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Research Article

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Cognitive flexibility as a predictor of optimism in university students

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ABSTRACT

The aim of this study is to investigate the predictive power of cognitive flexibility levels of university students on optimism. In addition, it is aimed to reveal whether the relationship between optimism and cognitive flexibility differs according to gender. The participants of the study consisted of a total of 835 university students, 632 females (75.7%) and 203 males (24.3%), studying at Ondokuz Mayıs University, Turkey. The ages of the university students participating in the research range from 17 to 43, and the average age of the students was determined as 20.58. In the data collection process, the Personal Information Form was used to determine the demographic information of the participants, the Cognitive Flexibility Inventory to determine their cognitive flexibility levels, and the Life Orientation Test to determine the level of positive expectations that individuals generally have about their experiences. To achieve the research purposes, missing value analysis, outlier analysis, normal distribution, linearity and homogeneity of variance-covariance matrices were examined, and it was found that the assumptions were met. Pearson Moment Correlation Coefficients were used to determine the relationships between optimism and cognitive flexibility. According to the correlation analysis results, positive and meaningful relationships were found between optimism and cognitive flexibility, and it was found that university students with high optimism scores also have high cognitive flexibility levels. Simple Linear Regression Analysis was performed to determine how much cognitive flexibility predicts optimism. As a result of the regression analysis, it was concluded that cognitive flexibility explains 19.4% of the total variance of optimism. Considering the research results, universities can organize programs and workshops aimed at developing the cognitive flexibility of students. These programs can increase students' optimism by teaching them positive thinking skills.

Introduction

Positive psychology is defined as a field of study that investigates the conditions that enable individuals to develop in the best possible way (Gable & Haidt, 2005). The goal of positive psychology is not to ignore the situations that cause individuals pain and unhappiness or to deny

the negative aspects of life, but to increase individuals' awareness of positive situations (Seligman & Csikszentmihalyi, 2020). With the contributions of positive psychology in the last twenty years, how people are or can be satisfied with their lives has become an important research topic. For this reason, concepts considered to have an important place in human life are examined. In this context, the concept of optimism has attracted the attention of researchers as one of the favorite concepts (Peterson & Bossio, 2001). Goleman (2000) defines optimism as a strong expectation that everything will be good and right in life, despite the difficulties and obstacles that individuals face. Optimism represents a cognitive, emotional, and motivational stance towards the future, believing that there will be good, beautiful, and positive events for the individual in the future (Schutte & Hosch, 1996).

Optimism is focused on goals and the future, and individuals believe that life will bring good things. This expectation of positive outcomes from life shapes and changes individuals' behaviors. Accordingly, individuals want to reach the situations they imagine as a result of the behaviors they exhibit and strive to achieve them (Scheier & Carver, 1987). Individuals with high levels of optimism are strong in the face of difficulties and obstacles, can cope effectively with stressful experiences, and can use effective problem-solving skills when faced with a problem situation (Brissette, Scheier, & Carver, 2002; Carver, Scheier, & Weintraub, 1989). For optimistic individuals, failures are not perceived as personal, and it is believed that there is always a positive way out, even for situations that end in failure (Felmann, 2000).

Individuals encounter various problems in their daily lives and in their relationships with people and strive to overcome these problems. Sometimes, even if individuals do not encounter a problem, they may have to make choices or decisions. Individuals who are faced with solving problems, making decisions, and making choices have different options. Each individual has the potential to behave differently in terms of how to use these options and how to behave. At this point, the concept of cognitive flexibility comes to the fore (Sapmaz & Doğan, 2013).

Canas, Quesada, Antoli, and Fajardo (2003) define cognitive flexibility as the individual's ability to adjust their information processing strategies in the face of different experiences, new and unexpected situations. Individuals who have the ability to change their cognitions can replace maladaptive thoughts that challenge and disturb them with more balanced and adaptive thoughts. These individuals can generate alternatives for any given situation and successfully cope with difficult situations (Teasdale, Scott, Moore, Hayhurst, Pope & Paykel, 2001; Deveney & Deldin, 2006; Gülüm & Dağ, 2012).

Individuals with high levels of cognitive flexibility are confident in themselves when faced with different situations. They are confident in their own behavior and believe they will succeed as a result of their behavior. Even though individuals may realize that there are different options for a given situation, they need to have self-confidence to be able to exhibit the desired behavior. Therefore, self-efficacy and self-confidence are an important part of cognitive flexibility (Martin & Anderson, 1998).

Cognitive flexibility contributes to the harmonious and positive development of individuals' relationships. For this reason, it is associated with numerous psychological constructs. Individuals who can effectively cope with difficult and negative situations have been found to have developed problem-solving skills (Bilgin, 2009) and high levels of social competence (Melby, Conger, Conger, & Lorenz, 1993). Individuals acquire problem-solving skills throughout their lives through the interpersonal relationships they establish. Therefore, it can be said that cognitive flexibility makes a positive contribution to problem-solving skills (Bilgin, 2009; 145).

Literature reviews have shown that all of the variables of achievement, general self-efficacy, academic self-efficacy, social self-efficacy, and emotional self-have significantly predicted cognitive flexibility in a positive direction (Esen, Özcan, & Sezgin, 2017), cognitive flexibility negatively predicted the attitude towards using social media (Peker & Çukadar, 2016), there is a negative relationship between cognitive flexibility and depression (Güler, 2015), there is a positive and significant relationship between cognitive flexibility and happiness (Asıcı & İkiz, 2015), and there is a positive and significant relationship between cognitive flexibility and self-efficacy (Shimogori, 2013). Studies have shown that cognitive rigidity is associated with mental health problems such as depression (Aguilera et al., 2019). Similarly, perfectionism, which affects cognitive flexibility, can negatively impact people's adaptation to the environment. Studies have shown a significant negative relationship between cognitive flexibility and perfectionism (Akkuş-çutuk, 2020; Atayeter & Ekici, 2020).

It has also been shown that there is a significant positive relationship between optimism and cognitive flexibility (Mellor et al., 2003; Sapmaz & Doğan, 2013). When the literature is examined, it is seen that there are limited studies on optimism and cognitive flexibility. Studies have shown that optimism protects mental health in anxiety and crisis situations (Singh & Jha, 2013), individuals with high levels of optimism experience fewer problems in traumatic events (Nes & Segerstorm, 2006), and those with low levels of optimism have a high risk of depression (Baker et al., 2005) and are associated with levels of depressive symptoms (Malouff & Scutte 2017). It has been found that failures in overcoming stress factors due to age reduce the impact of optimism (Wrosch, Jobin, & Scheier, 2017) and there is a significant negative relationship between perfectionism and optimism (Black & Reynolds, 2013). Nicholls, Polman, Levy, and Backhouse (2008), in their research examining the relationship between psychological resilience, optimism, pessimism, and coping, found that psychological resilience and optimism and pessimism had a significant relationship and individuals with high psychological resilience had high optimism scores and used problem-focused coping strategies; while individuals with low psychological resilience had high pessimism scores and used passive coping strategies such as avoidance.

The limited number of studies on optimism and cognitive flexibility in Türkiye shows the contribution that this research, which examines the relationship between optimism and cognitive flexibility, will make to the field. The concepts of "cognitive flexibility" and "optimism" hold an important place in the psychology literature. Optimism is generally a positive expectation of the future and a tendency to emphasize positive events. Research shows that optimism can improve individuals' quality of life, mental health, and overall well-being. Therefore, studies on optimism can help us understand individuals' psychological well-being and success. Cognitive flexibility, on the other hand, refers to a person's ability to think flexibly and includes skills such as adapting to changing conditions, coping with new situations, and solving problems. These skills are associated with individuals' ability to cope with stress, reframe negative situations, and think in a solution-oriented manner. This study is expected to help us understand how cognitive flexibility affects the level of optimism in university students. Especially university students may encounter many difficulties in their academic and personal lives, and having such skills is important for their success and psychological well-being. The results of this study may contribute to the development of interventions that can increase the level of optimism in university students and help them cope with stress more effectively. In this direction, the aim of this study is to examine the relationship between the optimism and cognitive flexibility of university students.

Method

Research model

This study was designed using a correlational and descriptive survey model, which is one of the quantitative research approaches, to investigate the relationship between the optimism and cognitive flexibility of university students.

Study group

The participants of the study consisted of 835 university students studying at Ondokuz Mayıs University, including 632 women (75.7%) and 203 men (24.3%). The ages of the university students participating in the study ranged from 17 to 43, and the average age of the students was determined to be 20.58.

Data collection tools

The Life Orientation Test was used to determine the level of optimism of individuals, the Cognitive Flexibility Inventory was used to determine the level of cognitive flexibility, and a Personal Information Form including demographic information was used to collect data for the study.

Life orientation test

The Life Orientation Test, developed by Scheier and Carver (1985), was used to determine the level of positive expectations individuals have about their lives in general. The 12-item scale was adapted into Turkish by Aydın and Tezer (1991). The measurement tool, which has a 5-point Likert-type rating, has four positive items (1, 4, 5, 11), four negative items (3, 8, 9, 12), and four filler items (2, 6, 7, 10). Higher total scores obtained from the scale mean that individuals have higher levels of optimism (Scheier & Carver, 1985). The Cronbach's alpha value of the scale was found to be .76, and the Cronbach's alpha value of the Turkish form was .72. In this study, the Cronbach's Alpha was found to be .77.

Cognitive flexibility inventory

The Cognitive Flexibility Inventory was developed by Dennis and Vander Wal (2010) to assess individuals' ability to generate alternative thoughts when faced with difficult situations. The adaptation, validity, and reliability studies of the scale for Turkish culture were conducted by Gülüm and Dağ (2012). The 20-item measurement tool has a 5-point Likert-type rating. It consists of two sub-dimensions: alternatives and control. It is stated that as the score obtained from the scale increases, cognitive flexibility also increases. The Cronbach alpha value of the Turkish version was found to be .90 (Gülüm & Dağ, 2012). In this study, the Cronbach Alpha value of the scale was found to be .84.

Data analysis

SPSS 20.0 package program was used to examine the relationship between the optimism of university students and their cognitive flexibility. Descriptive statistics were used to obtain information about the sociodemographic characteristics of the students. In order to achieve the research objectives, missing value analysis, outlier analysis, normal distribution, linearity, and homogeneity of variance-covariance matrices were examined and found to be met (Field, 2013). Pearson Product-Moment Correlation Coefficient was used to examine the relationship between optimism and cognitive flexibility. Simple linear regression analysis was performed to determine the extent to which optimism predicts cognitive flexibility.

Results

Pearson product-moment correlation coefficient was used to examine the relationship between optimism and cognitive flexibility. The analysis results are presented in Table 1.

Table 1 Correlation analysis results for the relationship between optimism and cognitive flexibility

Variable	X	Sd	N	Correlation (X, Y)
Cognitive Flexibility	73.8671	9.48280	835	0.441
Optimism	18.8323	5.66792	835	0.441

p<0.001

Correlation analysis results showed a significant positive correlation between optimism and cognitive flexibility (r=0.44, p<0.001).

Simple Linear Regression analysis was used to determine the extent to which cognitive flexibility predicts optimism. The results of the analysis are given in Table 2.

Table 2 Regression analysis results for predicting optimism with cognitive flexibility

Variable	B	Std. Error	Beta	t	p	R	R^2	Adj. R^2
(Constant)	-0.629	1.384		-0.454	0.650			
Cognitive Flexibility	0.263	0.019	0.441	14.173	0.000	0.441[a]	0.194	0.193

a. Constant: Cognitive Flexibility
b. Dependent variable: Optimism

The results indicate that cognitive flexibility is a significant predictor of optimism ($\beta = 0.441$, $t = 14.173$, $p < 0.001$). This means that as cognitive flexibility increases, so does optimism. The R^2 value of 0.193 suggests that 19.3% of the variance in optimism can be explained by cognitive flexibility.

Regression analysis revealed a significant relationship between optimism and cognitive flexibility ($R=0.441$, $R^2=0.194$), and it was determined that cognitive flexibility is a significant predictor of optimism ($F_{(1-833)}= 200.87$, $p<0.001$).

The findings in Table 2 indicate that cognitive flexibility explains 19.4% of the total variance in optimism.

Discussion and conclusion

The study concluded that there is a significant positive relationship between optimism and cognitive flexibility. Although research directly supporting the link between optimism and cognitive flexibility is limited (e.g., Doğan-Laçin & Yalçın, 2018; Sapmaz & Doğan, 2013), it can be stated that the positive emotions associated with optimism foster cognitive flexibility. The relationship between optimism and cognitive flexibility is thought to be a function of the positive outcomes resulting from optimism. Thinking more about positive outcomes enhances individuals' abilities to perceive challenging situations as manageable and to generate multiple alternative solutions for such situations, enabling them to remain open to flexibility and new alternatives. Consistent with this conclusion, Asıcı and İkizi (2015) found a significant positive relationship between cognitive flexibility and happiness. This finding suggests that as adolescents' cognitive flexibility levels increase enhancing their capacity to adaptively cope with and resolve problems in their lives their well-being levels also increase. Similarly, Aydınay-Satan's (2014) study found that cognitive flexibility has an impact on subjective well-being. Individuals with high levels of

cognitive flexibility are believed to think more adaptively, view challenges as opportunities, and consequently improve their overall life satisfaction and psychological well-being.

As a result of the research, it was concluded that cognitive flexibility is a significant predictor of optimism. According to this result of the research, university students with high levels of cognitive flexibility also have high levels of optimism. This result supports the results of previous studies. For example, in a study conducted by Topkaya, Köksal, and Bayram (2022), it was found that individuals with high levels of optimism also had high levels of cognitive flexibility. Similarly, in a study conducted by Demirtaş (2020), it was found that cognitive flexibility was a significant positive predictor of psychological well-being. This result of the study shows that as adolescents' level of cognitive flexibility increases, that is, as their ability to cope with and solve problems in their lives increases, their level of well-being also increases. In this context, individuals with high levels of cognitive flexibility are more likely to think adaptively, view challenges as opportunities, and consequently enhance their overall life satisfaction and psychological well-being. The findings of Demirtaş (2020) further support this notion, indicating that individuals' ability to develop diverse perspectives when solving problems and act accordingly facilitates an optimistic outlook and a higher level of well-being.

Based on the research findings, universities can organize programs and workshops aimed at developing students' cognitive flexibility. These programs can increase students' optimism by providing them with positive thinking skills. The relationship between optimism and cognitive flexibility can be applied to individuals of different age groups to enable comparisons. Different concepts that may affect the relationship between optimism and cognitive flexibility can be included in the research (e.g., proactive personality, self-efficacy, life satisfaction, self-esteem).

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Disclosure statement

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