matsuoka *et al.*, 2006), and we generated models for women and men separately.

Our results demonstrated sufficient fit indices for this measurement model. Fit indices for the measurement model in women were: $\chi^2(104, N=661) = 245.9, p < 0.001$, GFI: 0.96, AGFI: 0.94, NNFI: 0.97, CFI: 0.98, RMSEA: 0.045. The ratio of chi square and degree of freedom was statistically appropriate for our analysis (between 2:1 and 5:1). Fit indices for the measurement model in men were: $\chi^2(104, N=331) = 204.7, p < 0.001$, GFI: 0.94, AGFI: 0.91, NNFI: 0.96, CFI: 0.98, RMSEA: 0.054. The ratio of chi square and degree of freedom was statistically appropriate level in men as well. In the light of these results, we calculated an error variance between OCD and depression variables and the alternative subscale was removed from the model. Consequently, we obtained the structural model shown in Figure 1.

The relationships between variables and explained variances can be seen in the structural model shown in Figure 1. Results indicate that fit indices of the model were excellent for both women and men. Fit indices for women are: $\chi^2(103, N=661) = 198.1, p < 0.001$, GFI: 0.97, AGFI: 0.95, NNFI: 0.98, CFI: 0.98, RMSEA: 0.037 and for men: $\chi^2(103, N=331) = 184.4, p < 0.001$, GFI: 0.94, AGFI: 0.91, NNFI: 0.96, CFI: 0.97, RMSEA: 0.049.

For women, cognitive flexibility-control was predicted by attachment anxiety ($\beta = -0.40, p < 0.001$) and the avoidant attachment ($\beta = -0.09, p < 0.05$) and explained variances of these variables were 16% and 1%, respectively. Cognitive flexibility-control was predictive of Depression ($\beta = -0.41, p$

< 0.001), OCD ($\beta = -0.46, p < 0.001$) and social anxiety ($\beta = -0.36, p < 0.001$). Explained variances for these variables were 17%, 21%, and 13%, respectively. Explained variance of the indirect effect of cognitive flexibility-control in the relationship between attachment anxiety and psychopathology symptoms were 23% for depression, 19% for OCD and 17% for social anxiety. Explained variance of the indirect effect of cognitive flexibility-control in the relationship between avoidant attachment and psychopathology symptoms were 3% for depression, 5% for OCD and 9% for social anxiety.

For men, cognitive flexibility-control was predicted by attachment anxiety ($\beta = -0.44, p < 0.001$), but not by avoidant attachment ($\beta = -0.07, p > 0.05$) and explained variance of the attachment anxiety in the model was 19%. Depression ($\beta = -0.39, p < 0.001$), OCD ($\beta = -0.34, p < 0.001$) and social anxiety ($\beta = -0.28, p < 0.001$) were predicted by cognitive flexibility-control. Explained variances for these variables were 15%, 12%, and 8%, respectively. The explained variance of the indirect effect of cognitive flexibility-control in the relationship between attachment anxiety and psychopathology symptoms were 22% for depression, 25% for OCD and 18% for social anxiety.

To evaluate the mediator role of the cognitive flexibility-control variable in the relationship between the attachment patterns and psychopathology symptoms, we followed the methods used by Baron and Kenny (1986). According to these recommendations there are four conditions required to demonstrate a mediating role for a cognitive function. To evaluate these conditions, we conducted a series of regression analysis and Sobel tests.

Our results demonstrate both partial and full mediator roles of the cognitive flexibility-control variable in the relationship between attachment patterns and psychopathology symptoms in both women and men. A summary of the mediator analysis and Sobel tests results are shown in Table 4.

DISCUSSION and CONCLUSION

This study aimed to investigate the mediator role of cognitive flexibility in the relationship between attachment patterns and psychopathological symptoms. Our analysis considered women and men separately because attachment patterns vary between women and men (Schmitt *et al.*, 2003, Matsuoka *et al.*, 2006). In addition, the sample size of women and men are not equal in our dataset. However, when considered individually sufficient sample sizes are present for both genders. We aimed to control for the effect of this imbalanced sample size in our analysis. Fit indices were very strong for both groups. The results that we obtained validated the decision of separate evaluation of data for women and men and we observed differences between the models. The avoidant attachment

variable did not predict cognitive flexibility-control for men, but was predictive in women. Similarly, the avoidant attachment variable did not have a direct effect on OCD symptoms in men, but our data demonstrated a direct effect in women. There were additional differences between women and men revealed by the mediator analyses, as discussed below.

While the relationships between attachment and depression, OCD and social anxiety have been demonstrated in many studies (e.g. Myhr, Sookman & Pinard, 2004, Sabuncuoğlu & Berkem, 2006, Liu *et al.*, 2009, Sümer *et al.*, 2009), in our study there was no significant direct or indirect relationship between avoidant attachment and depression and OCD. In addition, the explained variances of avoidant attachment for women were low, but statistically significant. Differences between women and men may be attributed to statistical variation resulting from the larger number of female participants. Despite the small differences between women and men, there is a relationship between attachment anxiety and psychopathological symptoms, but not between avoidant attachment and psychopathological symptoms. This may be due to the nature of avoidant attachment. As summarized by Sümer and colleagues (2009), the development of avoidant attachment patterns is related to parental behaviors that suppress childhood emotions and the expression of emotion. In addition, current study considered the interactions of the variables in model, and thus the results may distinct from other reports in the literature.

The mediator role of cognitive flexibility-control in the relationship between attachment patterns and psychopathology symptoms has been clearly established in the model test and mediator analyses. Yet, there is a difference between two dimensions of cognitive flexibility. When we evaluated our model for the effect of the cognitive flexibility-alternatives variable, the results fail to demonstrate a significant relationship between cognitive flexibility-alternatives and psychopathology symptoms. The cognitive flexibility-alternatives dimension is designed to assess the ability to perceive alternative explanations and solutions for situations and to generate alternative reactions to these situations. The lack of a statistical relationship between these variables may be due to the nature of the psychopathologies. Perhaps a sense of control is more important in these psychopathologies than generating alternative explanations. Our results regarding the importance of the sense of control are consistent with studies that investigate personal control in depression and OCD (e.g. Steptoe *et al.*, 2007, Moulding & Kyrios, 2007). Alternatively, there may be a conditional cause resulting from the measurement instrument itself. If so, it is possible that we could not accurately assess the alternative cognitive dimension properly using these methods. In all circumstances, further investigations are required to understand this result.

There is a good rationale for inclusion of depression, OCD and social anxiety in the model. The most important reason is the high comorbidity rate of these disorders (Pigott *et al.*, 1994, Andrew *et al.*, 2002, Kessler, 1995, Pini *et al.*, 1997). At the beginning of our study, we aimed to investigate attachment patterns and psychopathology symptoms simultaneously with cognitive flexibility. So that we could examine the psychopathologies and other variables together and we could stay away from the statistical biases.

We applied Baron and Kenny's (1986) recommendations and completed regression analyses and Sobel tests for investigating the mediator role of the cognitive flexibility-control variable in the relationship between attachment patterns and psychopathology symptoms. In general, we conclude that cognitive flexibility-control variables have an important role in the model consistent with our initial hypothesis. According to the results, there is a partial mediator role of the cognitive flexibility in the relationship between attachment patterns and depression and OCD in men. Additionally, a full mediator role for cognitive flexibility-control variable in social anxiety was revealed by the data. The explained variances demonstrate that cognitive flexibility has an important role in these psychopathologies. Previous studies have demonstrated a relationship between the sense of control and depression and OCD (Moulding & Kyrios, 2007, Steptoe *et al.*, 2007) but the relationship between cognitive flexibility and social anxiety is relatively unexplored. The mediator role of cognitive flexibility-control was shown for women, except in cases of OCD. The model differentiation between men and women in the context of OCD may be due to unknown variables that we did not take into account, or the differentiation of OCD symptom clusters between men and women. In order to understand this result, we need more comprehensive research and analysis.

A partial mediator role of cognitive flexibility in the relationship between attachment patterns and depression and social anxiety for women was apparent in the dataset. Nevertheless, the explained variances of these relationships were relatively low in comparison to attachment anxiety. This might be due to our relatively large sample size.

The study had several important limitations: For example, we collected our data via self-reporting measures. Individual interviews for assessing the attachment patterns and protocols to evaluate cognitive flexibility are possible, but are impractical to apply in a large study cohort. Thus, potential biases in our dataset may stem from the group session administrations in classrooms. The age of participants has relatively small variation, potentially reducing the ability to generalize our results. This model could be separately evaluated in children, adolescents, and the elderly. Similarly, a study is also needed to evaluate these variables in a clinical sample to obtain deeper understanding of severe psychopathology.

In conclusion, our results demonstrate that cognitive flexibility has an important role in psychopathologies, consistent with cognitive theory. Hence, psychotherapy interventions that improve cognitive flexibility may be significant for reducing psychopathology symptoms. Furthermore, specific techniques for improving the cognitive flexibility could be recommended to patients based on the results of future studies.

Acknowledgements

"We thank to dear Hamza Akengin, Cem Atbaşoğlu, Elif Barışkın, Yusuf Bayar, Hakan Çetinkaya, Can Gürsoy, Gülden Güvenç, Sedat Işıklı, Selahattin Kaçiranlar, Neslihan Kahraman, Özlem Kahraman, Dilan Kılıç, Yeliz Kındap, Hatice Odacı, Hülya Olmuş, Hakkı Şimşek, Başak Taş, Hasan Gürkan Tekman, Arcan Tığrak, Özlem Tolan, Sait Uluç, Ünsal Yetim, Eda Zeytinoğlu for their valuable contributions to this study."

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