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The Mediating Role of Cognitive Flexibility in the Relationship Between Social Media Addiction and Mental Well-Being in Young Adults

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Abstract

The current research aimed to investigate the mediating role of cognitive flexibility in the relationship between young adults' social media usage habits and their mental health. The data were obtained from 338 university students, 246 of whom were female and 92 were male. The participants' mean age was 22. The study data were collected face-to-face with the paper-pencil method in the 2021-2022 fall semester. The obtained data were analyzed with IBM SPSS and IBM AMOS V24 software. The compatibility of the data with the normal distribution was examined with the assumption of multiple normality. To test whether cognitive flexibility has a mediating role in the correlation between social media addiction and mental well-being, an analysis was conducted based on the bootstrap method. As a result of the bootstrap analysis, the indirect impact of social media addiction on mental well-being through the mediation of cognitive flexibility was revealed to be statistically significant (β=-0.142; 95% CI [-0.256; -0.031]). The fit indices of the model were determined as CMNI/df =2.12, GFI=0.878, AGFI=0.853, IFI=0.873, TLI=0.856, CFI=0.871, and RMSE=0.058. In this respect, it can be said that increasing the cognitive flexibility of individuals will play an important role in both preventing social media addiction and increasing mental well-being. In line with the study results, it can be said that increasing the mental well-being of young adults and providing cognitive flexibility skills in their struggle with social media addiction will contribute positively to the process. Furthermore, providing individuals with cognitive flexibility skills at the early stages of development with preventive interventions may be effective in maintaining mental well-being that decreases with problems such as social media addiction.

Keywords: Young Adults, Social Media Addiction, Cognitive Flexibility, Mental Well-Being, Cognitive Behavioral Therapy

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INTRODUCTION

Social exclusion is perceived as an intolerable threat and pain for people, and our nervous system considers this situation as a response to physical pain. Researchers consider this similarity as an evolutionary development enabling humans to survive and ensuring the continuation of their species by being protected from threats (MacDonald and Leary, 2005). Social ties also have very important impacts on individuals' mental health. For example, Brier and Strauss (1984) followed up 20 patients hospitalized for the treatment of psychotic disorder for one and a half years and found that the social relationships of patients contributed positively to the recovery in this process. In their review study, Umberson and Karas Montez (2010) revealed that effective social relationships positively affected both physical and mental health.

Social relationships and the social support obtained from these relations have positive effects not only on coping with diseases and problems but also on an individual's general well-being. Furthermore, social relationships maintain this effect in every period of human development (Albay-Alyüz, 2020). University years are a period when the individual moves away from the family and acquires new social ties with new friendships in addition to existing social relationships. During university years, social skills are predictive of reducing loneliness, increasing adaptation to university life and general life satisfaction (Riggio et al., 1993). Especially the first years of university life are times when emotions such as loneliness, stress, and anxiety are experienced more intensely. While this process becomes more challenging and longer for some students, other students get through this process more successfully. At this point, friendship relations are one of the most important sources of support for young people (Yılmaz, 2020). While these relations can be face-to-face, they are also increasingly experienced through social media among young people.

Social media usage can be considered a normal social behavior. Studies show that social media usage affects mental health (Coyne et al., 2019; Rasmussen et al., 2020; Zhao, 2021). Sharma et al. (2020) investigated the effect of social media on mental health with a meta-analysis study and revealed that social media usage could have positive and negative effects on individuals' mental health. Especially the high frequency and duration of usage bring about some negative consequences. The findings demonstrate that excessive usage of social media can cause behavioral addiction (Marino et al., 2017; Ryan et al., 2014). In their meta-analysis study, Al-Samarraie et al. (2021) revealed that social media addiction might be associated with a lack of self-confidence, depression, anxiety, and physical health problems. Likewise, it was stated that addictive social media usage was associated with negative outcomes such as decreased productivity, unhealthy social relationships, and decreased life satisfaction (Sun and Zhang, 2021).

There are many variables affecting attitudes toward social media usage. The level of an individual's mental well-being is one of these variables (Rasmussen et al., 2020). Mental well-being includes self-acceptance, positive relationships with others, autonomy, environmental control, life purpose, and personal development. Studies reveal that individuals with a high level of mental well-being have a higher quality of life (Keyes, 2002). In a meta-analysis study covering 31 countries, Cheng and Yee-lam (2014) indicated that internet addiction was inversely related to both life satisfaction and quality of life. The research by Zhao (2021) revealed that social media addiction negatively affected mental well-being, and when compared to individuals addicted to social media, not addicted individuals had higher levels of mental well-being.

Kashdan and Rottenberg (2010) reported cognitive flexibility as the basis of mental well-being. Individuals with high cognitive flexibility can adapt to different environmental demands by restructuring their psychological resources, changing their perspectives, and balancing competing desires, needs, and life areas. It is also stated that cognitive flexibility is an essential determinant of being adequately equipped to cope with the stress leading to mental well-being (Lazarus, 1993; Koesten et al., 2009), and it is also a learnable trait in a similar way (Canas et al., 2003). The predictive role of cognitive flexibility has been tested and confirmed in a number of studies carried out abroad and in Turkey. Considering the study results, cognitive flexibility may be a potential trait-like

variable in explaining the subjective well-being of university students (Muyan-Yılık and Demir, 2020). Within the framework of these explanations, cognitive flexibility was considered to be an effective variable in the correlation between social media addiction and mental well-being, and answers were sought to the following research questions:

1. Is there a significant correlation between university students' social media addiction and mental well-being levels?

2. Does cognitive flexibility play a mediating role in the correlation between social media addiction and mental well-being?

METHOD

In this study, investigating the mediating role of cognitive flexibility in the correlation between social media addiction and mental well-being in young adults, the descriptive correlation method was employed. Descriptive methods are used in studies carried out to define and classify a certain behavior and determine its relationship with other behaviors (Büyüköztürk et al., 2012).

Participants

Within the scope of the research, data were collected from a total of 338 university students, 246 of whom were female and 92 were male. Table 1 contains the participants' descriptive statistics.

It was found that 72.8% of the participants were female, 27.2% were male, 38.2% were in the 4th grade, mothers of 56.3% were primary school graduates, and fathers of 52.5% were primary school graduates. The participants' mean age was determined to be 22, with a minimum age of 18 and a maximum age of 41.

Data Collection Tools

The Bergen Social Media Addiction Scale (Demirci, 2019), the Warwick-Edinburgh Mental Well-Being Scale (Demirtaş and Baytemir, 2019), and the Cognitive Flexibility Scale (Çelikkaleli, 2014) were used within the scope of the study.

Cronbach's alpha coefficient of the Bergen Social Media Addiction scale, consisting of 6 items in total, was obtained as 0.77. Cronbach's alpha coefficient of the 7-item Warwick-Edinburgh Mental Well-Being Scale was 0.766. Cronbach's alpha coefficient of the Cognitive Flexibility scale, comprising 12 items in total, was obtained as 0.798. The acquired values show that the reliability levels of the scales are good. (Table 2).

Data Collection and Analysis

The study data were collected face-to-face with the paper-pencil method in the 2021-2022 fall semester. The obtained data were analyzed with IBM SPSS and IBM AMOS V24 software. The compatibility of the data with the normal distribution was examined with the assumption of multiple normality. To test whether cognitive flexibility has a mediating role in the correlation between social media addiction and mental well-being, a mediated structural model was created, and analysis was conducted based on the bootstrap method. 5000 resamples were preferred in the bootstrap analysis. The significance level was accepted as $p<0.050$.

RESULTS

Prior to the analysis of the obtained data, confirmatory factor analyses (CFA) of the measurement tools used in the study were performed. Standardized path coefficients and fit index values for the measurement tools are shown in figures and tables.

Considering the confirmatory factor analysis results of the Bergen Social Media Addiction Scale consisting of 6 items in total, all of the path coefficients of the items were revealed to be statistically significant ($p<0.001$). Standardized path coefficients range from 0.413 to 0.779. Considering the fit indices of the model, they were determined as CMNI/df = 2.89, GFI = 0.981, AGFI = 0.943, IFI = 0.972, TLI = 0.939, CFI = 0.972, and RMSE = 0.075. The values of all fit criteria are within acceptable limits (Figure 1).

Considering the confirmatory factor analysis results of the Mental Well-Being Scale consisting of 7 items in total, all of the path coefficients of the items were identified to be statistically significant ($p<0.001$). Standardized path coefficients range from 0.272 to 0.757. The fit indices of the Warwick-Edinburgh Mental Well-Being Scale were determined as CMNI/df =2.613, GFI=0.971, AGFI=0.939, IFI=0.963, TLI=0.939, CFI=0.962, and RMSE=0.069. The values of all fit criteria are within acceptable limits (Figure 2).

Considering the confirmatory factor analysis results of the 12-item Cognitive Flexibility Scale, all of the path coefficients of the items were found to be statistically significant ($p<0.050$). Standardized path coefficients range from 0.118 to 0.753. The fit indices of the Cognitive Flexibility Scale were determined as CMNI/df =2.775, GFI=0.93, AGFI=0.893, IFI=0.908, TLI=0.88, CFI=0.907, and RMSE=0.072. The values of all fit criteria, except TLI and AGFI, are within acceptable limits (Figure 3).

Before starting to work on path analysis, all problems with the data (outliers, kurtosis and skewness values, missing data, etc.) should be eliminated. To use the maximum likelihood methods, the data should be compatible with the normal distribution. In the multivariate normality test carried out, it was revealed that the critical value was above 20. When analyzed according to Mahalanobis differences, it was determined that a total of 19 participants must be excluded from the analysis, and these values were extreme values. As a result of the analysis, the critical value was obtained as 19.607 in the multivariate normality test. While this value being below 10 is an excellent result, studies showed that a value up to 20 is usually not a problem (Gürbüz, 2019).

According to the analysis results, it was revealed that social media addiction predicted mental well-being ($\beta=-0.293$; $p<0.005$). The coefficient of determination (R^2) of mental well-being was 8.6%. In line with the mediated structural model analysis results, it was determined that social media addiction predicted cognitive flexibility ($\beta=-0.199$; $p<0.005$). The coefficient of determination (R^2) of cognitive flexibility was 4%. It was identified that the increase in social media addiction reduced cognitive flexibility (Table 3).

The impact of cognitive flexibility, the mediator variable, on well-being, the dependent variable, was statistically significant ($\beta=0.716$; $p<0.005$). However, it was observed that the path coefficient between social media addiction and well-being was still significant with the inclusion of cognitive flexibility, the mediator variable, in the model ($\beta=-0.136$; $p<0.005$). Social media addiction explained 56.9% of the change in mental well-being along with cognitive flexibility.

To test whether cognitive flexibility has a mediating role in the correlation between social media addiction and mental well-being, an analysis was conducted based on the bootstrap method. 5000 resamples were preferred in the bootstrap analysis. The 95% confidence interval (CI) acquired as a result of the analysis performed with the bootstrap technique should not cover the zero (0) value. As a result of the bootstrap analysis, the indirect impact of social media addiction on mental well-being through cognitive flexibility was identified to be statistically significant ($\beta=-0.142$; 95% CI [-0.256; -0.031]). The fit indices of the model were determined as CMNI/df=2.12, GFI=0.878, AGFI=0.853, IFI=0.873, TLI=0.856, CFI=0.871, and RMSE=0.058 (Figure 4).

DISCUSSION

The analysis results showed that social media addiction predicted mental well-being. Some studies in the literature support the above-mentioned findings. As the scores of young adults on the Psychological Well-Being Scale increase, their social media addiction scores decrease. From this point of view, it was concluded that the psychological well-being levels of young adults affected social media addiction (Özdemir, 2021). Studies demonstrate a negative correlation between problematic internet use and psychological well-being and life satisfaction in young adults. In their research carried out with university students, Durak-Batıgün and Kılıç (2011) determined that as the life satisfaction of individuals decreased, the level of internet addiction increased. O'reilly et al. (2018) revealed that adolescents perceived social media as a threat to mental well-being, according to the results of their qualitative study on how adolescents perceived the effects of social media use on mental health and well-being.

At the same time, the researchers found that adolescents' social media usage caused mood and anxiety disorders, it was regarded as a platform for cyberbullying, and social media usage was perceived as a type of addiction in itself. In their study investigating the mediating-moderating role of age in the correlation between social media usage and mental well-being, Hardy and Castonguay (2018) revealed a positive relationship between the number of social network usage and the feeling of having a nervous breakdown. The study by Zhao (2021) found that social media addiction negatively affected mental well-being and individuals not addicted to social media had higher levels of mental well-being than addicted ones.

In accordance with the mediated structural model analysis results, it was determined that social media addiction predicted cognitive flexibility. It was concluded that the increase in social media addiction reduced cognitive flexibility. The research findings are consistent with studies in the literature. In their study, Peker and Çukadar (2016) found that cognitive flexibility negatively predicted attitudes toward social media usage. With cognitive flexibility, individuals can manage their real-life relationships by believing that the results of their behaviors will be positive. In this respect, individuals with high cognitive flexibility can regard themselves as adequate to establish and maintain friendship relations and easily convey their feelings and thoughts to other people. As a result of this situation, individuals can meet their social competence expectations in a healthy way. The said finding shows similarities with the studies by Bilgin (2009), Martin and Rubin (1995), and Martin and Anderson (1998), demonstrating a relationship between cognitive flexibility and social competence. Social competence, which directs the individual’s cognitive structures, can enable the individual to have a flexible cognitive structure and decrease the attitudes leading to social media usage. In their study, Şenyiğit and Kıran (2019) found that as students' cognitive flexibility levels increased, their internet addiction levels decreased. Likewise, in their study on university students, Ateş and Sağar (2021) revealed that the cognitive flexibility skill predicted internet addiction, in other words, the internet addiction level decreased as the cognitive flexibility level increased.

To test whether cognitive flexibility has a mediating role in the correlation between social media addiction and mental well-being, an analysis was conducted based on the bootstrap method. 5000 resamples were preferred in the bootstrap analysis. The 95% confidence interval (CI) acquired from the analysis carried out with the bootstrap technique should not cover the zero (0) value. As a result of the bootstrap analysis, the impact of cognitive flexibility, the mediator variable, on well-being, the dependent variable, was found to be statistically significant. However, it was observed that the path coefficient between social media addiction and well-being was still significant with the inclusion of cognitive flexibility, the mediator variable, in the model. Social media addiction explained 56.9% of the change in mental well-being along with cognitive flexibility.

The current research shows that cognitive flexibility has a partial mediating role in the correlation between social media addiction and mental well-being. Since there was no study found in the literature that discussed these three variables together, a literature comparison could not be made. In conclusion, this study researched the mediating role of cognitive flexibility in the correlation

between social media addiction and mental well-being. In this respect, it was observed that social media addiction and mental well-being were related. Furthermore, it was determined that cognitive flexibility played a partial mediating role in the correlation between social media addiction and mental well-being.

From this point of view, it can be stated that cognitive flexibility should also be evaluated in the correlation between social media addiction and mental well-being. In this context, it can be said that increasing the cognitive flexibility of individuals will have an important role in both preventing social media addiction and increasing mental well-being because cognitive behavioral therapies argue that the individual's mental problems originate from maladaptive and negative thoughts and beliefs of the individual. To change the unhealthy emotions and behaviors of individuals, it is necessary to change the individual's thinking system (Corey, 2008).

In conclusion, the study revealed that cognitive flexibility played a mediating role in the correlation between social media addiction and mental well-being. From this point of view, it is recommended to carry out studies on the cognitive flexibility of individuals based on the Cognitive Behavioral Therapy model in the psychoeducational programs to be prepared in the struggle against social media addiction. Moreover, psychoeducational programs to be prepared to increase the mental well-being of individuals are also recommended to focus on the cognitive flexibility of individuals based on the Cognitive Behavioral Therapy model.

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Data Availability Statement

The raw data supporting the conclusions of this article will be made available by the authors upon request.

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Table 1. Descriptive statistics of the participants

	Frequency (n)	Percentage (%)
Gender		
Female	246	72.8
Male	92	27.2
Grade level		
1st Grade	17	5.1
2nd Grade	110	32.8
3rd Grade	80	23.9
4th Grade	128	38.2
Mother's education		
No school education	72	21.2
Primary school	191	56.3
High school	48	14.2
University and above	28	8.3

Father's education		
No school education	18	5.3
Primary school	178	52.5
High school	83	24.5
University and above	60	17.7
Age*	22.0 ± 3.0	21.0 (18.0 – 41.0)

*Mean ± standard deviation, median (minimum – maximum)

Table 2. Reliability results of the scales

Scale	Cronbach's alpha
Bergen Social Media Addiction Scale	0.770
Warwick-Edinburgh Mental Well-Being Scale	0.766
Cognitive Flexibility Scale	0.798

Table 3. Structural model analysis results (n=339)

Prediction Variables	Result Variables			
	Cognitive Flexibility		Mental Well-Being	
	β (95% CI)	SE	β (95% CI)	SE
Social media addiction (total effect)	-		-0.293 (-0.430: -0.154)*	0.070
R^2			0.086	
Social media addiction	-0.199 (-0.348: -0.045)*	0.077	-	
R^2	0.040			
Social media addiction (direct effect)	-		-0.136 (-0.254; -0.020)*	0.060
Cognitive Flexibility	-		0.716 (0.606: 0.815)*	0.053
R^2	-		0.569	
Indirect effect	-		-0.142 (-0.256; -0.031)**	

*p<0.050; SE: Standard Error; β: Standardized coefficients; R^2: Coefficient of determination; **Bootstrap indirect effect (95% CI)

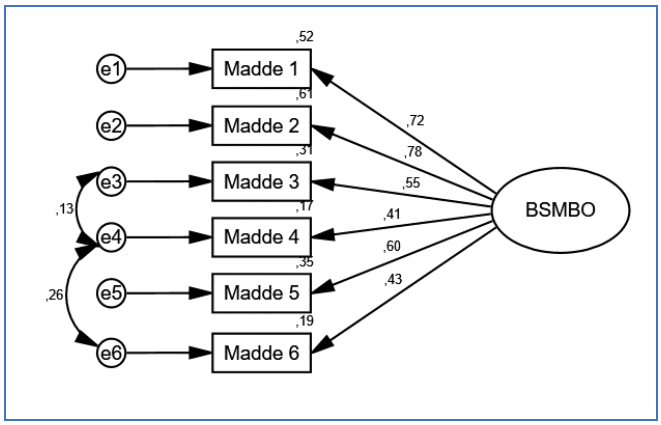

Figure 1. Standardized path coefficients of the Bergen Social Media Addiction Scale

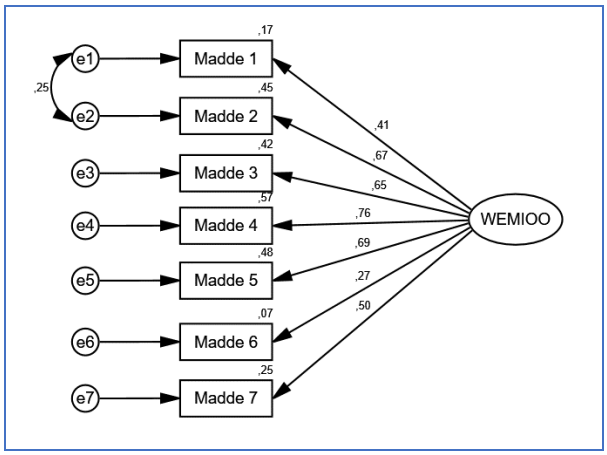

Figure 2. Standardized path coefficients of the Warwick-Edinburgh Mental Well-Being Scale

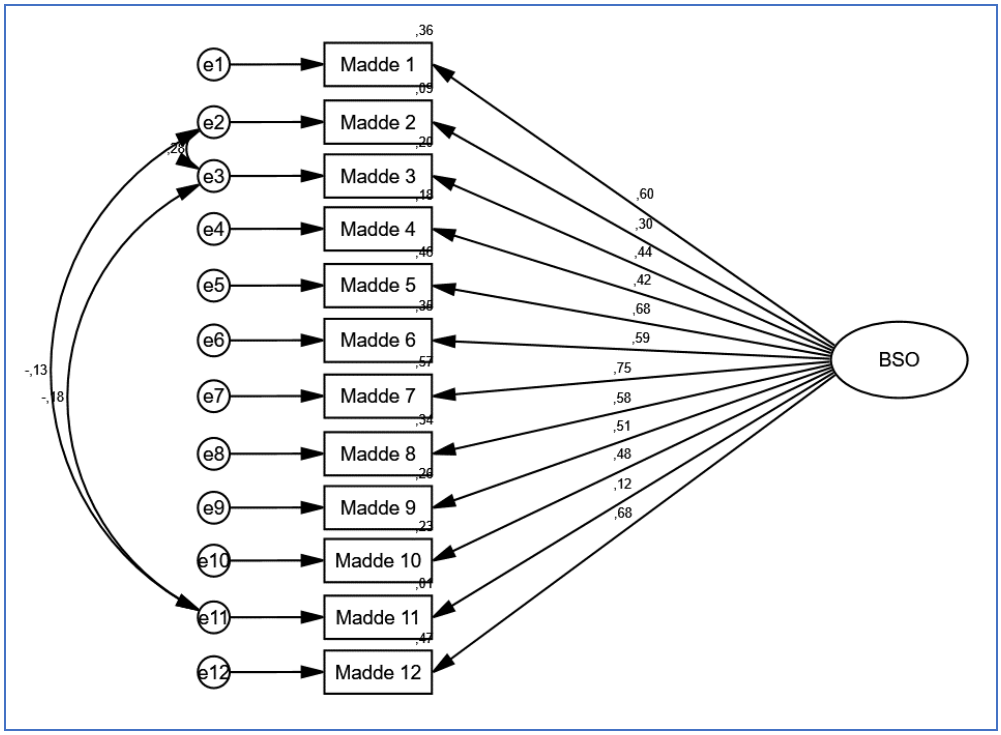

Figure 3. Standardized path coefficients of the Cognitive Flexibility Scale

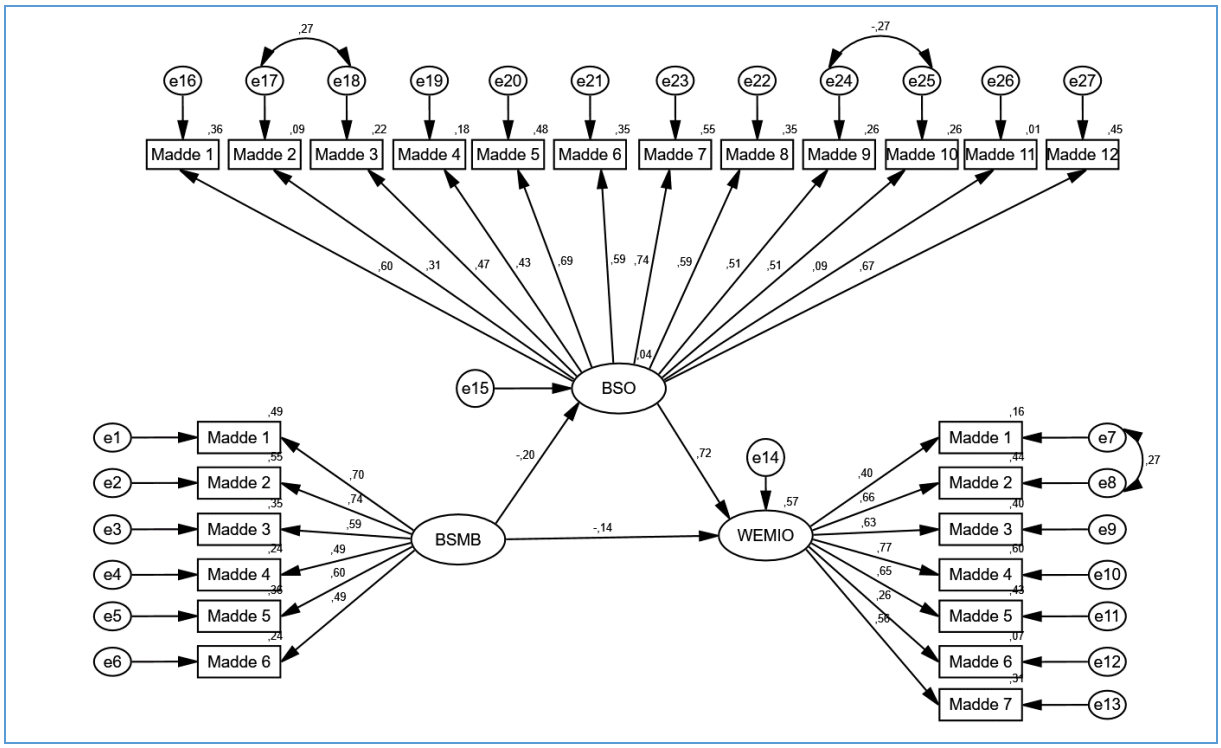

Figure 4. Standardized path coefficients