



Cognitive Flexibility and Mental Well-Being: Fear of Negative Evaluation and Academic Perfectionism as Serial Mediators

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Abstract

This study examined the serial multiple mediator roles of the fear of negative evaluation and academic perfectionism on the relation between cognitive flexibility and mental well-being in a sample of Turkish university students. A total of 320 students [162 (50.6%) female and 158 (49.4%) male, $M_{age} = 20.37$; $SD = 2.05$] in two separate public universities were involved in this study. The Warwick-Edinburgh Mental Well-Being Scale, the Cognitive Flexibility Inventory, the Brief Fear of Negative Evaluation Scale, and the Academic Perfectionism Scale were used to obtain the data. We investigated the serial multiple mediations roles by using bootstrapping based PROCESS macro (Model 6). The results revealed that significant relationships between the variables. Moreover, the findings indicated that fear of negative evaluation and academic perfectionism subsequently and partially mediated the relation between cognitive flexibility and mental well-being.

Keywords: Mental well-being, cognitive flexibility, fear of negative evaluation, academic perfectionism.

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Bilişsel Esneklik ve Mental İyi Oluş arasındaki ilişkide Olumsuz Değerlendirilme Korkusu ve Akademik Mükemmeliyetçiliğin Sırasal Çoklu Aracı Rolü

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Öz

Bu çalışmada Türk üniversite öğrencilerinin bilişsel esneklik düzeyleri ile mental iyi oluşları arasında olumsuz değerlendirilme korkusu ve akademik mükemmeliyetçiliğin sırasal çoklu aracılığı incelenmiştir. İki farklı devlet üniversitesinde öğrenim gören toplamda 320 [162 (%50.6) kadın ve 158 (%49.4) erkek, $Yaş_{ort} = 20.37$, $ss = 2.05$] öğrenci çalışmaya dahil olmuştur. Warwick-Edinburgh Mental İyi Oluş Ölçeği, Bilişsel Esneklik Envanteri, Olumsuz Değerlendirilme Korkusu Ölçeği Kısa Formu ve Akademik Mükemmeliyetçilik Ölçeği verilerin elde edilmesinde kullanılmıştır. Çalışmada incelenen sırasal çoklu aracılık rolü PROCESS makrosu (Model 6) kullanılarak incelenmiştir. Araştırmanın sonuçlara göre, çalışmanın değişkenleri olan bilişsel esneklik, ruhsal iyi oluş, olumsuz değerlendirilme korkusu ve akademik mükemmeliyetçiliğin birbirleriyle anlamlı ilişkiye sahip oldukları görülmüştür. Ayrıca bilişsel esneklik ile mental iyi oluş arasında değerlendirilme korkusu ve akademik mükemmeliyetçiliğin sıralı kısmi aracı rolleri istatistiksel bakımdan önemli bulunmuştur.

Anahtar kelimeler: Mental iyi oluş, bilişsel esneklik, olumsuz değerlendirilme korkusu, akademik mükemmeliyetçilik.

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1. Introduction

Mental well-being is a concept which stands for both hedonic (i.e., happiness, subjective well-being) and eudemonic (i.e., positive functioning and relations) well-being (Tennant et al., 2007). Mental well-being is an important concept for students since it has a direct effect on their psychological development, social relationships, academic life and physical health (Clarke, Kuosmanen, & Barry, 2015). Cleary, Walter, & Jackson (2011) suggested that university students are at risk of generating mental health problems since they experience major transitions in their lives, such as the transition from high school to university, staying away from parents, financial hardship. These stressful experiences can lead to various mental health problems which may result in poor well-being and poor academic performance (Grøtan, Sund, & Bjerkeset, 2019). Therefore, it becomes important to promote the general mental well-being of university students. One of the factors contributing to the promotion of well-being is closely related to cognitive flexibility which has been accepted as one of the indicators of mental well-being.

Cognitive flexibility can be described as the study of underlying mechanisms of flexible behavior at the mental level. Cognitive flexibility is considered to be an important skill since it lets us change strategies when they are not working anymore. Individuals with cognitive flexibility generally tend to use new information to create new alternatives in a given situation and therefore, they easily adapt to changes in the environment. Martin and Anderson (1998, p. 1) defined cognitive flexibility as the

“(a) awareness that in any given situation there are options and alternatives available, (b) willingness to be flexible and adapt to the situation, and (c) self-efficacy or belief that one has the ability to be flexible.”

In their study, Mellor, Cummins, Karlinski, & Storer (2003) showed that higher levels of cognitive flexibility are related with positive psychological outcomes such as self-esteem, optimism, and positive affect while lower levels of cognitive flexibility are associated with psychological distress such as depression and anxiety (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Although there were no studies directly examining the relationship between cognitive flexibility and fear of negative evaluation, given the positive nature of cognitive flexibility, we can assume that cognitive flexibility would reduce fear of negative evaluation.

Fear of negative evaluation can be considered as a set of maladaptive beliefs stemming from the fear of being judged negatively by others. A previous study highlighted the fear of negative evaluation as a crucial risk factor for depression (Wang, Hsu, Chiu, & Liang, 2012) and social anxiety (Carleton, McCreary, Norton, & Asmundson, 2006). Also, individuals high in fear of negative evaluation are likely to exhibit higher levels of social appearance anxiety and stress (Nonterah et al., 2015; Levinson et al., 2013), higher negative and lower positive affect, lower helping behavior (Karakashian, Walter, Christopher, & Lucas, 2006) and lower quality of life (Dryman, Gardner, Weeks, & Heimberg, 2016). These findings indicate that fear of negative evaluation has negative relations with adaptive variables and positive relations with maladaptive variables. Additionally, fear of being judged negatively by others and worrying about making mistakes can be linked to perfectionist tendencies (Frost, Marten, Lahart, & Rosenblate, 1990). Fear of negative social evaluation has also been found to increase perfectionism in individuals (Flett, Russo, & Hewitt, 1994). Gong, Fletcher, and Paulson (2017) suggested that evaluative concerns of individuals are very important in understanding how perfectionism develops in individuals.

We would expect that fear of negative evaluation would lead to perfectionism in individuals. Perfectionism which is one of the mostly studied personality phenomenon in academic settings, has been accepted as a multidimensional construct with both maladaptive and adaptive aspects (Hewitt & Flett, 1991). Previous studies revealed that perfectionism has more negative outcomes rather than positive ones (Burns, 1983; Sirois & Molnar, 2016). For example, Rice and Dellwo

(2002) reported that maladaptive perfectionists experience lower levels of emotional well-being and school-satisfaction.

In this study, we will focus on academic perfectionism which can be briefly defined as setting and achieving high levels of academic performance or standards. Students who are maladaptive perfectionists have lower levels of academic achievement (Ram, 2005). Furthermore, students who demonstrate high levels of academic perfectionism are unable to feel satisfaction as a result even when successful (Patch, 1984). Therefore, it can be seen as a negative aspect for the well-being of students.

1.1. The Current Study

The literature review indicated that there were no studies directly examining the relations between fear of negative evaluation, academic perfectionism, cognitive flexibility and mental well-being. Hence, the findings of the study were evaluated based on the theoretical framework of the variables. For instance, cognitive flexibility is seen as an ability which helps individuals to deal with and adopt to the changes in the environment (Gabrys, Anisman, & Matheson, 2018). Therefore, cognitive flexibility will allow individuals to cope with the problems of changing environment, regulate their emotions and experience more positive emotions (Gabrys et al., 2018; Wilson, Nusbaum, Whitney, & Hinson, 2018). For this reason, we can expect cognitive flexibility will lead to increased feelings of well-being. Additionally, cognitive flexibility is expected to associate with lower levels of fear of negative evaluation which is described by Leary (1983) as the low tolerance of an individual to the negative or hostile evaluations by others. Furthermore, fear of negative evaluation is expected to increase academic perfectionism and decrease mental well-being since it has a direct impact on an individual's behaviors during the learning and teaching process. For instance, fear of negative evaluation can predict the fear of failure (McKinney, 2003) which in turn increases academic perfectionism among students. Also, students with fear of negative evaluation tend to avoid social situations in order not to experience rejection (Rapee & Heimberg, 1997) which, in turn, would lead to lower levels of well-being. The findings of our study will be very helpful to develop intervention programs which aim to improve students' well-being since the relations between fear of negative evaluation, academic perfectionism, cognitive flexibility and mental well-being have not been directly examined before. Finally, we can conclude that fear of negative evaluation and academic perfectionism would mediate the relationship between cognitive flexibility and mental well-being. Thus, based on these findings, the following hypotheses were proposed.

Hypothesis. Fear of negative evaluation and academic perfectionism would mediate sequentially the relationship between cognitive flexibility and mental well-being.

2. Method

2.1. Participants

A total of 320 students in two separate public universities in Turkey were involved in this study. Of all the participants, 162 (%50.6) were female and 158 (%49.4) were male. Participants ranged in age from 18 years to 30 years with an average age of 20.37 years ($SD = 2.05$). Of those participants, 78 (%24) were first grade, 91 (%28) were second grade, 77 (%24) were third grade and 74 (%23) were fourth-grade students. The grade point average of the participants was 2.77 ($SD = .57$) and the average daily time spent on studying was reported as 74.68 min. ($SD = 61.17$).

2.2. Measures

2.2.1. Warwick-Edinburgh Mental Well-Being Scale: Warwick-Edinburgh Mental Well-Being Scale was developed by Tennant et al. (2007) in order to assess the mental well-being. It was adapted into Turkish by Keldal (2015). Fourteen items were scored on 5-point Likert scale, with scores ranging from 14-70. Higher scores on WEMWBS indicate higher levels of well-being. In

Turkish version of WEMWBS, unidimensional structure of the scale was confirmed by the CFA; ($\chi^2/df = 3.71$, NFI = .94, RFI = .93, IFI = .96, CFI = .96, NNFI = .95, and RMR = .054). The internal reliability for the overall measure was reported as $\alpha = .92$. In this study, the internal reliability of the scale was $\alpha = .88$.

2.2.2. Cognitive Flexibility Inventory: The Cognitive Flexibility Scale (Dennis and Wal, 2010) is a 20-item self-report measure that assesses cognitive flexibility. The CFS was adapted into Turkish by Sapmaz and Doğan (2013). The inventory uses a 7-point Likert-type scale with scores ranging from 20-140. Higher scores on CFI indicate higher levels of cognitive flexibility. In Turkish version of CFI, unidimensional structure of the inventory was confirmed by the CFA; ($\chi^2/df = 2.44$, NFI = .96, RFI = .95, IFI = .98, CFI = .98, RMSEA = .054, and RMR = .052). The internal consistency was reported satisfactory for the inventory ($\alpha = .90$). In this study, the internal reliability was also found satisfactory ($\alpha = .88$).

2.2.3. Brief Fear of Negative Evaluation Scale (BFNE): The BFNE (Leary, 1983) is a brief 12-item scale designed to assess fear of negative evaluation. It was adapted into Turkish by Çetin, Doğan and Sapmaz (2010). The BFNE is a 5-point Likert scale with scores ranging from 12-60. Higher scores on BFNE indicate higher levels of fear of negative evaluation. The one-factor structure was confirmed for the BFNE in Turkish version of the instrument ($\chi^2 = 89.91$, NFI = .96, RFI = .95, IFI = .98, CFI = .98, GFI = .95, and RMSEA = .062). The internal consistency was reported satisfactory for the instrument ($\alpha = .84$). In this study, the internal reliability was found $\alpha = .90$.

2.2.4. Academic Perfectionism Scale: The Academic Perfectionism Scale (Odacı, Kalkan, & Çikrikci, 2017) is a 13-item self-report instrument designed to assess the academic perfectionism among students. The APS is a 5-point Likert scale, with scores ranging from 13-65. Higher scores on the APS indicate higher levels of academic perfectionism. Confirmatory factor analysis revealed acceptable fit indices ($\chi^2/df = 2.36$, GFI = .94, AGFI = .91, CFI = .91, RMSEA = .06, and SRMR = .05). The internal consistency of the scale was ($\alpha = .82$). In this study, the internal consistency of the scale was found to be $\alpha = .83$.

2.3. Data Analysis

In order to investigate the serial mediator roles of fear of negative evaluation and academic perfectionism on the relationship between cognitive flexibility and mental well-being, we used PROCESS v3.4 (Model 6) developed by Hayes (2018). PROCESS macro was used to test serial multiple mediator model (SMM). In SMM, there is an independent variable influencing dependent variable via a series of mediations in sequence, leading to the creation of paths between mediators. In the end of the analysis, bootstrapping coefficients are produced. For the bootstrapping, 10000 bootstrap samples and 95% confidence intervals were generated. The confidence interval should not include the null value in order to conclude that there is a statistically significant difference between the groups (Preacher & Hayes, 2008). Prior to the mediation analysis, we investigated the mean, standard deviation and skewness – kurtosis. The relationship between the variables of the study was examined by using Pearson's correlation coefficient.

3. Results

3.1. Preliminary Analyses

The descriptive statistics and correlation coefficients for the variables are given in Table 1.

Table 1. Descriptive statistics

Variable	1	2	3	M	SD	Skewness	Kurtosis
1. Mental well-being	-			52.20	8.94	-.607	1.053
2. Cognitive flexibility	.44**	-		106.49	16.02	-.199	.839
3. Fear of negative evaluation	-.41**	-.28**	-	28.98	9.27	.192	-.531
4. Academic perfectionism	-.38**	-.32**	.54**	35.17	8.74	.079	.101

Note. ** $p < .001$

When the values in Table 1 are examined, it is seen that mental well-being is positively related to cognitive flexibility ($r = .44, p < .001$). However, mental well-being has negative relationship with fear of negative evaluation ($r = -.41, p < .001$) and academic perfectionism ($r = -.38, p < .001$). Likewise, cognitive flexibility is negatively related to fear of negative evaluation ($r = -.28, p < .001$) and academic perfectionism ($r = -.32, p < .001$). Finally, fear of negative evaluation is positively related to academic perfectionism ($r = .54, p < .001$).

3.2. Serial Multiple Mediation Analysis

We investigated the serial multiple mediation of fear of negative evaluation and academic perfectionism on the relationship between cognitive flexibility and mental well-being by using serial multiple mediator model. In this model, we examined the direct and indirect effects of cognitive flexibility (independent variable) on mental well-being (dependent variable). Additionally, the effect of fear of negative evaluation as the first mediating variable (M_1) on the second mediating variable of academic perfectionism (M_2) can also be examined in their effects on mental well-being. Therefore, we are able to test three different mediation models in a single analysis as “ $X \rightarrow M_1 \rightarrow Y$ ”, “ $X \rightarrow M_2 \rightarrow Y$ ” and “ $X \rightarrow M_1 \rightarrow M_2 \rightarrow Y$ ”. The findings of serial multiple mediation model are presented in Figure 1.

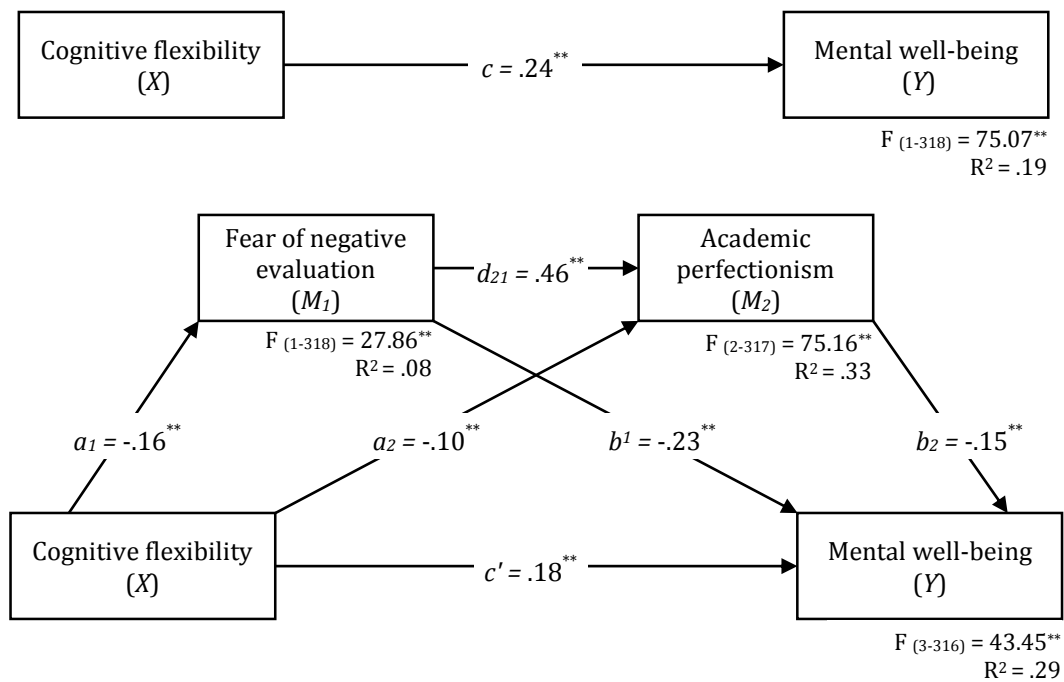


Figure 1. Unstandardized coefficients of the serial multiple mediation model, ** $p < .001$

As it can be seen in Figure 1, cognitive flexibility positively predicted mental well-being (c coeff = .24, 95%CI = .19, .30). When mediating variables were simultaneously entered the equation, the significance of the relationship between cognitive flexibility and mental well-being decreased, but the significance level did not change (c' coeff = .18, 95%CI = .13, .24). These results support the partially mediational model. Additionally, cognitive flexibility negatively predicted fear of negative evaluation (a_1 coeff = -.16, 95%CI = -.226, -.103) and academic perfectionism (a_2 coeff = -

.10, 95%CI = -.15, -.05). Also, mental well-being was negatively predicted by fear of negative evaluation (b_1 coeff = -.23, 95%CI = -.34, -.12) and academic perfectionism (b_2 coeff = -.15, 95%CI = -.26, -.03).

Statistical significance of the indirect effects within the tested model in this study and bootstrapping results with upper and lower limits of %95 confidence intervals were given in Table 2.

Table 2. The Findings of bootstrapping coefficients and confidence intervals

Effect	Bootstrap Coefficient ^a	SE	<i>t</i>	<i>p</i>	Lower Limit ^b	Upper Limit ^b
Total effect	.243	.028	8.66	< .001	.188	.299
Direct effect	.180	.028	6.40	< .001	.125	.235
Total indirect effect	.063	.015			.036	.096
Indirect effect ($X \rightarrow M_1 \rightarrow Y$)	.037	.012			.018	.063
Indirect effect ($X \rightarrow M_2 \rightarrow Y$)	.015	.008			.002	.032
Indirect effect ($X \rightarrow M_1 \rightarrow M_2 \rightarrow Y$)	.011	.006			.001	.024

^a Unstandardized; Based on 10,000 bootstrap samples, ^b %95 confidence intervals

As seen in Table 2, there were three different indirect effects in the model. First indirect effect revealed that cognitive flexibility significantly affects mental well-being through fear of negative evaluation (bootstrap coeff= .037, 95%CI = .018, .063). Second, the indirect effect of cognitive flexibility through academic perfectionism on mental well-being was statistically significant (bootstrap coeff = .015, 95%CI = .002, .032). Finally, serial multiple mediation of fear of negative evaluation and academic perfectionism on the relationship between cognitive flexibility and mental well-being was found statistically significant (bootstrap coeff = .011, 95%CI = .001, .024).

4. Discussion and Conclusion

In this study, we investigated the associations between mental well-being, cognitive flexibility, fear of negative evaluation and academic perfectionism among university students. Serial multiple mediations of fear of negative evaluation and academic perfectionism on the relationship between cognitive flexibility and mental well-being was examined. The hypotheses of this study will be discussed in more details below.

Our main hypothesis included that cognitive flexibility would positively predict mental well-being. Therefore, we can assume that higher levels of cognitive flexibility will lead to higher levels of well-being among students. Previous studies showed that individuals with higher levels of cognitive flexibility have higher levels of self-esteem, optimism, and positive affect (Mellor et al., 2003) while individuals with lower levels of cognitive flexibility demonstrate higher levels of depression and anxiety (Hayes et al., 2006). Since cognitive flexibility allows individuals to cope with the problems of changing the environment, regulate their emotions and experience more positive emotions (Gabrys et al., 2018; Wilson, Nusbaum, Whitney, & Hinson, 2018), we expect cognitive flexibility to increase well-being. In a study with 395 college students, Koesten et al. (2009) found that cognitive flexibility was significantly associated with young adults' well-being. In this sense, this finding of the study is consistent with those in the relevant literature.

Additionally, our main hypothesis also included that cognitive flexibility would negatively predict fear of negative evaluation. Therefore, we expect higher levels of cognitive flexibility will lead to lower levels of fear of negative evaluation. This finding of our study is also in line with the ones in the related literature. Previous studies indicated that cognitive flexibility is associated with lower levels of fear of negative evaluation which is seen as the tolerance of an individual to the negative or hostile evaluations by others (Leary, 1983; Weeks, Heimberg, & Rodebaugh, 2008). Findings from these studies support the findings of the current research.

Our findings also confirmed and showed that cognitive flexibility negatively predicts academic perfectionism. Since individuals with high levels of cognitive flexibility tend to be flexible and adapt to the situation easily and use new information to create new alternatives when the old ones are not working anymore, they will be able to set and achieve more realistic and healthy academic performance or standards. Besides, individuals with low cognitive flexibility have difficulty in adapting to new and unexpected situations in the environment (Canas, Queseda, Antoli, & Fajardo, 2003), which can lead to perfectionist tendencies.

Another finding of this study was that fear of negative evaluation positively predicts academic perfectionism. Therefore, fear of being judged negatively by others and worrying about making mistakes can be linked to perfectionist tendencies. In a study by McKinney (2003) it was found that fear of negative evaluation predicts the fear of failure, which, in turn, increases academic perfectionism among students. Since students with fear of negative evaluation tend to avoid negative criticism from others, they may try to achieve unrealistic academic performance or standards.

Finally, the main hypothesis of the study confirmed and showed that fear of negative evaluation and academic perfectionism mediate the relationship between cognitive flexibility and mental well-being. We expect cognitive flexibility will lead to increased feelings of well-being since it allows individuals to cope with the problems of changing the environment, regulate their emotions and experience more positive emotions (Gabrys et al., 2018; Wilson, Nusbaum, Whitney, Hinson, & 2018). Additionally, cognitive flexibility is associated with lower levels of fear of negative evaluation (Leary, 1983). Also, we expect fear of negative evaluation will increase academic perfectionism and decrease mental well-being since it has a direct impact on an individual's behaviours during the learning and teaching process. Rapee and Heimberg (1997) stated that students with fear of negative evaluation tend to avoid social situations in order not to experience rejection, which, in turn, would lead to lower levels of well-being. The findings of our study support previous research.

This study had some limitations. Firstly, all data were based entirely on self-report measures, which can be influenced by social desirability response bias. The findings on the variables also based on these self-report measures used in this study. Therefore, future studies may use different measuring tools to avoid this limitation. Secondly, the sample includes only university students from two different universities in Turkey, which further limits the generalizability of the study. Future studies may use data collected from different age groups in other cities and regions. Third, although strong associations between variables were established by using bootstrapping technique, this study used a cross-sectional design which limits the ability to make predictions. Future research may consider longitudinal designs to establish more conclusive evidence of causal relationships.

Notwithstanding these limitations, the findings of our study made a contribution to positive psychology literature. The findings of the study demonstrated that higher levels of cognitive flexibility is associated with higher levels of mental well-being. Additionally, the serial multiple mediation of fear of negative evaluation and academic perfectionism on the relationship between cognitive flexibility and mental well-being was found statistically significant. Finally, the findings of our study suggest that higher levels of cognitive flexibility lead to lower levels of fear of negative evaluation and academic perfectionism, which, in turn, increase mental well-being.

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Etik Beyannameesi

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