



THE REPUBLIC OF TURKEY

ANKARA YILDIRIM BEYAZIT UNIVERSITY

THE GRADUATE SCHOOL OF SOCIAL SCIENCES

**THE EFFECTS OF OBSERVING OSTRACISM AND BEING
THE TARGET OF OSTRACISM ON COGNITIVE
FLEXIBILITY**

DOCTOR OF PHILOSOPHY

Mehmet KAVAKLI

DEPARTMENT OF PSYCHOLOGY

ANKARA, 2022

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Advisor

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ANKARA, 2022

APPROVAL PAGE

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PLAGIARISM PAGE

I hereby declare that all information in this thesis has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all materials and results that are not original to this work; otherwise, I accept all legal responsibility. Date (02/06/2022)

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X X X X

DEDICATION



To my son “Deniz”

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Today, I have come to the end of my doctoral journey and moved on to a new era in my life. This should not be seen as a mere individual achievement. This endeavor would not have been possible without the support I had received from many people. First of all, I would like to thank my advisor, Asst. Prof. Dr. Gülten Ünal, who supported me from the beginning till the end of the Ph.D. program. She has always been by my side. I learned a lot from her, both academically and personally. Her guidance is greatly appreciated.

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ABSTRACT

The Effects of Observing Ostracism and Being the Target of Ostracism on Cognitive Flexibility

The main aim of this dissertation is to examine the effects of observing ostracism and being the target of ostracism on cognitive flexibility. For this purpose, three different experiments were carried out. In the first experiment, ostracism scenarios were adapted and developed to manipulate both observing ostracism and being the target of ostracism. Future life alone, a classical exclusion paradigm, was also included in the experiment. In Study 1, the sample was composed of 263 undergraduate students. The results of the first experiment showed that the scenarios created successfully manipulated both observing ostracism and being the target of ostracism. The second experiment was conducted using the scenarios tested in Study 1. In Study 2, there are 4 different conditions in total, namely, observing ostracism, being the target of ostracism, and two control conditions. The second experiment was conducted with a total of 102 undergraduate students. The results revealed that observing ostracism increased cognitive flexibility performance. However, being the target of ostracism did not affect cognitive flexibility performance. Also, observing ostracism and ostracism did not affect empathy. Study 3 was designed to replicate the second experiment by changing ostracism paradigm. In the third experiment, Cyberball was used instead of scenarios to manipulate exclusion. The experiment was conducted with 127 undergraduate students. Similar results were obtained in the third experiment for observing ostracism. Observing ostracism increased cognitive flexibility performance. Being the target of ostracism negatively affected cognitive flexibility performance. Observing ostracism did not affect empathy. Ostracism, on the other hand, only affected the emotional empathy. The results were discussed considering the temporal need-threat model and evolutionary perspective.

Keywords: observing ostracism, ostracism, empathy, cognitive flexibility, cognitive performance, exclusion

ÖZ

Psikolojik Dışlanmanın Gözlemlenmesinin ve Psikolojik Dışlanmaya Hedef Olmanın Bilişsel Esneklik Üzerindeki Etkileri

Bu çalışmanın temel amacı psikolojik dışlanmanın gözlemlenmesi ve psikolojik dışlanmaya hedef olmanın bilişsel esneklik üzerindeki etkisini incelemektir. Bu amaç doğrultusunda üç farklı deney planlanmıştır. İlk deneyde hem dışlanmanın gözlemlenmesi hem de dışlanmaya hedef olmayı manipüle etmek amacıyla dışlanma senaryoları uyarlanmış ve geliştirilmiştir. Ayrıca bu deneye klasik bir dışlanma manipülasyonu olan gelecekte yalnız kalma paradigması eklenmiştir. Birinci çalışmanın örneklemini 263 üniversite öğrencisi oluşturmuştur. Birinci deneyin sonuçları hem dışlanmanın gözlemlenmesi hem de dışlanmaya hedef olma için oluşturulan senaryoların etkili bir şekilde çalıştığını göstermiştir. İkinci deney birinci çalışmada test edilen senaryolar kullanılarak yürütülmüştür. İkinci deneyde dışlanmanın gözlemlenmesi, dışlanmaya hedef olma ve kontrol grupları ile birlikte toplamda dört koşul oluşturulmuştur. İkinci deney toplamda 102 üniversite öğrencisi ile yürütülmüştür. Sonuçlar dışlanmayı gözlemlenmenin bilişsel esneklik performansını arttırdığını göstermiştir. Ancak dışlanmaya hedef olma bilişsel esneklik performansını etkilememiştir. Ayrıca hem dışlanmayı gözlemlenme hem de dışlanmaya hedef olma empatiyi etkilememiştir. Üçüncü çalışma farklı bir dışlanma paradigması ile ikinci deneyi tekrar etmek amacıyla tasarlanmıştır. Üçüncü deneyde dışlanma senaryoları yerine sanal top atma (Cyberball) oyunu kullanılmıştır. Bu deney toplamda 127 üniversite öğrencisi ile yürütülmüştür. Üçüncü deneyde de dışlanmanın gözlemlenmesi için benzer sonuçlar elde edilmiştir. Psikolojik dışlanmanın gözlemlenmesi bilişsel esneklik performansını arttırmıştır. Dışlanmaya hedef olma ise bilişsel esneklik performansını olumsuz etkilemiştir. Dışlanmanın gözlemlenmesi empatiyi etkilememiştir. Dışlanmaya hedef olma ise yalnızca duygusal empati boyutunu etkilemiştir. Sonuçlar ihtiyaç tehdidi modeli ve evrimsel bakış açısı dikkate alınarak tartışılmıştır.

Anahtar Kelimeler: Psikolojik dışlanmanın gözlemlenmesi, psikolojik dışlanma, empati, bilişsel esneklik, bilişsel performans, dışlanma

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1. INTRODUCTION

Human beings are social species, and all people live in more than one group setting. Being at least in one group is crucial for almost all living species. Group membership is also extremely significant for people. As expressed in the evolutionary approach, being a member of a group and belonging to it provide benefits to individuals in many ways (Baumeister & Leary, 1995; Gruter & Masters, 1986). For instance, individuals might easily do a job with a group that they cannot do by themselves. In addition, group membership gives the individual social identity, and acting according to the group norms reduces uncertainty. It is also important to maintain group membership status by remaining a member of the group. In this sense, exclusion is a situation that threatens the individual's group membership status, and ostracism (being ignored and excluded) is a painful experience. Regardless of its reason, exposure to ostracism influences individuals' cognition, emotion, and behaviors in many negative ways (Williams, 2001, 2007). Being ostracized from a group causes loss of resources and exposure to dangers. Therefore, the maintenance of group membership status is crucial for each member of the group. Individuals may try to avoid being excluded from their groups for these reasons.

Being the target of ostracism is a phenomenon that may be encountered frequently in daily life. This phenomenon has attracted the attention of researchers, especially in the last two decades. Thus, numerous studies have been conducted on the consequences of being the target of ostracism (e.g., Hales et al., 2016; Nezlek et al., 2015; Poulsen & Kashy, 2012; Williams & Nida, 2011). However, not only individuals who are the target of ostracism, but also individuals who are the source of the exclusion attracted the attention of the researchers (e.g., Zadro & Gonsalkorale, 2014; Zadro et al., 2005). Besides, ostracism experience does not only affect the actors of the event. The presence of other people in an environment of ostracism brings up another point. This is *observing ostracism*. It is expressed as vicarious ostracism in the

literature, as well (Wesselmann et al., 2009, 2013a). The former notion (i.e., observing ostracism) will be used throughout this dissertation.

Observing ostracism has as many negative effects as being the target of ostracism. Observing ostracism also causes a need threat similar to ostracism (Giesen & Echterhoff, 2018; Rudert & Greifeneder, 2019). For this reason, observing ostracism has also attracted the attention of researchers. However, studies on observing ostracism are relatively limited when compared to studies on being the target of ostracism or source of ostracism. Especially in the last two decades, many studies have been conducted examining the relationships between being the target of ostracism, source of ostracism, and various variables (e.g., Gooley et al., 2015; Lutz & Schneider, 2021; Nezlek et al., 2015; Yang et al., 2021). On the other hand, observing ostracism has received relatively less attention from researchers. Moreover, there are limited number of studies that are comparing being the target of ostracism and observing ostracism (Giesen & Echterhoff, 2018; Wesselmann et al., 2009). This dissertation will contribute to filling this gap in the literature.

The main aim of this dissertation is to examine the effect of observing ostracism and being the target of ostracism on cognitive flexibility. Although relatively few, there are studies examining the relationship between ostracism and cognitive processes such as cognitive control process (Wang & Sha, 2018), confirmatory information processing (Greitemeyer et al., 2012), social information processing (Bossi, et al., 2018), visual working memory (Xu et al., 2018), cognitive performance (Jamieson, et al., 2010), working memory performance (Fuhrman et al., 2019), selective attention (Xu et al., 2017), and cognitive process and decision making (Juanchich et al., 2018). The results of the aforementioned studies seem not have consistent findings with each other. Some of these studies state that ostracism positively affects cognitive performance (e.g., Du et al., 2019; Jamieson et al., 2010; Kiat et al., 2018). Still, ostracism influences cognitive performance negatively or has no effect (e.g., Baumeister et al., 2002,

2005; Buelow et al., 2015; Bossi et al., 2018; Fuhrman et al., 2019; Greitemeyer et al., 2012; Juanchich et al., 2018). Thus, new studies that investigate the relationship between cognitive processes and ostracism are needed to be conducted. On the other hand, as far as is known, there is no research delving into the effects of observing ostracism on any cognitive processes. Connectedly, the aim of this dissertation is to examine the effects of observing ostracism on cognitive flexibility as being one of the cognitive processes. In addition, the effects of being the target of ostracism on cognitive flexibility will be investigated experimentally. Thus, this dissertation aims to contribute to this field where there is limited research.

This dissertation has two main research questions: (i) “Does observing ostracism affect cognitive flexibility?” and (ii) “Does being the target of ostracism affect cognitive flexibility?”. Connectedly, a total of three different experimental studies were planned to find out the effects of observing ostracism as well as being the target of ostracism. Scenarios were adapted for experimental and control groups to manipulate observing ostracism in the first study. In the first study, the effectiveness of these adapted and developed scenarios was tested. Observing ostracism, being the target of ostracism scenarios, and the future life alone exclusion paradigm were used. The first study, therefore, aimed to test the effectiveness of observing ostracism and being the target of ostracism scenarios.

Observing ostracism and being the target of ostracism scenarios tested in the 1st study were planned to be used in the 2nd study. The aim of the 2nd study was to examine the effects of observing ostracism and being the target of ostracism on cognitive flexibility separately. As far as is known, there is only one study examining the relationship between ostracism and cognitive flexibility (Mortezazadeh et al., 2021). On the other hand, there is no previous study that examined the relationship between observing ostracism and cognitive processes. Therefore, the effects of being the target of ostracism and observing ostracism on cognitive flexibility were investigated in the 2nd study. Besides, need threat and trait empathy measurements were taken

from the participants after the manipulations. Particularly, the role of empathy in the relationship between exclusion and cognitive flexibility is aimed to be examined.

In the existing literature, many different ostracism paradigms have been used to manipulate ostracism. Occasionally, the exclusion paradigms used may lead to different results. Thus, it is recommended to use more than one exclusion paradigm, in order to both reduce this possibility and increase the reliability of results (Williams & Zadro, 2001). This approach is called the “multi-method approach”. The fact that the results regarding the relationship between ostracism and cognitive processes are different may also raise some problems related to the methodology. Therefore, a 3rd study was designed to replicate the 2nd study. The same procedure was followed in the 3rd study as in the 2nd study. Within the scope of the multi-method approach, an ostracism paradigm called “Cyberball” was used instead of the scenarios.

Throughout this chapter, ostracism, observing ostracism, and ostracism models will be discussed in detail. The needs threatened by ostracism and observing ostracism and their relationships with empathy will be discussed further. Then, reflexive, short- and long-term reactions following ostracism and observing ostracism will be examined. After examining the cognitive flexibility in detail, possible relationships between ostracism, observing ostracism, and cognitive flexibility will be explained. Finally, the rationale behind the current dissertation will be presented with an overview of the goals and hypotheses.

1.1. Ostracism

The exclusion phenomenon has long been the interest of social psychologists. Researchers have defined exclusion in different terms. These are ostracism, social exclusion, rejection, abandonment, unrequited love, betrayal, bullying, social outcast, and stigmatization (Leary, 2005a). There is no empirical evidence showing that these concepts (notably ostracism, social exclusion, and rejection) refer to the same or different phenomena (Williams, 2007). However, while ostracism, social exclusion and rejection concepts might be defined in different

ways by some researchers, they are often used interchangeably by others. According to the definitions in the literature, in social exclusion the individual is expelled from the group, sometimes explicitly and sometimes without any explanation. In rejection, an individual or group makes it clear to another individual that they do not want to have a relationship with the individual. On the other hand, ostracism is mostly “defined as being ignored and excluded, and it often occurs without excessive explanation or explicit negative attention.” (Williams, 2007, p. 429). As it can be understood from these definitions, ostracism differs from social exclusion and rejection especially in one aspect. Groups or individuals give a reaction to the excluded individual in some way in both rejection and social exclusion. In ostracism, no positive or negative reaction or feedback is given to the individual. The individuals are treated as if they do not exist within the group environment and are ignored (Williams, 2007). Experiences of ostracism may be quite painful for the person who is ignored and pretended not to exist (Leary, 2005a; Williams, 2007).

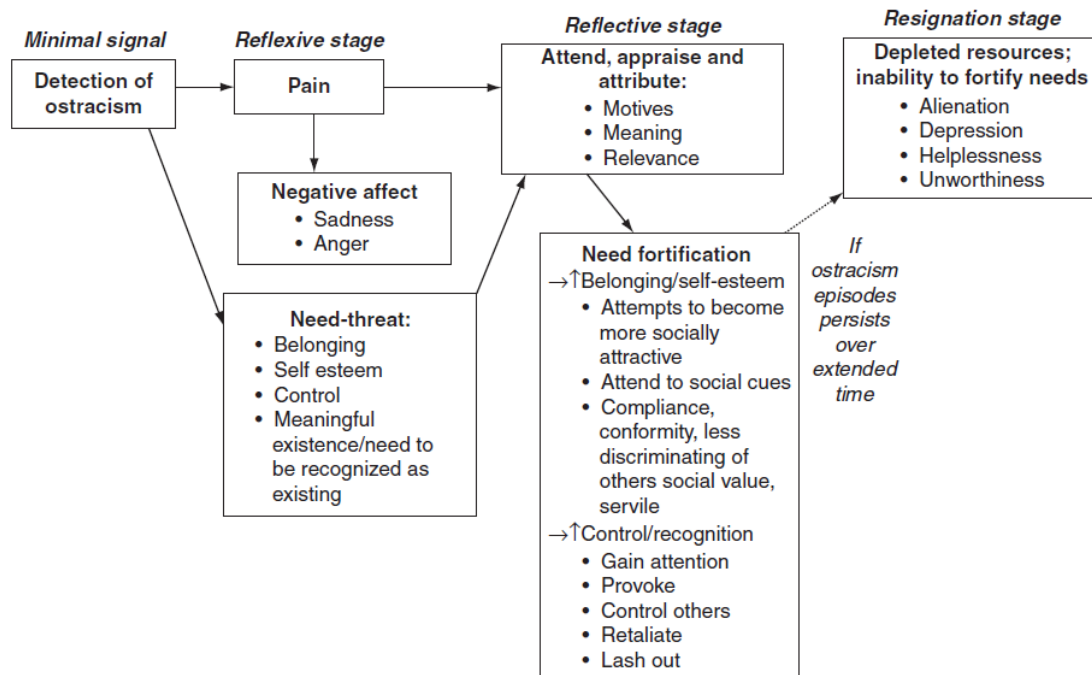
Some models and theories have been put forward to explain the seemingly complex and painful phenomenon of exclusion. These exclusion theories and models are basically the sociometer theory (Leary, 1999), the social monitoring system (Pickett & Gardner, 2005), the social pain theory (MacDonald & Leary, 2005), goal-driven resource redistribution theory (Shilling & Brown, 2016), multi-motive model (Smart-Richman & Leary, 2009), and the need-threat model (Williams, 2001, 2007). Williams' model specifically focuses on ostracism. The temporal need threat model will be taken as a basis in this dissertation for this reason.

1.1.1. The Temporal Need Threat Model

A model of ostracism was first introduced by Williams (1997). Later, this model was revised by Williams and Zadro (2001). Presenting a compact model of ostracism contributed to the conceptualization of ostracism. In addition, this model made it possible to conduct research and hypothesis testing. The need threat model has evolved over time (Hales & Williams, 2018;

Williams, 2007, 2009). At the heart of the temporal need-threat model is the concept of the need threat. According to this model, the basis of the behaviors and reactions caused by ostracism is that ostracism poses a threat to some basic psychological needs of people.

Figure 1.1. The temporal need-threat model (Williams, 2009).



As can be seen from Figure 1.1, there are four basic needs or social motivations in the model. These are “need to belong, self-esteem, control, meaningful existence”. The experience of ostracism threatens these needs or social motivations. There were four needs or social motives when the model was introduced. However, Hales and Williams (2018) stated that uncertainty is also affected by exclusion, thus “certainty” was defined as the fifth need.

Ostracism poses a need threat. This need threat also negatively affects individuals cognitively, emotionally, and behaviorally. Therefore, exposure to ostracism can result in serious negative consequences. Avoiding these negative effects could be vitally important. According to the temporal need-threat model, there is an alarm system that evolves in human beings and serves to anticipate ostracism (Williams, 2009). This evolutionary evolving detect system enables the rapid detection and action of a sign of ostracism. This alarm system increases

the chances of survival. Because living and staying in a group is necessary for survival. Sense of ostracism also increases the probability of survival. With the help of the early detection system, people who detect ostracism may correct their behaviors. They may seek alternative groups before being ostracized or its negative effects occur. In this way, the need threat might be experienced less. It is noteworthy that clues of ostracism may not always be true. In other words, the early detection system works very quickly, and individuals quickly detect signs of ostracism and take action. This brings up over-detection. But the cost of a false alarm is low compared to missing real ostracism (Williams, 2009).

One of the most substantial clues and signals about ostracism is “pain”. Studies show that ostracism experience activates the dorsal anterior cingulate cortex (dACC) of the brain, which is associated with physical pain (Eisenberger & Lieberman, 2004; Eisenberger et al., 2006). Pain, felt as if it were physical pain, directs one's attention to ostracism and the source of ostracism. In this way, the individual has the chance to determine the clues about ostracism and the importance of the threat. Hence, pain (hurt feelings) triggers appraisal and attention (Williams, 2009).

The need threat arises as soon as the threat detected by the early detection system is determined to be real ostracism. According to the temporal need-threat model, exposure to ostracism threatens one's need to belong, self-esteem, meaningful existence, control, and certainty. The need threat causes negative affect. Responses to ostracism change according to the threatened need. These needs and responses to ostracism will be discussed in the next sections.

1.1.1.1. Need to Belong

One of the most frequently threatened needs of ostracism is the “need to belong”. The need to belong motivates people to establish and maintain positive, socially, and emotionally

satisfying bonds with other people. According to Baumeister and Leary (1995), it is important for people to feel a sense of belonging (Allen et al., 2021; Leary & Gabriel, 2022). Not merely ostracism but also unpleasant social responses negatively affect the need to belong. Nevertheless, ostracism affects the need to belong more strongly and clearly compared to unpleasant social responses (Zadro et al., 2005). This need is thought to have evolved over the course of evolution to motivate people to stay together. Because the coexistence of humans with creatures of their own kind increases the chances of survival and the continuation of genes (MacDonald & Leary, 2005). Therefore, the need to belong is evolutionarily important. Studies have supported the view that ostracism poses a threat to the need to belong (Eck et al., 2017; Liu et al., 2019; Lutz, & Schneider, 2021).

1.1.1.2. Self-Esteem

Another need threatened by ostracism is “self-esteem”. Having positive self-esteem is a fundamental psychological need, and self-esteem is one of the crucial motivators of an individual's behavior. According to sociometer theory, self-esteem is a gauge of relational evaluation for acceptance and belonging. Individuals use self-esteem as an index of inclusionary status in the sociometer theory (Leary, 2005b). In the temporal need-threat model, self-esteem is not just a gauge for inclusionary status. According to need-threat model the experience of ostracism threatens self-esteem. As a matter of fact, the self is a structure that is shaped by feedback from other people during social interactions. From this point of view, it is evident that ostracism can pose a threat to the need to have positive self-esteem. In addition, many studies show ostracism leads to a decrease in self-esteem (Kavaklı, 2019; Onoda et al., 2010; Sakız et al., 2021). There is a perception among individuals that people who exhibit inappropriate behavior, have undesirable characteristics, and have bodily defects often experience ostracism. For this reason, exposure to ostracism gives a message to the ostracized

individuals that they have this type of feature (Williams, 2001). As a result, the self-esteem of the individual is threatened by ostracism. In ostracism, since the excluded individual is not given clear information about the reason for the exclusion, they are more likely to make personal attributions for the reason of their exclusion.

1.1.1.3. Control

The third need, which is one of the fundamental human needs such as self-esteem and the need to belong, is the “control” perception. According to Williams (2001), exposure to ostracism negatively affects one's control perception. Since the individual is ignored in ostracism and pretended as if s/he is not in the environment, ostracized individuals' are more likely to negatively affect their perception of control. Since the source of the ostracism does not give any explanation it is not possible for the ostracized individual to have control over the relationship. The view that ostracism threatens the control need is also supported in the literature (Mazinani et al., 2021; Sommer et al., 2001).

1.1.1.4. Meaningful Existence

Ostracism is an experience immensely powerful that it threatens the need for “meaningful existence”. According to the terror management theory, humans are aware of the fact that they are mortal, unlike other living species, and this awareness leads them to feel anxiety (Greenberg et al., 1986). The desire to overcome this feeling of anxiety is one of the important motivators of our behavior. Ostracism also reminds people that they are mortal beings. In other words, ostracism is a mortality salience cue. Sometimes this situation is also called "social death". Also, the experience of ostracism may give them a glimpse of what life would be like without their existence. Ostracism reminds the individuals that life can go on without them, and thus their existence is of no great significance (Williams & Zadro, 2005).

1.1.1.5. Certainty

One of the needs recently added to the need threat model is “certainty” (Hales & Williams, 2018). Uncertainty is an important concept in exclusion. Especially in the case of ostracism, there is ignored and uncertainty. Individuals would like to reduce the uncertainties in their lives. According to the uncertainty-identity theory, each individual wants to join groups and reduce uncertainty (Gaffney et al., 2018). However, being ostracized by group members creates uncertainty, and uncertainties in a group setting also cause the need threat.

1.1.2. Effects and Consequences of Being the Target of Ostracism

In the temporal need-threat model, the consequences and responses of ostracism are divided into three groups or stages with the consideration of the onset of their emergence. These are reflexive stage, short-term responses, and long-term responses.

1.1.2.1. Reflexive Stage

According to Williams' temporal need-threat model (2001, 2009), ostracism, or the threat of being ostracized causes some automatic response, such as experiencing anger, sadness, (hurt feelings) or pain similar to physical pain in the first place (Williams & Zadro, 2005). These initial reactions are independent of individual and environmental factors, and initial reactions are reflexive reactions to ostracism. This prediction of the temporal need-threat model has also been supported by various research papers. For instance, one study found that being ostracized from a computer or human did not make a significant difference in reactions (Williams & Zadro, 2005). Automatic reactions to ostracism lead the ostracized individual to take necessary precautions and cope with ostracism. For this reason, there are opinions stating that automatic responses to ostracism develop evolutionarily (Eisenberger et al., 2003; MacDonald & Leary, 2005; Williams & Zadro, 2005). These views seem to be consistent with the early detection system, which is used to anticipate exclusion.

1.1.2.2. Short-Term Responses

Short-term responses occur after the threat of ostracism is judged to be real (Williams, 2007). Short-term responses generally aim to cope with the negative consequences of ostracism. According to the temporal need-threat model, short-term responses occur in three ways. These reactions are antisocial behaviors, prosocial behaviors, and withdrawal or avoidance. Reflexive responses are independent of individual factors and environmental factors. Nevertheless, in the case of short-term responses, the type of response varies according to the threatened need, and individual and environmental factors. For example, individuals may often exhibit antisocial behaviors such as aggression if an ostracism experience threatens their control and meaningful existence needs (Williams, 2001, 2007). As a matter of fact, there are also studies showing that there is a relationship between aggression and exclusion (e.g., Poon et al., 2016; Poon & Chen, 2016; Ren et al., 2018). In addition, the negative consequences of ostracism do not only include antisocial behaviors towards others. Individuals might also engage in destructive behaviors towards themselves. Depression, anxiety, low self-esteem, alcohol and substance use, and impairment in cognitive functions can be counted as examples of destructive behaviors (Bacon et al., 2015; Baumeister et al., 2002, 2005; Kavaklı, 2018, 2021).

Ostracism does not only have negative consequences, it could sometimes result in positive ways. According to Williams (2001, 2009) individuals whose need to belong and self-esteem needs are threatened tend to exhibit prosocial behaviors. Behaving in accordance with the group norms, trying to join new groups, and cooperating with group members may be counted as examples of prosocial behaviors. According to the temporal need-threat model, another short-term response to ostracism is withdrawal. For some individuals, ostracism may lead to neutral and avoidant behaviors that can be described as neither positive nor negative. Some people who are ostracized may withdraw themselves cognitively and emotionally, or they may prefer to stay away from the environment where they are ostracized (Twenge et al., 2003).

1.1.2.3. Long-Term Responses

Long-term consequences of ostracism occur when an individual is exposed to long-term ostracism by groups or individuals they value. Exposure to prolonged ostracism also depletes a person's emotional and cognitive resources (Williams, 2007, 2009). It is difficult to scientifically investigate the long-term consequences of ostracism. However, various methods have been developed for this aim. Diaries and memories were used to investigate the long-term consequences of ostracism. In addition, interviews were conducted with individuals who experienced long-term ostracism. Studies conducted with the aforementioned methodologies show that long-term ostracism consumes cognitive and emotional resources and ostracized people accept the fact that they are excluded (Williams, 2007). Unlike short-term reactions, individuals do not make any positive or negative efforts in long-term ostracism. Instead of exhibiting positive or negative behaviors, they withdraw to avoid being ostracized again. There are also research findings on the negative consequences of long-term ostracism (e.g., Jiang, & Chen, 2020; Wesselmann et al., 2012; Williams, & Nida, 2011). For instance, Jiang and Chen (2020) reported that there was a positive relationship between long-term ostracism and depressive symptoms. In addition, long-term ostracism causes the depletion of coping resources (Williams & Nida, 2011).

1.2. Observing Ostracism

Ostracism is a painful process that threatens basic psychological needs (need to belong, self-esteem, control, meaningful existence, and certainty). However, not only being the target of ostracism but also observing ostracism poses a need threat. The fact that observing ostracism poses a need threat similar to being the target of ostracism is also supported by the literature (e.g., Giesen & Echterhoff, 2018; Güroğlu et al., 2013; Wesselmann et al., 2009, 2013). In daily life, people may encounter ostracism many times. They are sometimes the target and sometimes the source of these ostracism experiences. Previous studies have generally evaluated ostracism

from the perspective of those who are being the target of ostracism. The effects of observing ostracism have been the subject in relatively few studies. However, observing ostracism is also a quite common phenomenon, and people may witness a greater number of ostracism experiences in their daily lives. Both being the target of ostracism and observing ostracism have evolutionarily similar foundations. It was aforementioned that ostracism activates the evolutionary developing ostracism detection system in the temporal need-threat model. Similarly, observing ostracism activates the evolutionary alarm mechanism to detect ostracism (Wesselmann et al., 2009). In other words, the mere observing ostracism causes similar results as being the target of ostracism.

It is crucial to detect the possibility of ostracism in advance. The ostracism detection system is quite sensitive, crude, and simple, and this can sometimes cause false alarms and over detection. However, missing a real ostracism might be more costly. That's why even the slightest sign of ostracism is perceived as a threat by the ostracism detect system. In other words, even observing ostracism activates the ostracism detect system, and some relevant brain regions. Studies have shown that observing ostracism leads to enhanced activity in the dorsal anterior cingulate cortex (dACC) and anterior insula (AI). Furthermore, observing ostracism activates the dorsomedial (DMPFC) and medial prefrontal cortex and precuneus in the brain that are used to think about other people's mental states (Masten et al., 2011, 2013; Meyer et al., 2013; Wesselmann et al., 2013a). In a study, participants who observed an ostracism clip reported need-threat, enhanced heart rate, and skin conductivity (Coyne et al., 2011). Also, individuals who observe ostracism show social pain and distress similar to the ostracized person (Giesen & Echterhoff, 2018; Masten et al., 2011), and self-reported measures showed fundamental need threat, as well (Wesselmann et al., 2009). In addition, a study carried out by Poon et al. (2020) reported that observing ostracism leads to higher social and physical pain and negative emotions.

When these results are considered together, it is noticed that observing ostracism may be as threatening as being the target of ostracism. In addition, observing ostracism has effects and consequences just like what ostracism does. These effects and consequences will be discussed in the next section.

1.2.1. Effects and Consequences of Observing Ostracism

One of the most obvious consequences of observing ostracism is that it causes need threat, just as ostracism does. In addition, some moderator variables may affect the consequences of ostracism (Williams, 2007). Similarly, observing ostracism might be moderated by some variables. Culture, social context, and social cognition may influence responses to observing ostracism (Rudert & Greifeneder, 2019).

There can be many reasons for being ostracized. However, attributions to the cause of ostracism directly affect responses to observing ostracism. Attributions may cause observers to make different evaluations about ostracism experience. Rudert and Greifeneder (2019) emphasize three distinct motives that observers might attribute to ostracism. These are punitive motive, malicious motive, and role-prescribed motive. In the punitive motive, observers assume that the target is ostracized as a result of a misbehavior such as violating group norms or making a mistake. For example, observers may know that the target is behaving inappropriately to the group. The excluded individual may be a troublemaker. In such a situation, observers may feel that the target is responsible for ostracism and should be punished. Ostracism might also be seen as punishment imposed by the group.

Secondly, observers may attribute the ostracism to a malicious motive of the ostracized group, such as racism, or ingroup favoritism. When observers do not have enough clues to make a socially acceptable attribution, they may attribute in the direction of malicious motive. To illustrate, if the observers see that a person of a different race is ostracized from a group, they may attribute the ostracism to racism. Ostracism attributed to a malicious motive is considered

inappropriate and difficult to be accepted by the observer. Therefore, if the observer attributes the ostracism to a malicious motive, they disapprove of the ways the sources behave and prefer to side with the ostracized person (Rudert & Greifeneder, 2019). The ostracism attributed to a malicious motive and punitive motive is also supported by the literature (Masten et al., 2011; Wesselmann et al., 2009, 2013b). As a result of a study conducted for this purpose, participants assign less money if the target of ostracism had previously violated group norms. In cases where there was no violation of the norm, the participants assigned less money to the sources of ostracism (Rudert et al., 2020). Therefore, the attributions to be made about ostracism affect the appraisals of the observers about ostracism.

The third motive is the role-prescribed motive. Sometimes observers may not consider a behavior as ostracism. In such a situation, the observer may think that ostracism occurs within the framework of group norms and that this is related to the social status and social role of the target (Rudert & Greifeneder, 2019). For example, not allowing an undergraduate student to attend a department meeting at the university is not perceived as ostracism. This could be considered hierarchical as this is generally the norm and departmental meetings are private. It is also compatible with the social role of the student.

Attribution is relatively easy when the observer has sufficient knowledge about ostracism (source's motivation to ostracism and information about why the target was ostracized). However, the observer may not always have enough information notably in uncertain situations. In real life, ostracism may happen very quickly, and observers also need to make a quick assessment. Rudert and Greifeneder (2019) state that in cases of uncertainty, observers should make evaluations based on heuristics and social stereotypes to understand ostracism events. They suggested two perspectives: the social dissimilarity rule and stereotypes about the groups' facial appearance. These perspectives are explained below.

Observers usually report that ostracized individuals differ in certain characteristics from people who are the source of ostracism (e.g., ethnic differences, cognitive or physical disabilities, and social status; Rudert et al., 2018). Rudert and Greifeneder (2019) have called social dissimilarity rule the process of observers to do the attributions related to ostracism. For example, if an ostracized individual is different from the rest of the group (in terms of having a different race, cognitive or physical disabilities) and the group members are similar, the observers attribute to a malicious motive, and they might support the target. If the ostracized person is not different from the rest of the group, an observer may attribute this similarity to a punitive motive. In such a case, the observer may think that the excluded individual is doing something to reprehensibly mistake. The second perspective is stereotypes about the groups' facial appearance. Observers' attributions for ostracism may be affected by the target's and source's facial appearance. Usually, observers may not recognize the target and source and may infer from their facial appearances. The facial appearance effect is also supported by the literature. For instance, the results of a study conducted by Rudert et al. (2017) showed that participants' moral judgments about ostracism were affected by facial appearance.

Behavioral responses emerge after observers make an attribution about ostracism. Rudert and Greifeneder (2019) divided behavioral responses to observing ostracism into two groups: the punishment of sources and targets and self-protection. If observers attribute to a punitive motive, they will probably support the sources of ostracism. For instance, in a study conducted by utilizing Cyberball (Cyberball is an online ball tossing game to manipulate ostracism), observers tend to punish the target when the target passes the ball late to other players (Wesselmann et al., 2013b). On the other hand, if observers attribute to a malicious motive, they may support the target. For this purpose, observers may try to compensate for the ostracism of the target by punishing the inappropriate behaviors of the sources. This idea is also supported by the study of Wesselmann et al. (2013b). It was shown that in Cyberball, when

individuals observe that the target is ostracized without an apparent reason, they try to compensate by throwing more balls at the target. In addition, while the participants were throwing more balls to the target, they also punished sources by throwing fewer balls.

Another possible behavioral response to observing ostracism is self-protection. Observers' supportive or punitive attitudes towards the target or source may have some consequences. For example, when an observer supports the target, the observer itself can then become a target if the source realizes it. Especially if the observers are afraid that supporting the target will have negative consequences for them, they may act with the self-protection motivation. Even if they do not support the source morally, they may side with the source in order to protect themselves. This behavior is called “defensive ostracism” (Rudert & Greifeneder, 2019; Williams, 1997). On the other hand, observers may also punish targets by attributing to punitive motives. However, this includes some risks for observers. For example, targets may become powerful over time and observers themselves may be threatened with ostracism.

One of the behavioral consequences of observing ostracism can be considered in terms of the early detection system suggested by Williams (2007). Exposure to ostracism activates the mechanism for detecting ostracism. Similarly, observing ostracism may trigger the early detection system. Although they are not currently the subject of ostracism, they may be alert to threats and possibilities of ostracism.

1.2.2. Manipulating Being the Target of Ostracism and Observing Ostracism

Exclusion studies are mostly conducted experimentally in the laboratory. Although there are self-report measures, they generally measure the perceived ostracism (e.g., Ferris et al., 2008; Gilman et al., 2013; Sertelin-Mercan, 2016). For this reason, it is more appropriate to measure ostracism experimentally. There are many exclusion paradigms developed to manipulate ostracism. There are different paradigms that it becomes an important decision

which exclusion paradigm should be used in an experimental study. As suggested by Williams and Zadro (2001), using the multi-method approach makes the results of the studies more reliable. Because sometimes different paradigms can lead to different results. In order to prevent this, studies might be replicated using different exclusion paradigms. The paradigms frequently used in exclusion studies are Cyberball, eye gaze paradigm, ostracism online paradigm, get-acquainted, future life alone, reliving and pre-living paradigms (Wirth, 2016).

Observing ostracism is a relatively new concept. In order to manipulate observing ostracism, some adjustments can be made in ostracism paradigms. For example, the most commonly used observing ostracism manipulation is Cyberball, as in ostracism (e.g., Poon et al., 2020; Wesselmann et al., 2009). Cyberball is played on the computer. Video recording is made for observing ostracism and observing inclusion conditions. Observing ostracism is manipulated by making the participants watch these videos. The other method used is scenarios. Observing ostracism condition is created with the help of a scenario. Observing ostracism can also be manipulated in different ways by applying different exclusion paradigms. However, Cyberball and scenario manipulations are used in this dissertation, since Cyberball and scenarios are the most commonly used and known methods.

1.2.3. The Relationships Among Observing Ostracism, Being the Target of Ostracism, and Empathy

Empathy is the ability to enter an individual's life and to understand s/he feelings (Kalisch, 1973). It is also important to understand the feelings of ostracized people. Empathy may also play a crucial role in observing ostracism process. As a matter of fact, the negative consequences of observing ostracism can also be explained by the empathic skills of individuals (Giesen & Echterhoff, 2018). In the perception-action model of empathy, it is stated that observing the pain experienced by other individuals causes a somatic and autonomic reaction as if observers are experiencing the same pain. Also, the relationship between observing

ostracism and empathy may be more intense and clearer compared to exposure to ostracism. Observers can empathize with both the source and the target. To whom the observer will act empathetically might be explained by the attributions they make about ostracism. For example, if the observers attribute based on the punitive motive, they can empathize more with the source. If the observers attribute with malicious motive, they can empathize with the target and support the target.

On the other hand, not only the attributions about ostracism but also the relationships between the observer and target or source determine how observers behave. For example, if the target is someone the observer does not know, they may not be very empathetic towards each other. Nonetheless, if the target is someone familiar to the observer, then the observer may act more empathetically (Singer & Lamm, 2009). The same may be true for the source. If the observers know the source, they can act empathetically towards the source. Some studies try to explain the need threat posed by observing ostracism with empathy. In one of these, a group of observers was asked to take the perspective (perspective taking vs. no perspective-taking) of the individual ostracized in the Cyberball game. Observers in the perspective-taking group reported higher need threats compared to the other group (Wesselmann et al., 2009). In addition, there is a correlation between the activation of trait empathy-related regions in the brain such as the anterior insula (AI) and the medial prefrontal cortex (MPFC), and target-oriented prosocial behaviors (Masten et al., 2010; Wesselmann et al., 2013a). However, it can be hard to explain reactions to ostracism with only empathy.

1.3. Cognitive Flexibility

1.3.1. Definition of Cognitive Flexibility

Executive functions are the family of top-down mental processes that enable individuals to plan, pay attention, focus, or conduct multiple tasks at the same time (Diamond, 2013). According to the common opinion, executive functions have three cores (Diamond, 2013; Lehto

et al., 2003). These are inhibition (response inhibition, inhibitory control, behavioral inhibition, and cognitive inhibition), cognitive flexibility and working memory. Cognitive flexibility is also called mental flexibility, shifting, or creativity. Depending on these three cores, higher-order executive functions such as problem-solving, reasoning, and planning are built. (Diamond, 2013, 2014). These executive functions are also crucial and necessary for both physical and mental health (e.g., Fazeli et al., 2015; Koesten et al., 2009; Tchanturia et al., 2011).

In order to comprehend cognitive flexibility, it is helpful to understand other cognitive structures behind (such as inhibition and working memory). Inhibitory control includes the ability to control one's emotions, behaviors, attention, and thoughts instead of acting with inner impulses (Diamond, 2013; Logue & Gould, 2014). Response inhibition prevents impulsive response, acting uncontrollably and according to habits. Working memory is a core of executive functions that holds information in mind and enables this information to work in the mind. It is an essential core of executive functions, necessary to make sense of what happened. Because to make sense of something, it is necessary to know before the events and to establish a relationship between the events.

Canas et al. (2003) define cognitive flexibility as an ability to adapt cognitive processes and cognitive strategies to face new and unexpected circumstances in the environment. This definition contains three crucial points. First, cognitive flexibility is a concept that can be learned and gained through experience. Secondly, cognitive flexibility includes the adaptation of cognitive processes and cognitive strategies. Finally, cognitive flexibility involves adaptation to new and unexpected circumstances and environmental changes (Canas et al., 2006).

Cognitive flexibility is also an executive function that is important for cognitive skills. Cognitive flexibility has many definitions. However, there is no clear and apparent definition on which scientists fully agree in the literature. Therefore, there are different definitions of

cognitive flexibility. According to Diamond (2013, 2014), cognitive flexibility emerges based on the other two cores of the executive functions (inhibition and working memory). In addition, one of the most important aspects of cognitive flexibility is to alteration perspectives interpersonally or spatially, and how individuals think about something (For example, looking at an event from a different direction (spatially), or evaluating (interpersonally) a situation from someone else's perspective). Diamond (2013) stated that in order to change perspective, the previous perspective must be inhibited, and a different perspective should be loaded into working memory. For this reason, cognitive flexibility is based upon inhibition and working memory. According to Diamond's (2013) opinion, when problem solving does not work, a new solution or way is tried from a different perspective. Therefore, cognitive flexibility is an adaptive cognitive concept. Cognitive flexibility also includes adapting to changing situations and being flexible enough to take advantage of opportunities (Canas et al., 2006; Diamond, 2013).

In a study examining the nature of cognitive flexibility, Ionescu (2012) emphasized that cognitive flexibility is still a concept that is not sufficiently understood and that it is understood in multiple ways. Furthermore, Ionescu talks about the different definitions of cognitive flexibility and the importance of each. For instance, Takeuchi et al. (2010, p. 12) definition is that *"flexibility is the ability to produce responses from a wide perspective"*. According to Garcia-Garcia et al. (2010, p. 754), *"cognitive flexibility, the ability to adapt goal-directed behavior in response to changing environmental demands, is one crucial factor in the executive control of attention, and yet it varies widely amongst individuals"*. Diamond's (2006, p. 70) definition is that *"cognitive flexibility, that is, the ability to flexibly switch perspectives, the focus of attention, or response mappings"*. Cognitive flexibility definitions made by different researchers might be expanded. As can be seen from these definitions, there is no fully accepted

and agreed-upon definition of cognitive flexibility. However, researchers agree that cognitive flexibility is an important and improvable concept.

1.3.2. Importance of Cognitive Flexibility

Cognitive flexibility is an important concept in many ways. First of all, it is positively associated with some positive concepts such as self-esteem (Kim & Omizo, 2005), creativity (Dreu et al., 2011), resilience (Ram et al., 2019), and psychological well-being (Fathi-Ashtiani & Sheikholeslami, 2019; Malkoç & Kesen Mutlu, 2019).

A study examining the associations between cognitive flexibility, openness to experience, creativity and self-esteem reported that cognitive flexibility was positively associated with both creativity and self-esteem (Chen et al., 2022). Koesten et al., (2009) reported that cognitive flexibility positively predicted young adults' well-being. On the other hand, cognitive flexibility is negatively related with anxiety, impulsiveness, and depression (Yu et al., 2020). Thus, individuals with high cognitive flexibility may have higher self-esteem, psychological well-being, and creativity. Individuals who have low level cognitive flexibility may be more open to psychopathologies such as depression, anxiety, and stress. The aforementioned results show the importance of cognitive flexibility through its relationship with other variables. Nonetheless, the importance of cognitive flexibility arising from its own characteristics and nature should also be emphasized.

Cognitive flexibility might be defined as the skill to adapt and to achieve aims and behaviors according to changing and new environments. From these perspectives, cognitive flexibility is substantial for individuals because being cognitively flexible allows them to analyze situations differently and to find alternative solutions in the problem-solving processes. Being cognitively flexible may also lead to success. Because individuals who are cognitively flexible can adapt to new situations relatively easily. They can also be more resilient against stress, and cognitively flexible people might see different aspects of events (e.g., Beversdorf et

al., 1999; Esen-Aygun, 2018; Kalia et al., 2019; Krems, 1995). In addition, cognitively flexible individuals may have higher creativity. They may quickly switch between thoughts on more than one concept. They can cope better with stressful events and easily adapt to new stimuli and information (e.g., Alexander et al., 2007; Dreu et al., 2011; Wu & Koutstaal, 2020). For these reasons, cognitive flexibility is an important concept that may positively affect individuals' lives.

1.3.3. Implications of Cognitive Flexibility for Ostracism

There are various studies on the relationship between ostracism and some cognitive processes (like confirmatory information processing, cognitive control process, social information processing, visual working memory, working memory performance; e.g., Baumeister et al., 2002; Buelow et al., 2015; Du et al., 2019). However, these studies are not sufficiently consistent with each other to allow a consensus. For example, studies mostly state that ostracism affects cognitive processes negatively and cognitive performance decreases due to ostracism (e.g., Baumeister et al., 2002, 2005; Buelow et al., 2015; Fuhrman et al., 2019; Greitemeyer et al., 2012; Lustenberger & Jagacinski, 2010; Hawes et al., 2012; Tobia et al., 2017; Wang & Sha, 2018). A limited number of studies state that ostracism increases cognitive performance or has no effect on cognitive performance (e.g., Bossi et al., 2018; Du et al., 2019; Gardner et al., 2000; Jamieson et al., 2010; Juanchich et al., 2018; Kiat et al., 2018; Otten & Jonas, 2013; Xu et al., 2016). Because of these inconsistent results, it is crucial to examine the association between different cognitive variables (such as cognitive flexibility, working memory, response inhibition) and ostracism. The effect of ostracism on cognitive performance may also affect the ostracism reactions of individuals. Therefore, studies on the relationships between ostracism and cognitive processes are crucial.

Cognitive flexibility can also be considered as one of these cognitive variables. However, the number of studies on the relationship between ostracism and cognitive flexibility

is considerably limited. The effect of ostracism on cognitive flexibility may be determinative in the behavior or reactions of individuals following ostracism. In other words, the reactions and behaviors of individuals following ostracism may be tried to be explained from the perspective of cognitive flexibility.

1.3.4. Measuring Cognitive Flexibility

Measurement and measurement methodology become very important in a cognitive variable. Because different measurement methods have been developed to measure cognitive flexibility, as well. Cognitive flexibility is a variable that is more appropriate to measure with the help of tasks due to its nature and structure. However, there are also cognitive flexibility measurements made with the pen and paper method in the literature (e.g., Bilgin, 2009; Çelikkaleli, 2014; Dennis & Vander Wal, 2010; Martin & Anderson, 1998).

Cognitive flexibility, which is measured as self-report, can be discussed and cause problems. Especially in an experimental research design, measuring cognitive flexibility with tasks can provide important advantages. For this purpose, various tasks have been developed to measure cognitive flexibility. Verbal design, or semantic fluency might be given as examples of psychological tasks used to evaluate cognitive flexibility. In addition, cognitive flexibility can be measured using set-shifting tasks or task-switching (Diamond, 2013). One of the oldest and classic examples of these measurements is the Wisconsin Card Sorting Test. This test is suitable for adults and school-aged children (Diamond, 2013; Ionescu, 2012). In this test, participants arrange the cards according to their shapes and colors, and the rules are changed without informing participants.

Task switching paradigms generally involve two types of tasks (e.g., whether a number is even or odd, the color or shape of the stimulus is asked, or the stimulus is on the left or right) (Diamond, 2013). One of the well-known switching tasks is the Dimensional Change Card Sort. In this task, participants first begin to sort the cards following a rule. They then proceed to sort

according to a different rule (e.g., sort by color and sort by shape) (Ionescu, 2012), and it was developed for children. There are also other tasks to measure cognitive flexibility, and these are the appearance-reality distinction, the induction task, the Stroop test, the day-night Stroop like test, the flexible item selection task, the pattern completion task, the A not B task, the optional shift task, and the alternative uses task (Ionescu, 2012).

In this dissertation, a new cognitive flexibility task was used to measure cognitive flexibility. In this task, participants are required to generate five different sentences from the words of eight different categories given in a mixed table. Cognitive flexibility was measured through these five different sentences that the participant generates (Cambaz & Ünal, 2021).

1.4. The Relationship Between Being the Target of Ostracism and Cognitive Flexibility

The relationship between ostracism and cognitive processes has long been of great interest to researchers. Various studies (although relatively few) have been conducted to examine the relationships between ostracism and cognitive processes. However, the results obtained from these studies are not consistent enough to allow a definite conclusion. A significant part of these studies states that ostracism experience leads to deterioration in cognitive processes (e.g., Baumeister et al., 2002, 2005; Buelow et al., 2015; Fuhrman et al., 2019; Hawes et al., 2012). Nevertheless, contrary to these findings, there are also studies showing that ostracism does not cause impairment in cognitive processes or has no effect (e.g., Bossi et al., 2018; Du et al., 2019; Juanchich et al., 2018; Kiat et al., 2018).

On the other hand, another problem in the relationship between ostracism and cognitive processes is the breadth of the term "cognitive processes". Ostracism and cognitive processes are generally related to cognitive control processes (Wang & Sha, 2018), confirmatory information processing (Greitemeyer et al., 2012), anticipatory attention processes (Kiat et al., 2018), working memory (Buelow et al., 2015; Fuhrman et al., 2019; Xu et al., 2018), behavioral

activation and inhibition systems (Yanagisawa et al., 2011), selective attention (Xu et al., 2017), decision making (Juanchich et al., 2018), and self-regulation (Baumeister et al., 2005). The relationships between ostracism and cognitive processes were carried out over these cognitive variables.

In this dissertation, the relationship between cognitive flexibility and ostracism, as one of the cognitive processes, is examined. To our knowledge, there is no study in the literature examining the relationship between ostracism and cognitive flexibility. Only a study has been found in the literature investigating the relationship between cognitive flexibility and ostracism (Mortezazadeh et al., 2021). The result of the study show that ostracism reduces cognitive flexibility, but social acceptance increases the level of cognitive flexibility. As far as is known, apart from Mortezazadeh's et al. (2021) study, there is no study examining the relationship between ostracism and cognitive flexibility. For this reason, the relationship between cognitive flexibility and ostracism may be examined through the other cores of the executive function (response inhibition and working memory) on which cognitive flexibility is based. For instance, in a study examining the effect of social exclusion on working memory in young adolescent girls, verbal working memory performance decreased following social exclusion. Also, social exclusion had no effect on visuo-spatial working memory (Fuhrman et al., 2019). In a study investigating the effect of ostracism on children's cognitive processes, girls showed lower working memory performance following ostracism, but no difference was found in boys (Hawes et al., 2012). Other research results show that exclusion negatively affects working memory (Paolini et al., 2020; Xu et al., 2018). There are also studies reporting that exclusion increases working memory capacity (Du et al., 2020). In a study conducted with patients with bipolar personality disorder, major depression and a healthy group, the effect of social exclusion on response inhibition was examined. The results showed that participants in the depression and healthy control groups exhibited better response inhibition performance. There was no

difference in the performance of the participants in the bipolar personality disorder and major depression groups (Ernst et al., 2018). Zhang et al. (2021) also found that social exclusion increases executive control performance. When all these results are evaluated together, the difficulty in making a definitive interpretation of how exclusion affects cognitive flexibility stands as a remarkable point.

1.5. The Relationship Between Observing Ostracism and Cognitive Flexibility

It was mentioned in the previous section that there is only one study examining the relationship between ostracism and cognitive flexibility. Studies investigating the relationship between observing ostracism and cognitive processes also are very limited (Marinović & Träuble, 2018). Therefore, it does not seem possible to directly talk about the relationship between observing ostracism and cognitive flexibility or any cognitive processes. However, when considered indirectly, there may be a relationship between observing ostracism and cognitive flexibility. Because observing ostracism and ostracism pose a similar need threat. In other words, both observing ostracism and being the target of ostracism have similar effects (Giesen & Echterhoff, 2018; Wesselmann, 2013a, 2013b). Being the target of ostracism is also positively or negatively related to cognitive processes. Thus, observing ostracism may also affect cognitive processes. Similar to being the target of ostracism, the effects of observing ostracism might be positive or negative.

These two possibilities (positive or negative effects of observing ostracism on cognitive processes) may be explained as follows: Observing ostracism may also negatively affect cognitive processes. Observing ostracism may lead to an impairment in cognitive processes. Nonetheless, conversely, it might also activate the evolutionary alarm system expressed in the temporal need-threat model. Therefore, observing ostracism may also lead to an increase in cognitive performance. More research is needed to determine the effect of observing ostracism on cognitive processes. This dissertation aimed to contribute to this gap in the literature.

1.6. Present Study

1.6.1. Study 1

Within the scope of this dissertation, Study 1 was conducted to determine whether observing ostracism and being the target of ostracism scenarios could be adapted to Turkish manipulate properly. For this purpose, the ostracism scenarios used by Pfundmair et al. (2015) were adapted as being the target of ostracism and inclusion scenarios. Moreover, observing ostracism and observing inclusion scenarios were developed based on the being the target of ostracism scenarios. To better understand the effectiveness of these scenarios, the future life alone paradigm, which is a scenario-based exclusion paradigm, was also used. It was aimed to examine the effectiveness of the manipulations by measuring the need threat after each ostracism manipulation. For this aim, the following three hypotheses were investigated within the scope of Study 1.

H1: Observing ostracism scenario affects need threats in a negative way.

H2: Being the target of ostracism scenario affects need threats in a negative way.

H3: Future life alone exclusion paradigm affects need threats in a negative way.

1.6.2. Study 2

The main aim of this dissertation is to examine the effect of observing ostracism and being the target of ostracism on cognitive flexibility. Although relatively few, there are studies examining the relationship between ostracism and cognitive processes such as cognitive control process (Wang & Sha, 2018), confirmatory information processing (Greitemeyer et al., 2012), social information processing (Bossi, et al., 2018), visual working memory (Xu et al., 2018), cognitive performance (Jamieson, et al., 2010), working memory performance (Fuhrman et al., 2019), selective attention (Xu et al., 2017), cognitive process, and decision making (Juanchich et al., 2018). However, the results of the aforementioned studies are not consistent with each

other. Some of these studies state that ostracism positively affects cognitive performance (e.g., Du et al., 2019; Jamieson et al., 2010; Kiat et al., 2018). Still, ostracism influences cognitive performance negatively or has no effect (e.g., Baumeister et al., 2002, 2005; Buelow et al., 2015; Bossi et al., 2018; Fuhrman et al., 2019; Greitemeyer et al., 2012; Juanchich et al., 2018). Thus, new studies on the relationship between ostracism and cognitive processes are needed in the field.

Inconsistent results between ostracism and cognitive abilities or processes may be explained in two ways. The first one is that an experience of ostracism causes individuals to deplete their cognitive resources. Depleted resources can cause a person's cognitive performance to decline. This explanation seems quite plausible because ostracism is an undesirable and negative situation. The second explanation might be made within the framework of the temporal need-threat model proposed by Williams (2009). In this model, it is mentioned that people develop an evolutionary alarm mechanism that helps to anticipate exclusion. With this alarm system, individuals may accurately decide whether the perception of ostracism is correct or not. This evolutionary alarm system is highly sensitive because the cost of missing true ostracism is greater than the cost of a false alarm. Thus, being a target of ostracism can trigger a person's alarm system, leading them to perform cognitively better.

The results of the research in the literature support both explanations above. However, it is not easy to make an accurate judgment about how observing ostracism affects cognitive performance. Because, as far as is known, there is no research has examined the relationship between observing ostracism and any cognitive process in the literature. From this perspective, the most important and focused point of this dissertation is to examine how observing ostracism affects cognitive flexibility. To our knowledge, there is no research on the effect of observing ostracism on any cognitive processes. Therefore, explanations on how ostracism affects cognitive processes can also be valid for observing ostracism.

To test the effect of observing ostracism and being the target of ostracism on cognitive flexibility, the scenarios tested in the 1st study were used in the 2nd study. The aim of the 2nd study is to examine the effects of observing ostracism and being the target of ostracism on cognitive flexibility separately. As far as is known, only one study examined the relationship between social exclusion and cognitive flexibility (Mortezazadeh et al., 2021). Study 2 will contribute to filling this gap in the literature from this aspect. Furthermore, it is planned to see the effects of being the target of ostracism and observing ostracism on empathy and need threat with need-threat, empathy measurements taken right after the cognitive flexibility task. Two research questions were addressed within the scope of Study 2.

RQ 1: Does observing ostracism have any effects on cognitive flexibility?

RQ 2: Does being the target of ostracism affect cognitive flexibility?

RQ 3: Does observing ostracism affect empathy?

RQ 4: Does being the target of ostracism affect empathy?

H1: Observing ostracism scenario affects need threats in a negative way.

H2: Being the target of ostracism scenario affects need threats in a negative way.

1.6.3. Study 3

The purpose of Study 3 is to replicate the results obtained in Study 2 using a different ostracism paradigm. There are many exclusion paradigms used to manipulate exclusion. The Cyberball, the eye gaze paradigm, the ostracism online paradigm, the get-acquainted, the future life alone paradigm, and the reliving and pre-living paradigms are some of them (Wirth, 2016). Sometimes different paradigms can lead to different results in exclusion studies. Therefore, the paradigm used to manipulate exclusion is very substantial. For example, inconsistent results regarding the relationships between ostracism and cognitive processes may also be due to the

paradigms used in the research. In the literature, an approach the name of which is “the multi-method approach” is suggested to overcome the problems arising from paradigm differences (Williams & Zadro, 2001).

The multi-method approach includes using more than one exclusion paradigm and examining the results with two different paradigms. Hence, the reliability and validity of the obtained results also increase. At least, it allows the interpretation that the result obtained is independent of the paradigm used. The fact that the results regarding the relationship between ostracism and cognitive processes are different may also raise problems related to the methodology. For this reason, the 3rd study is planned to increase the reliability of the 2nd study. The same procedure was followed in the third study as in the 2nd study. Within the scope of the multi-method approach, an ostracism paradigm called the “Cyberball” was used instead of the scenarios in Study 3. The same research questions in Study 2 were addressed within the scope of Study 3.

RQ 1: Does observing ostracism have any effects on cognitive flexibility?

RQ 2: Does being the target of ostracism affect cognitive flexibility?

RQ 3: Does observing ostracism affect empathy?

RQ 4: Does being the target of ostracism affect empathy?

H1: Observing ostracism (Cyberball) affects need threats in a negative way.

H2: Being the target of ostracism (Cyberball) affects need threats in a negative way.

2. STUDY 1

2.1. Method

2.1.1. Participants

Two hundred and sixty-three undergraduate students (39 males, 224 females, ages 18 to 34, $M = 20.60$, $SD = 2.32$) participated in this study. In total, 6 different conditions were created, including three exclusion and three inclusion (38 participants observing ostracism and 46 participants inclusion; 42 participants being the target of ostracism and 41 participants inclusion; 44 participants future life alone ostracism and 52 participants inclusion). The convenience sampling method was used. The inclusion criteria consisted of age over 18 years, answering all tasks and all the items in the questionnaires, and volunteering to participate in the study. The exclusion criteria consisted of participants who did not complete the entire experiment and stayed in the experiment for too long. Ethical approval was obtained from Ankara Yıldırım Beyazıt University Ethical Committee (Approval Date: 16.04.2021, Approval Number: 14).

Prior to data collection part, an informed consent form stating the details about the study was provided to the participants. Only participants who volunteered for the study, approved the form and consented to participate were included in the study. Participants were given extra points for their courses as an incentive.

2.1.2. Measures

2.1.2.1. Demographic Information Form

A demographic information form was created that includes questions about age and gender.

2.1.2.2. Observing Ostracism Scenario

In order to manipulate observing ostracism, the participants were given an observing ostracism experience vignette. Observing ostracism scenario was developed from the scenarios used by Pfundmair et al. (2015). Two conditions (observing ostracism and inclusion) were established in total. Participants in the first condition read an observing ostracism scenario. In control condition, participants read inclusion experience (see Appendix A for the scenarios).

2.1.2.3. Being the Target of Ostracism Scenario

To manipulate ostracism, the participants were given an ostracism experience vignette. Being the target of ostracism scenario was adapted from the scenarios used by Pfundmair et al. (2015). Two conditions (ostracism and inclusion) were created in total. The participants in the first condition read an ostracism scenario about themselves. In control condition, the participants read inclusion experience (see Appendix B for the scenarios).

2.1.2.4. Future Life Alone Exclusion Paradigm

To manipulate social exclusion, the future life alone paradigm was used. In this paradigm, participants fill out a personality scale, then an experimenter or a computer program analyzes participants' scores for the personality scale. After that, the researcher shares the feedback with participants. The participants who are in exclusion condition are informed that they will be alone in the future and their existing friendship will not continue. Those in the inclusion condition are given the opposite feedback (e.g., you will have rewarding relationships throughout your life) (Baumeister et al., 2002, 2005) (see Appendix C for the scenarios).

2.1.2.5. The Need Threat Scale

This scale is used to measure the need threat after exclusion manipulation. Need Threat scale was developed by Van Beest and Williams (2006) in order to measure the effect of ostracism on the participants' five basic needs (Hales and Williams, 2018). The scale's adaptation studies were conducted by Aydın et al. (2013). The scale consists of 5-point Likert type 25 items. The lowest score that can be obtained for each basic need are 5, and the highest score is 25. Low scores indicate that manipulation of exclusion leads to need threats. In the current research, Cronbach Alpha values were found out as .94 for the need to belong, .94 for self-esteem, .93 for control and .87 for meaningful existence, and .89 for certainty. McDonald's Omega reliability values were found out as .94 for the need to belong, .94 for self-esteem, .93 for control and .87 for meaningful existence, and .89 for certainty. The original scale was adapted according to the scenarios (see Appendix D for the scale).

2.1.2.6. Manipulation Check

After the reading scenarios and future life alone paradigm, the following manipulation check questions were asked to determine whether exclusion manipulations work: "I felt I was being ignored.", "I felt I was being excluded.", and "Ali was being ignored", "Ali was being excluded" (on a scale ranging from 1 (not at all) to 5 (extremely)).

2.1.3. Design and Procedure

Firstly, ethical approval was obtained from Ankara Yıldırım Beyazıt University Ethical Committee. Then participants were selected from undergraduate students studying at a state university in Turkey. Totally 263 participants were included in this study. In total, 6 different conditions were created, including three exclusion and three inclusion (observing ostracism, observing inclusion, being the target of ostracism, being the target of inclusion, future life alone exclusion, future life alone inclusion). Because the study was conducted online, the participants were able to participate in the study at any time of the day. The study was conducted on the

internet via Qualtrics, and participants participated in the study individually. Participants were randomly assigned to each condition. Immediately after the manipulation, manipulation control questions were asked. Then, the participants filled in need threat scale. The study took approximately 10 minutes. When the study is completed, participants were debriefed and thanked for their participation.

2.1.4. Data Analysis

First of all, skewness and kurtosis values were examined to assess normal distribution assumption. The manipulation check for ostracizing status was tested using independent sample t-test. Then, to investigate different ostracism manipulations impact on basic human needs (need to belong, self-esteem, meaningful existence, control, and certainty) one-way ANOVA analyses was conducted. All analysis were conducted with the open access statistics program JASP (Goss-Sampson, 2020; JASP, 2021).

2.2. Results

2.2.1. Manipulation Checks

Before the main analyses, manipulation checks were examined. The participants in the being the target of ostracism condition reported that the target was more ignored ($M = 4.33$, $SD = .95$) and excluded ($M = 4.36$, $SD = .98$) than the participants assigned to the inclusion condition ($M = 1.39$, $SD = .89$; $M = 1.34$, $SD = .76$, respectively) ($t(81) = 14.51$, $p < .001$, $d = 3.19$, 95% CI [2.54, 3.35]; $t(81) = 15.64$, $p < .001$, $d = 3.42$, 95% CI [2.63, 3.40]).

The participants assigned to the observing ostracism condition reported that the target was more ignored ($M = 3.47$, $SD = 1.55$) and excluded ($M = 3.47$, $SD = 1.45$) than the participants in the observing inclusion condition ($M = 1.63$, $SD = 1.04$; $M = 1.54$, $SD = 1.01$, respectively) ($t(82) = 6.48$, $p < .001$, $d = 1.42$, 95% CI [1.28, 2.41]; $t(82) = 7.19$, $p < .001$, $d = 1.58$, 95% CI [1.40, 2.46]).

The participants in the future life alone ostracism condition reported that the target was more ignored ($M = 3.89$, $SD = 1.17$) and excluded ($M = 3.59$, $SD = 1.37$) than the participants in the inclusion condition ($M = 1.77$, $SD = 1.32$; $M = 1.29$, $SD = .67$, respectively) ($t(94) = 8.25$, $p < .001$, $d = 1.69$, 95% CI [1.61, 2.63]; $t(94) = 10.72$, $p < .001$, $d = 2.20$, 95% CI [1.88, 2.73]). Taken together, these results affirmed the effectiveness of manipulations.

2.2.2. The Effects of Observing Ostracism, Being the Target of Ostracism, and Future Life Alone Exclusion on the Need Threat Scale

In order to test different ostracism manipulations effects (observing ostracism, being the target of ostracism, and future life alone) on need to belong, self-esteem, control, meaningful existence, and certainty, one-way ANOVA analyses was performed. Descriptive statistics were given in the Table 2.1.

Table 2.1. Descriptive statistics on the need threat scores of experimental groups

		Observing Ostracism (n = 38)	Observing Inclusion (n = 46)	Ostracism (n = 42)	Inclusion (n = 41)	Future Life Exclusion (n = 44)	Future Life Inclusion (n = 52)
NB	M	12.03	21.09	8.19	21.88	12.70	20.65
	SD	5.81	4.21	3.17	4.12	5.62	2.99
SE	M	11.39	20.78	8.57	21.39	12.79	20.12
	SD	5.13	3.63	3.68	4.44	5.19	3.36
ME	M	13.63	21.46	9.88	22.22	14.50	21.12
	SD	5.81	4.09	4.64	4.08	5.44	2.78
CON	M	12.00	19.15	9.69	20.27	15.04	18.72
	SD	5.11	4.11	3.80	3.65	4.26	3.68
CER	M	13.76	20.20	12.05	20.98	14.66	19.06
	SD	5.56	3.93	4.66	4.20	4.64	5.54

Note. NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, M: mean, SD: standard deviation

Table 2.2. Skewness and kurtosis values of the need threat scale

	NB	SE	ME	CON	CER
Skewness	-.377	-.286	-.575	-.445	-.409
SE	.150	.150	.150	.150	.150
Kurtosis	-1.27	-1.25	-.970	-.836	-.729
SE	.300	.300	.300	.300	.300

Note. NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, SE: standard error

Skewness and kurtosis values were examined to assess normal distribution assumption. All skewness and kurtosis values are in the range of +2 and -2. According to George and Mallery (2016), values between +2 and -2 are within acceptable limits. Therefore, it was decided to perform the analyses using the parametric test.

Table 2.3. The effect of ostracism manipulations on need to belong

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Ostracism Groups	7318.144	5	1463.629	75.782	< .001	0.597
Residuals	4944.298	256	19.314			

A one-way between groups analysis of variance was carried out to explore the impact of the ostracism manipulations on need to belong. The results revealed that there is a statistically significant differences in the means of need to belong score among ostracism groups ($F(5, 256) = 75.78, p < .001$). The actual difference in the mean need to belong scores between the groups was quite strong. The effect size, calculated using eta squared, was .60.

Table 2.4. Post hoc results on the impact of different exclusion paradigms on need to belong

			95% CI for Mean Difference		SE	t	p _{bonf}
			Lower	Upper			
		Mean Difference					
OST	INC	-13.688	-16.458	-10.917	0.965	-14.186	< .001
	OBS_OST	-3.836	-6.661	-1.011	0.984	-3.899	0.002
	OBS_INC	-12.896	-15.590	-10.203	0.938	-13.750	< .001
	FL	-4.514	-7.236	-1.792	0.948	-4.761	< .001
	FL_INC	-12.457	-15.086	-9.827	0.916	-13.603	< .001
INC	OBS_OST	9.852	7.010	12.693	0.990	9.955	< .001
	OBS_INC	0.791	-1.919	3.501	0.944	0.838	1.000
	FL	9.174	6.434	11.913	0.954	9.616	< .001
	FL_INC	1.231	-1.416	3.878	0.922	1.335	1.000
OBS_OST	OBS_INC	-9.061	-11.827	-6.294	0.963	-9.405	< .001
	FL	-0.678	-3.473	2.116	0.973	-0.697	1.000
	FL_INC	-8.621	-11.325	-5.916	0.942	-9.154	< .001
OBS_INC	FL	8.382	5.721	11.043	0.927	9.045	< .001
	FL_INC	0.440	-2.126	3.006	0.894	0.492	< .001
FL	FL_INC	-7.943	-10.539	-5.346	0.904	-8.784	0.002

Note. OST: ostracism, INC: inclusion, OBS_OST: observing ostracism, OBS_INC: observing inclusion, FL: future life alone exclusion, FL_INC: future life alone inclusion, SE: standard error, Bonf: Bonferroni post hoc test

Post-hoc comparisons using the Bonferroni test indicated that the mean score for the ostracism group ($M = 8.19$, $SD = 3.17$) was significantly lower than the inclusion group ($M = 21.88$, $SD = 4.12$). The observing ostracism ($M = 12.03$, $SD = 5.81$) and the future life alone exclusion ($M = 12.70$, $SD = 5.62$) groups had significantly lower need to belong scores than their inclusion groups ($M = 21.09$, $SD = 4.21$; $M = 20.65$, $SD = 2.99$). There were no statistically

significant differences between control groups. There was no significant difference between the observing ostracism and the future life alone exclusion groups, but the need to belong score for the ostracism group was lower than the other exclusion groups.

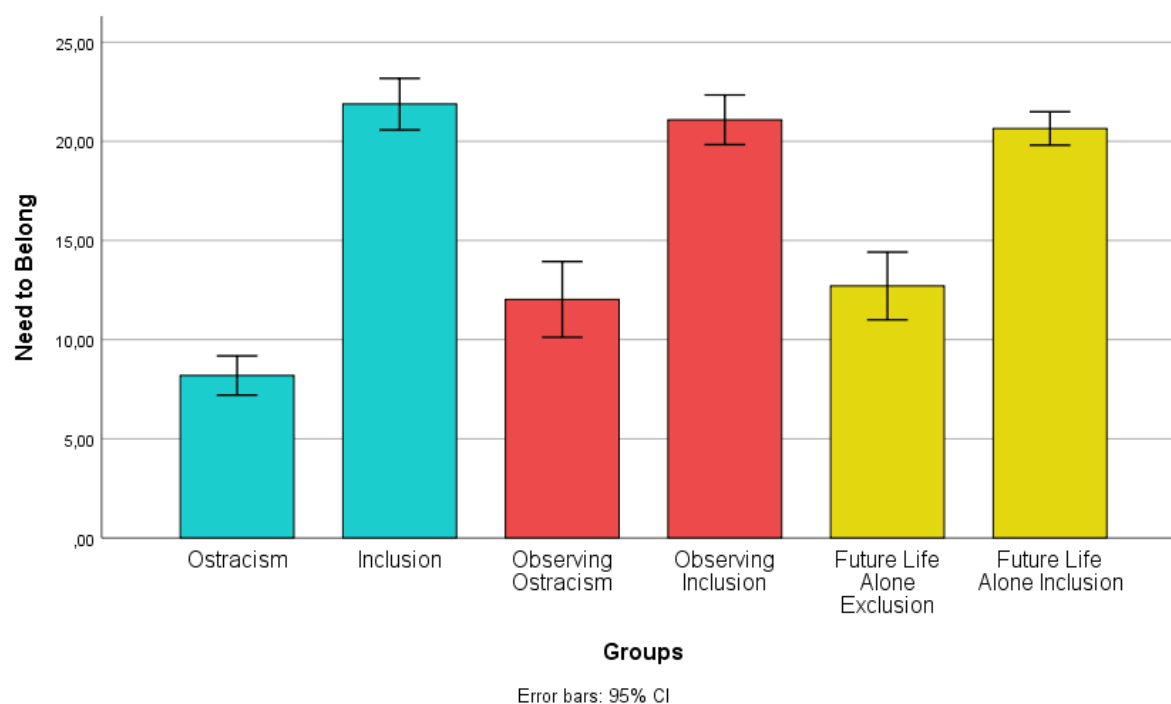


Figure 2.1. Need to belong scores for different ostracism manipulations

Table 2.5. Effect of ostracism manipulations on self-esteem

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Ostracism	6681.581	5	1336.316	73.833	< .001	0.591
Groups						
Residuals	4633.400	256	18.099			

A one-way between groups analysis of variance was conducted to explore the effect of the ostracism manipulations on self-esteem. The results revealed that there is a statistically significant difference in the means of self-esteem score among ostracism groups ($F(5,256) = 73.83, p < .001$). The actual difference in mean self-esteem scores between the groups was quite strong. The effect size, calculated using eta squared, was .59.

Post-hoc comparisons using the Bonferroni test indicated that the mean score for the ostracism group ($M = 8.57$, $SD = 3.68$) was significantly lower than the inclusion group ($M = 21.39$, $SD = 4.44$). The observing ostracism ($M = 11.39$, $SD = 5.13$) and the future life alone exclusion ($M = 12.79$, $SD = 5.19$) groups had significantly lower self-esteem scores than their inclusion groups ($M = 20.78$, $SD = 3.63$; $M = 20.12$, $SD = 3.36$). There were no statistically significant differences between control groups. There was no significant difference between observing ostracism and ostracism groups, but the self-esteem score of the ostracism group was lower than the future life alone exclusion group (see also Table 2.6.).



Table 2.6. Post hoc results on the impact of different exclusion paradigms on self-esteem

		95% CI for Mean					
		Mean Difference	Difference		SE	t	p bonf
			Lower	Upper			
OST	INC	-12.819	-15.501	-10.137	0.934	-13.724	< .001
	OBS_OST	-2.823	-5.558	-0.088	0.952	-2.964	0.050
	OBS_INC	-12.211	-14.818	-9.604	0.908	-13.449	< .001
	FL	-4.224	-6.859	-1.589	0.918	-4.603	< .001
	FL_INC	-11.546	-14.092	-9.001	0.886	-13.025	< .001
INC	OBS_OST	9.996	7.245	12.746	0.958	10.434	< .001
	OBS_INC	0.608	-2.016	3.231	0.914	0.665	1.000
	FL	8.595	5.943	11.246	0.923	9.307	< .001
	FL_INC	1.273	-1.290	3.835	0.892	1.426	1.000
OBS_OST	OBS_INC	-9.388	-12.066	-6.710	0.933	-10.066	< .001
	FL	-1.401	-4.106	1.305	0.942	-1.487	1.000
	FL_INC	-8.723	-11.341	-6.105	0.912	-9.568	< .001
OBS_INC	FL	7.987	5.411	10.563	0.897	8.903	< .001
	FL_INC	0.665	-1.819	3.149	0.865	0.769	1.000
FL	FL_INC	-7.322	-9.836	-4.809	0.875	-8.365	< .001

Note. OST: ostracism, INC: inclusion, OBS_OST: observing ostracism, OBS_INC: observing inclusion, FL: future life alone exclusion, FL_INC: future life alone inclusion, SE: standard error, Bonf: bonferroni post hoc test

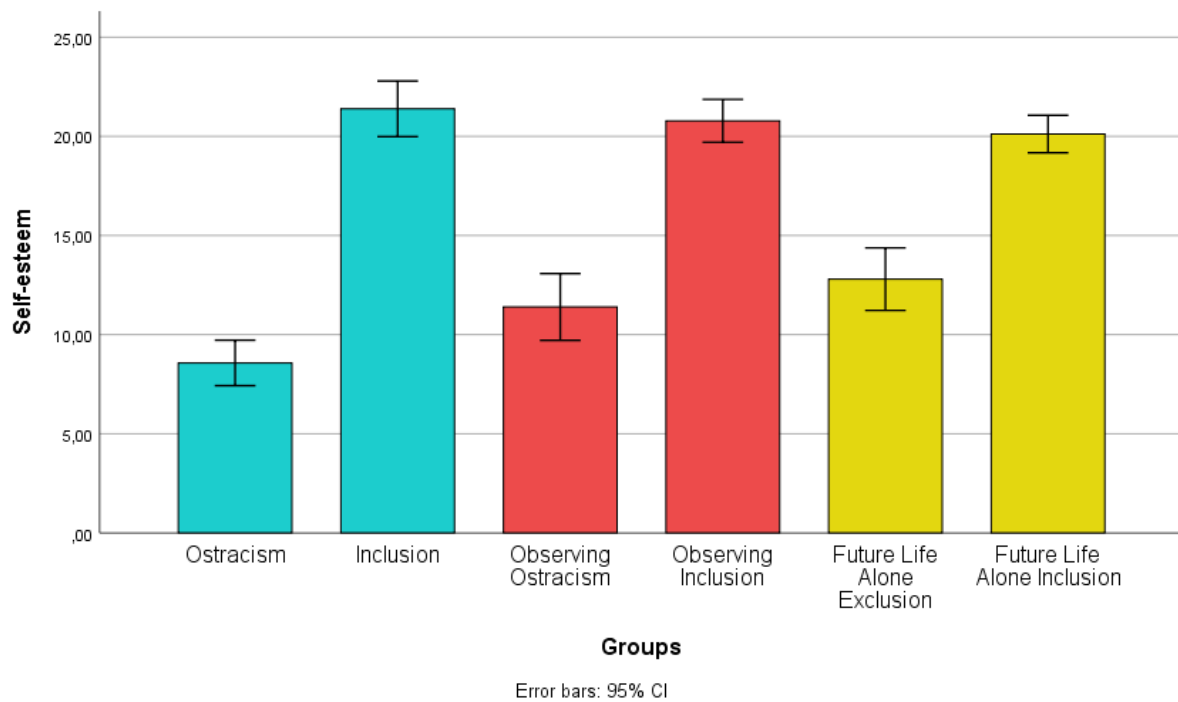


Figure 2.2. Self-esteem scores for different ostracism manipulations

Table 2.7. The effect of ostracism manipulations on meaningful existence

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Ostracism Groups	5705.945	5	1141.189	56.009	< .001	0.522
Residuals	5216.044	256	20.375			

A one-way between groups analysis of variance was conducted to explore the effect of the ostracism manipulations on meaningful existence. The results revealed that there is a statistically significant differences in mean meaningful existence score among ostracism groups ($F(5,256) = 56.01, p < .001$). The actual difference in mean meaningful existence scores between the groups was quite strong. The effect size, calculated using eta squared, was .52.

Table 2.8. Post hoc results on the impact of different exclusion paradigms on meaningful existence

		95% CI for Mean					
		Mean Difference	Difference		SE	t	p _{bonf}
			Lower	Upper			
OST	INC	-12.339	-15.184	-9.493	0.991	-12.451	< .001
	OBS_OST	-3.751	-6.652	-0.849	1.011	-3.711	0.004
	OBS_INC	-11.597	-14.364	-8.831	0.963	-12.038	< .001
	FL	-4.619	-7.415	-1.823	0.974	-4.744	< .001
	FL_INC	-11.237	-13.937	-8.536	0.941	-11.947	< .001
INC	OBS_OST	8.588	5.669	11.507	1.016	8.449	< .001
	OBS_INC	0.741	-2.043	3.525	0.969	0.765	1.000
	FL	7.720	4.906	10.533	0.980	7.879	< .001
	FL_INC	1.102	-1.617	3.821	0.947	1.164	1.000
OBS_OST	OBS_INC	-7.847	-10.688	-5.005	0.990	-7.930	< .001
	FL	-0.868	-3.739	2.002	1.000	-0.869	1.000
	FL_INC	-7.486	-10.264	-4.708	0.967	-7.739	< .001
OBS_INC	FL	6.978	4.245	9.711	0.952	7.331	< .001
	FL_INC	0.361	-2.275	2.996	0.918	0.393	1.000
FL	FL_INC	-6.618	-9.285	-3.951	0.929	-7.125	< .001

Note. OST: ostracism, INC: inclusion, OBS_OST: observing ostracism, OBS_INC: observing inclusion, FL: future life alone exclusion, FL_INC: future life alone inclusion, SE: standard error, Bonf: Bonferroni post hoc test

Post-hoc comparisons using the Bonferroni test indicated that the mean score for the ostracism group ($M = 9.88$, $SD = 4.64$) was significantly lower than the inclusion group ($M = 22.22$, $SD = 4.08$). The observing ostracism ($M = 13.63$, $SD = 5.81$) and the future life alone exclusion ($M = 14.50$, $SD = 5.44$) groups had significantly lower meaningful existence scores

than their inclusion groups ($M = 21.46$, $SD = 4.09$; $M = 21.12$, $SD = 2.78$). There were no statistically significant differences between control groups. There was no significant difference between the observing ostracism and the future life alone exclusion groups, but the meaningful existence score of the ostracism group was lower than the other exclusion groups.

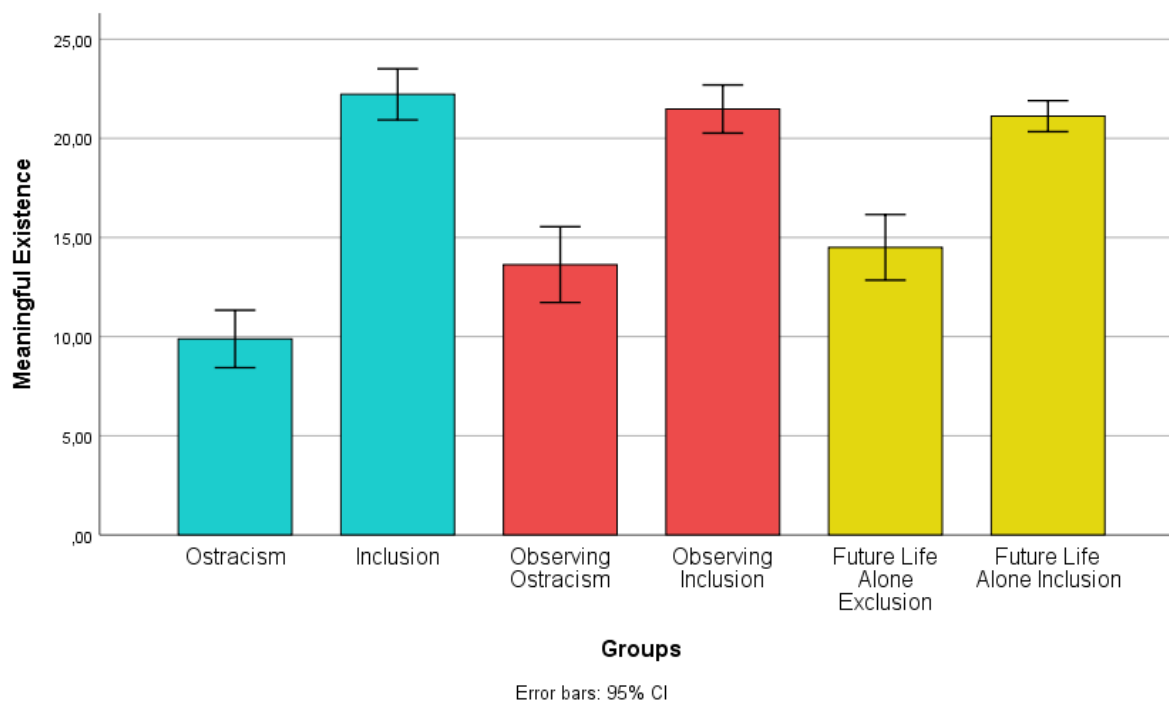


Figure 2.3. Meaningful existence scores for different ostracism manipulations

Table 2.9. Effect of ostracism manipulations on control

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Ostracism Groups	3902.974	5	780.595	46.332	< .001	0.475
Residuals	4313.026	256	16.848			

A one-way between groups analysis of variance was conducted to explore the effect of the ostracism manipulations on need for control. The results revealed that there is a statistically

significant differences in mean control need score among ostracism groups ($F(5,256) = 46.33$, $p < .001$). The actual difference in mean meaningful existence scores between the groups was quite strong. The effect size, calculated using eta squared, was .47.

Post-hoc comparisons using the Bonferroni test indicated that the mean score for the ostracism group ($M = 9.69$, $SD = 3.80$) was significantly lower than the inclusion group ($M = 20.27$, $SD = 3.65$). The observing ostracism ($M = 12.00$, $SD = 5.11$) and the future life alone exclusion ($M = 15.04$, $SD = 4.26$) groups had significantly lower control need scores than their inclusion groups ($M = 19.15$, $SD = 4.11$; $M = 18.72$, $SD = 3.68$). There were no statistically significant differences between control groups. There was no significant difference between observing ostracism and ostracism groups, but the future life alone exclusion group was higher need for control scores than the other exclusion groups (see also Table 2.10.).

Table 2.10. Post hoc results on the impact of different exclusion paradigms on control

		95% CI for Mean					
		Mean Difference	Difference		SE	t	p _{bonf}
			Lower	Upper			
OST	INC	-10.578	-13.165	-7.990	0.901	-11.738	< .001
	OBS_OST	-2.310	-4.948	0.329	0.919	-2.513	0.189
	OBS_INC	-9.462	-11.977	-6.946	0.876	-10.801	< .001
	FL	-5.355	-7.898	-2.812	0.885	-6.048	< .001
	FL_INC	-9.035	-11.491	-6.579	0.855	-10.564	< .001
INC	OBS_OST	8.268	5.614	10.922	0.924	8.946	< .001
	OBS_INC	1.116	-1.415	3.648	0.882	1.266	1.000
	FL	5.223	2.664	7.781	0.891	5.862	< .001
	FL_INC	1.543	-0.929	4.015	0.861	1.792	1.000
OBS_OST	OBS_INC	-7.152	-9.736	-4.568	0.900	-7.949	< .001
	FL	-3.045	-5.656	-0.435	0.909	-3.350	0.014
	FL_INC	-6.725	-9.251	-4.200	0.880	-7.646	< .001
OBS_INC	FL	4.107	1.621	6.592	0.866	4.745	< .001
	FL_INC	0.427	-1.970	2.823	0.835	0.511	1.000
FL	FL_INC	-3.680	-6.105	-1.255	0.845	-4.357	< .001

Note. OST: ostracism, INC: inclusion, OBS_OST: observing ostracism, OBS_INC: observing inclusion, FL: future life alone exclusion, FL_INC: future life alone inclusion, SE: standard error, Bonf: Bonferroni post hoc test

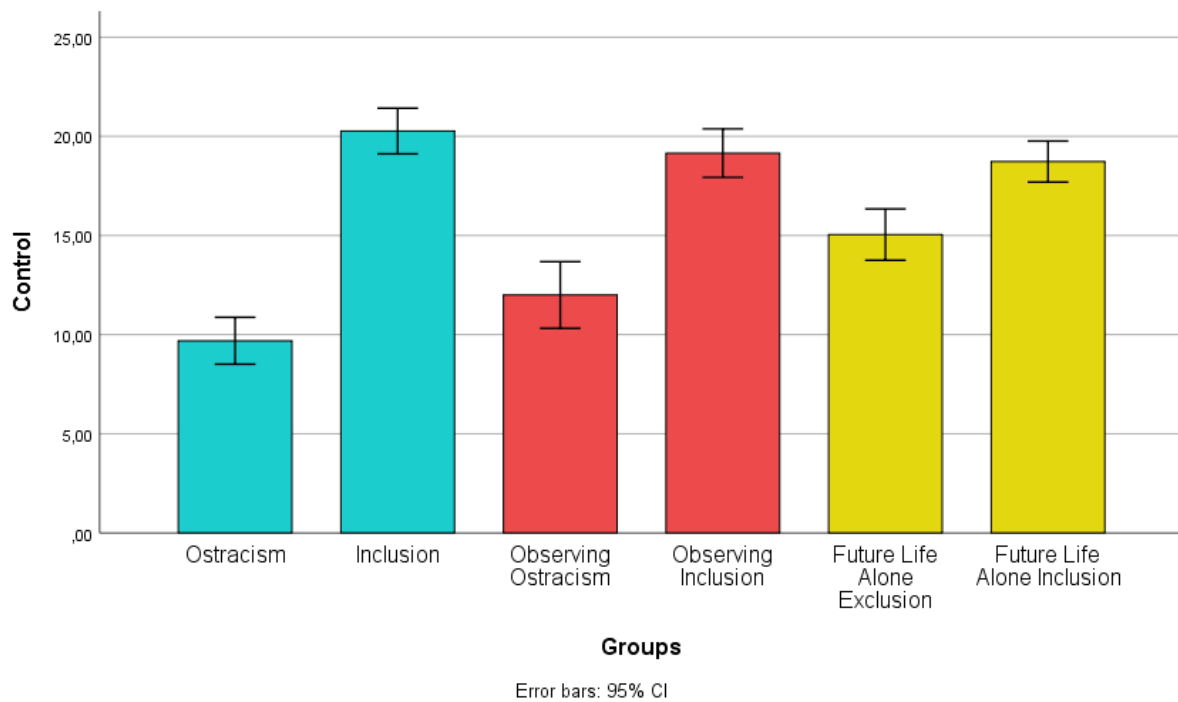


Figure 2.4. Need for control scores for different ostracism manipulations

Table 2.11. The effect of ostracism manipulations on certainty

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Ostracism Groups	3001.924	5	600.385	30.668	< .001	0.375
Residuals	5011.698	256	19.577			

A one-way between groups analysis of variance was carried out to explore the effect of different ostracism manipulations on certainty. The results revealed that there is a statistically significant differences in mean certainty score among ostracism groups ($F(5,256) = 30.67, p < .001$). The actual difference in mean meaningful existence scores between the groups was quite strong. The effect size, calculated using eta squared, was .37.

Table 2.12. Post hoc results on the impact of different exclusion paradigms on certainty

			95% CI for Mean				
			Difference				
			Mean				
			Difference	Lower	Upper	SE	t
							p _{bonf}
OST	INC	-8.928	-11.717	-6.139	0.971	-9.191	< .001
	OBS_OST	-1.716	-4.560	1.129	0.991	-1.732	1.000
	OBS_INC	-8.148	-10.860	-5.437	0.944	-8.629	< .001
	FL	-2.611	-5.352	0.129	0.954	-2.736	0.100
	FL_INC	-7.011	-9.659	-4.364	0.922	-7.605	< .001
INC	OBS_OST	7.212	4.352	10.073	0.996	7.239	< .001
	OBS_INC	0.780	-1.949	3.509	0.950	0.821	1.000
	FL	6.317	3.559	9.074	0.960	6.577	< .001
	FL_INC	1.917	-0.748	4.582	0.928	2.065	0.599
OBS_OST	OBS_INC	-6.432	-9.218	-3.647	0.970	-6.632	< .001
	FL	-0.896	-3.710	1.918	0.980	-0.914	1.000
	FL_INC	-5.296	-8.018	-2.573	0.948	-5.585	< .001
OBS_INC	FL	5.537	2.857	8.216	0.933	5.934	< .001
	FL_INC	1.137	-1.447	3.720	0.900	1.264	1.000
FL	FL_INC	-4.400	-7.014	-1.786	0.910	-4.833	< .001

Note. OST: ostracism, INC: inclusion, OBS_OST: observing ostracism, OBS_INC: observing inclusion, FL: future life alone exclusion, FL_INC: future life alone inclusion, SE: standard error, Bonf: Bonferroni post hoc test

Post-hoc comparisons using the Bonferroni test indicated that the mean score for the ostracism group ($M = 12.05$, $SD = 4.66$) was significantly lower than the inclusion group ($M = 20.98$, $SD = 4.20$). The observing ostracism ($M = 13.76$, $SD = 5.56$) and the future life alone exclusion ($M = 14.66$, $SD = 4.64$) groups were significantly lower certainty scores than their

inclusion groups ($M = 20.20$, $SD = 3.93$; $M = 19.06$, $SD = 5.54$). There were no statistically significant differences between control groups and ostracism groups.

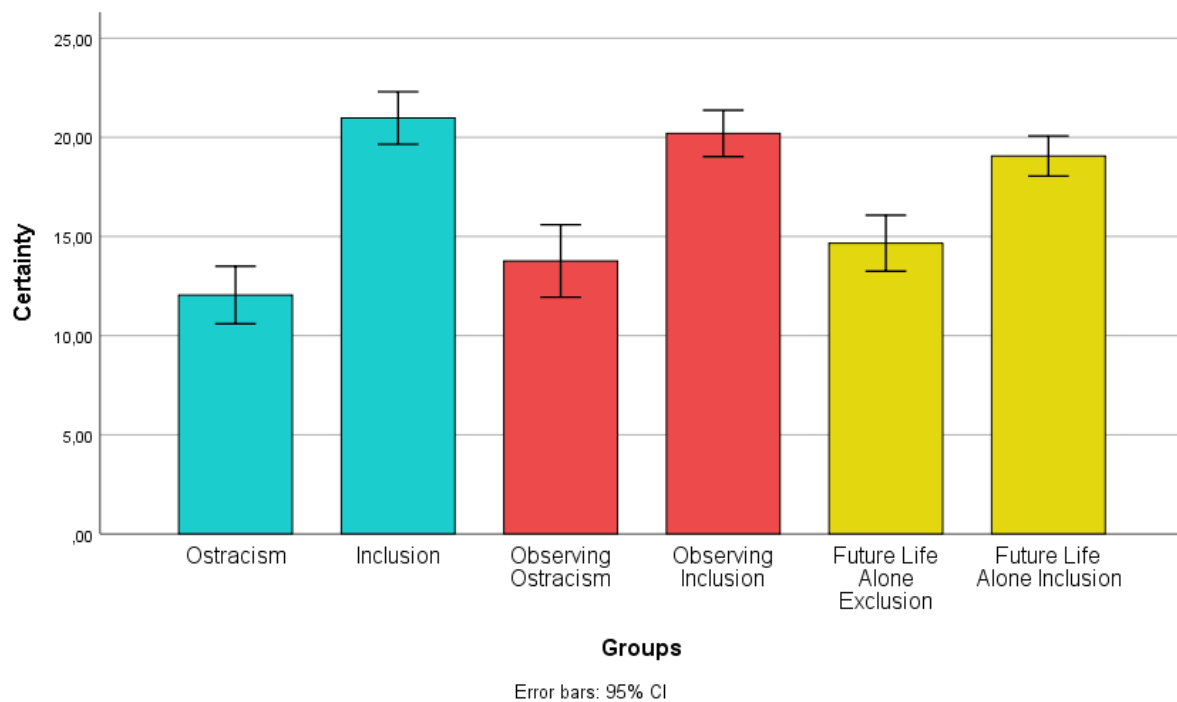


Figure 2.5. Certainty scores for different ostracism manipulations

2.3. Discussion for Study 1

The aim of Study 1 was to examine the effectiveness of being the target of ostracism and observing ostracism scenarios, which were adapted and developed into Turkish. In order to test the adapted scenarios, i.e., future life alone a scenario-based exclusion paradigm was used in addition to being the target of ostracism and observing ostracism scenarios (Bernstein & Claypool, 2012; Wirth, 2016).

The results showed that the three ostracism manipulations (being the target of ostracism, observing ostracism, and future life alone exclusion) used in the study lead to need threatening. In other words, all manipulations successfully worked. Being the target of ostracism and observing ostracism scenarios are also valid. However, for some needs, being the target of ostracism scenario was more effective. This result may be explained by the fact that the individual is the direct subject of ostracism in the being the target of ostracism scenario. Thus,

being the target of ostracism may have created more of a need threat. As a result, the scenarios of observing ostracism and being the target of ostracism successfully have manipulated ostracism.



3. STUDY 2

3.1. Method

3.1.1. Participants

One hundred thirty-four undergraduate students participated in the study. However, 32 participants were excluded from the sample because they did not understand and could not perform the main task, i.e, the cognitive flexibility task. Finally, 102 undergraduate students (25 males, 77 females, ages 20 to 24, $M = 21.54$, $SD = 0.92$) participated in this study. The convenience sampling method was used. The inclusion criteria consisted of age over 18 years, answering all tasks and all the items in the questionnaires, and volunteering to participate in the study. The exclusion criteria consisted of participants who did not complete the entire experiment and stayed in the experiment for too long. Ethical approval was obtained from Ankara Yıldırım Beyazıt University Ethical Committee (Approval Date: 16.04.2021, Approval Number: 14).

In total, 4 different conditions were created, including two exclusion and two inclusion (28 participants observing ostracism and 24 participants observing inclusion; 26 participants being the target of ostracism and 24 participants inclusion). There are 52 participants (15 males, 37 females, ages 20 to 24, $M = 21.60$, $SD = 0.89$) in the observing ostracism condition, and 50 participants (10 males, 40 females, ages 20 to 24, $M = 21.48$, $SD = 0.95$) in the being the target of ostracism condition. Prior to data collection, an informed consent form stating the details of the study was provided to the participants; only participants who volunteered for the study, approved the form and consented to participate were included in the study. Participants were given extra points for their courses as an incentive.

3.1.2. Measures

3.1.2.1. Demographic Information Form

A demographic information form was created that includes questions about age and gender.

3.1.2.2. Observing Ostracism Scenario

The observing ostracism scenario tested in the first study was used again in the Study 2.

3.1.2.3. Being the Target of Ostracism Scenario

The ostracism scenario tested in the first study was used again in the Study 2.

3.1.2.4. Cognitive Flexibility Task

This task was used in order to measure participants' cognitive flexibility performance. Cognitive flexibility task was developed by Cambaz and Ünal (2021) by considering different cognitive flexibility tasks (Dreu et al., 2011; Rietzschel et al., 2007). In this task, participants are required to generate five different sentences from the words of eight different categories given in a mixed table (see Appendix E for the list of words). Cognitive flexibility was measured through these five different sentences that the participant generates. Cognitive flexibility score was calculated as “the number of different categories used in a sentence – 1” within this framework. The total score is taken by adding the cognitive flexibility score generated for all sentences (Cambaz & Ünal, 2021). Using only one category in a sentence does not earn points, because the participants are already asked to use least one word from the given table. For instance, if the participant makes a sentence such as "I feel unhappy", (the table of words is available in Appendix E) the cognitive flexibility score is calculated as "0" for this sentence.

Because in this sentence, only one word from one category was used. All of the participants, without exception, use at least one word in each of their sentences. For example, considering the sentence “The rabbit, cat and dog were playing happily in the train.”, five different words from three different categories are used. The cognitive flexibility score for this sentence is “2”. Using different words belonging to the same category does not produce a cognitive flexibility score. Hence, the assumption used here is that it is more difficult to use words consisting of different categories in a sentence.

3.1.2.5. Need Threat Scale

The need threat scale used in the first study was used again in the Study 2. For the observing ostracism condition, Cronbach Alpha values were found out as .92 for the need to belong, .95 for self-esteem, .94 for control and .86 for meaningful existence, and .88 for certainty in the current experiment. McDonald’s Omega reliability values were found out as .92 for the need to belong, .95 for self-esteem, .94 for control and .87 for meaningful existence, and .88 for certainty. For the being the target of ostracism condition, Cronbach Alpha values were found out as .95 for the need to belong, .94 for self-esteem, .93 for control and .90 for meaningful existence, and .90 for certainty in the current experiment. McDonald’s Omega reliability values were found out as .95 for the need to belong, .94 for self-esteem, .93 for control and .90 for meaningful existence, and .90 for certainty (see Appendix D for the scale).

3.1.2.6. Basic Empathy Scale

To measure participants’ empathy levels, the basic empathy scale was used. This scale was developed by Jolliffe and Farrington (2006). Adaptation study into Turkish was conducted by Topçu et al. (2010). The scale has 20 items, and 5-point Likert type scale ranging from *totally disagree* (1) to *totally agree* (5). It comprises of two-factors, namely, cognitive empathy and emotional empathy, and the scale gives a total empathy score. A high score indicates high

empathy, and low scores indicate low empathy. For the observing ostracism condition, Cronbach Alpha values were found out as .86 for the cognitive empathy, .77 for emotional empathy, .84 for total empathy score in the current experiment. McDonald's Omega reliability values were found out as .87 for the cognitive empathy, .79 for emotional empathy, and .87 for total empathy score. For the being the target of ostracism condition, Cronbach Alpha values were found out as .86 for the cognitive empathy, .82 for emotional empathy, .87 for total empathy score in this experiment. McDonald's Omega reliability values were found out as .88 for the cognitive empathy, .84 for emotional empathy, and .89 for total empathy score (see Appendix F for the scale).

3.1.2.7. Manipulation Check

After reading scenarios, the participants were asked the following questions for manipulation check in the being the target of ostracism condition: "I felt I was being ignored.", "I felt I was being excluded.", and in the observing ostracism condition: "Ali was being ignored", "Ali was being excluded" (on a scale ranging from 1 (*not at all*) to 5 (*extremely*)).

3.1.3. Design and Procedure

Participants were selected from undergraduate students studying at a state university in Turkey. Totally 102 participants were included in this study. In total, two different main conditions were created, including two exclusions and two inclusions. The experiments were carried out online via PsyToolkit (Stoet, 2010; 2017). Participants were randomly assigned to each group. Immediately after the manipulation, manipulation control questions were asked. Afterwards, the participants were given the cognitive flexibility task. Participants who completed cognitive flexibility task filled in the need threat scale, the basic empathy scale, and the demographic information form. The study took approximately 15 minutes. When the study is completed, participants were debriefed and thanked for their participation.

3.1.4. Data Analysis

Firstly, the manipulation check for ostracizing status was tested using independent sample t-test. Then, to investigate observing ostracism manipulation on cognitive flexibility, independent sample t-test analyses were performed. Independent sample t-test analyses also conducted to examine the effect of being the target of ostracism manipulation on cognitive flexibility. All analysis were conducted with the open access statistics program JASP (Goss-Sampson, 2020; JASP, 2021).

3.2. Results

3.2.1. Manipulation Checks

Before the analyses, manipulation checks were investigated. Participants assigned to the observing ostracism condition reported that the target was more ignored ($M = 3.57$, $SD = 1.17$) and excluded ($M = 3.93$, $SD = 1.02$) than participants assigned to the observing inclusion condition ($M = 1.92$, $SD = 1.18$; $M = 1.79$, $SD = 1.18$, respectively) ($t(50) = 5.07$, $p < .001$, $d = 1.41$, 95% CI [1.00, 2.31]; $t(50) = 7.02$, $p < .001$, $d = 1.95$, 95% CI [1.53, 2.75]).

The participants in being the target of ostracism condition reported that the target was more ignored ($M = 4.15$, $SD = .73$) and excluded ($M = 3.88$, $SD = 1.11$) than the participants in the inclusion condition ($M = 1.25$, $SD = .44$; $M = 1.21$, $SD = .41$, respectively) ($t(48) = 16.81$, $p < .001$, $d = 4.76$, 95% CI [2.56, 3.25]; $t(48) = 11.13$, $p < .001$, $d = 3.15$, 95% CI [2.19, 3.16]). Taken together, these results affirmed the effectiveness of manipulations.

3.2.2. Descriptive Statistics

In this section, the descriptive statistics about the observing ostracism and being the target of ostracism groups were presented. Moreover, skewness and kurtosis values were given to assess normal distribution assumption.

Table 3.1. Descriptive statistics about the observing ostracism group and being the target of ostracism group

		Observing Ostracism (n = 28)	Observing Inclusion (n = 24)	Ostracism (n = 26)	Inclusion (n = 24)
COGF	M	4.68	3.00	4.54	3.71
	SD	2.92	1.91	2.76	2.39
NB	M	11.36	20.08	9.77	22.00
	SD	4.36	4.79	2.83	2.72
SE	M	10.86	19.54	10.38	21.71
	SD	4.59	4.78	4.04	3.63
ME	M	12.21	20.58	12.54	22.58
	SD	5.25	4.40	4.61	2.72
CON	M	11.71	19.83	12.38	21.04
	SD	4.00	3.91	3.87	3.14
CER	M	14.00	19.33	15.04	21.21
	SD	4.98	4.15	4.86	2.67
CE	M	16.57	16.75	15.69	15.83
	SD	4.56	5.13	4.00	3.89
EE	M	24.39	27.00	24.15	23.00
	SD	5.65	6.12	6.03	6.34
ET	M	40.96	43.75	39.85	38.83
	SD	8.61	9.34	8.14	9.15

Note. COGF: cognitive flexibility, NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, CE: cognitive empathy, EE: emotional empathy, ET: empathy total, M: mean, SD: standard deviation

Table 3.2. Skewness and kurtosis values of the observing ostracism group and being the target of ostracism group

		COGF	NB	SE	ME	CON	CER	CE	EE	ET
	Skewness	.876	-.054	.038	-.294	-.021	-.322	1.20	.356	.652
Observing	SE	.330	.330	.330	.330	.330	.330	.330	.330	.330
Ostracism	Kurtosis	.185	-1.27	-1.29	-1.25	-1.15	-.446	3.48	.068	2.10
	SE	.650	.650	.650	.650	.650	.650	.650	.650	.650
Being the	Skewness	.723	.029	-.059	-.467	-.258	-.509	-.026	.698	.111
Target of	SE	.337	.337	.337	.337	.337	.337	.337	.337	.337
Ostracism	Kurtosis	.369	-1.54	-1.45	-.860	-.904	-.440	-.610	1.05	-.516
	SE	.662	.662	.662	.662	.662	.662	.662	.662	.662

Note. COGF: cognitive flexibility, NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, CE: cognitive empathy, EE: emotional empathy, ET: empathy total, SE: standard error

Skewness and kurtosis values were examined to assess normal distribution assumption. Most skewness and kurtosis values are in the range of +2 and -2. According to George and Mallery (2016), values between +2 and -2 are within acceptable limits. Therefore, it was decided to perform the analyses using the parametric test. Only because the empathy scores of the observing ostracism group were outside the +/-2 range, it was assumed that they were not normally distributed.

3.2.3. The Effect of Observing Ostracism on Cognitive Flexibility

An independent sample t-test was performed to examine the effect of observing ostracism on cognitive flexibility. In addition, the analysis was repeated with the Bayesian independent sample t-test.

Table 3.3. Observing ostracism and observing inclusion differences on cognitive flexibility task performance

	Group	M	SD	95% CI		t	df	p	Cohen's d
				Lower	Upper				
COGF	OBS	4.68	2.92	.278	3.08	2.41	50	.02	0.67
	OBIN	3.00	1.91						

Note. COGF: cognitive flexibility, OBS: observing ostracism, OBIN: observing inclusion, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test was conducted to determine the role of observing ostracism in the cognitive flexibility task. The participants in the observing ostracism condition was statistically significantly higher cognitive flexibility task performance ($M = 4.68$, $SD = 2.92$) than the participants in observing inclusion condition ($M = 3.00$, $SD = 1.91$) ($t(50) = 2.41$, $p < .05$, $d = 0.67$, 95% CI [.278, 3.08].

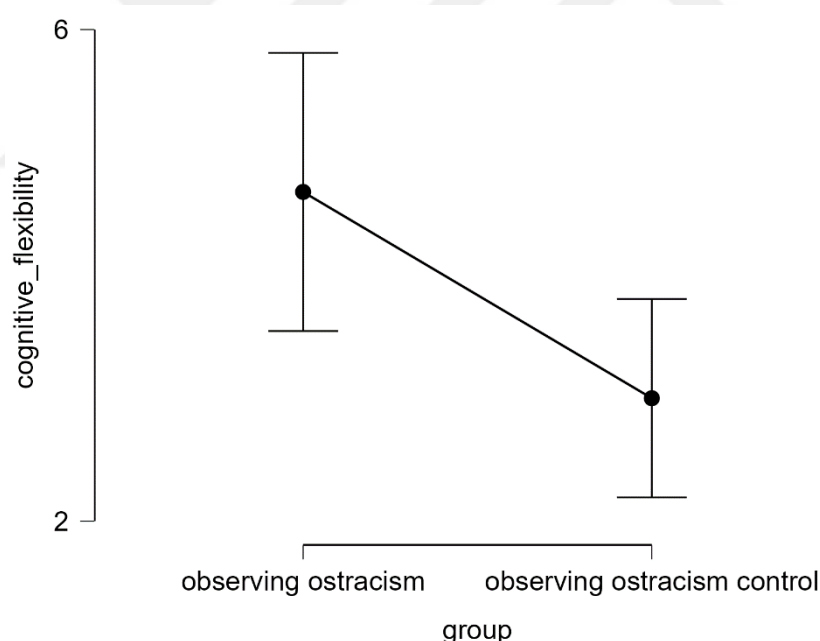


Figure 3.1. Cognitive flexibility task performances of observing ostracism and observing inclusion groups

The same analysis (observing ostracism and observing inclusion differences on cognitive flexibility task performance) was repeated with Bayesian independent sample t-test. “ BF_{01} is a ratio of the likelihood of observing the data given the null hypothesis relative to the likelihood of observing the data given the alternative hypothesis” (Juanchich et al., 2018, p.

612). If BF_{01} is higher than 1, this means evidence in support of the null hypothesis. If BF_{01} values is lower than 1, this means evidence in favor of the alternative hypothesis. Furthermore, larger BF_{10} indicate more support for alternative hypothesis (Juanchich et al., 2018; van Doorn et al., 2021).

According to the Bayes factor results, the effect of the observing ostracism vs. observing inclusion on cognitive flexibility task performance was statistically significant ($BF_{01} = 0.179$, $BF_{10} = 5.59$). These results support alternative hypothesis (moderate), which means that the participants in observing ostracism condition show better cognitive flexibility performance compared to the participants in observing inclusion condition.

3.2.4. The Effect of Observing Ostracism on Need Threat and Empathy

Independent sample t-test and the Mann Whitney U analyses were performed to examine the effect of observing ostracism on the need threat and the empathy level.

Table 3.4. Observing ostracism and observing inclusion differences on need threat scores

	Group	M	SD	95% CI		t	df	p	Cohen's d
				Lower	Upper				
NB	OBS	11.36	4.36	-11.27	-6.18	-6.88	50	.000	-1.91
	OBIN	20.08	4.79						
SE	OBS	10.86	4.59	-11.30	-6.07	-6.67	50	.000	-1.85
	OBIN	19.54	4.78						
ME	OBS	12.21	5.25	-11.09	-5.64	-6.17	50	.000	-1.71
	OBIN	20.58	4.40						
CON	OBS	11.71	4.00	-10.33	-5.91	-7.37	50	.000	-2.05
	OBIN	19.83	3.91						
CER	OBS	14.00	4.98	-7.91	-2.75	-4.15	50	.000	-1.15
	OBIN	19.33	4.15						

Note. OBS: observing ostracism, OBIN: observing inclusion, NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test were carried out to determine the effect of observing ostracism on the need threat scores. The participants in the observing ostracism condition have statistically significantly lower need to belong score ($M = 11.36$, $SD = 4.36$) than participants in observing inclusion condition ($M = 20.08$, $SD = 4.79$) ($t(50) = -6.88$, $p < .001$, $d = -1.91$, 95% CI [-11.27, -6.18].

The participants in the observing ostracism condition have statistically significantly lower self-esteem score ($M = 10.86$, $SD = 4.59$) than the participants in observing inclusion condition ($M = 19.54$, $SD = 4.78$) ($t(50) = -6.67$, $p < .001$, $d = -1.85$, 95% CI [-11.30, -6.07]. The participants in the observing ostracism condition have statistically significantly lower meaningful existence score ($M = 12.21$, $SD = 5.25$) than the participants in observing inclusion condition ($M = 20.58$, $SD = 4.40$) ($t(50) = -6.17$, $p < .001$, $d = -1.71$, 95% CI [-11.09, -5.64].

The participants in the observing ostracism condition have statistically significantly lower control score ($M = 11.71$, $SD = 4.00$) than the participants in observing inclusion condition ($M = 19.83$, $SD = 3.81$) ($t(50) = -7.37$, $p < .001$, $d = -2.05$, 95% CI [-10.33, -5.91]. The participants in the observing ostracism condition have statistically significantly lower certainty score ($M = 14.00$, $SD = 4.98$) than the participants in observing inclusion condition ($M = 19.33$, $SD = 4.15$) ($t(50) = -4.15$, $p < .001$, $d = -1.15$, 95% CI [-7.91, -2.75].

Table 3.5. Observing ostracism and observing inclusion differences on empathy scores

	Group	M	SD	95% CI		t / z	df	p	Cohen's d
				Lower	Upper				
EE	OBS	24.39	5.65	-5.89	0.67	-1.60	50	.117	-0.44
	OBIN	27.00	6.12						
CE	OBS	16.57	4.56	-2.00	2.00	-.445	50	.657	-
	OBIN	16.75	5.13						
ET	OBS	40.96	8.61	-7.00	2.00	-1.01	50	.312	-
	OBIN	43.75	9.34						

Note. OBS: observing ostracism, OBIN: observing inclusion, EE: emotional empathy, CE: cognitive empathy, ET: empathy total, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test was performed to determine the effect of observing ostracism on emotional empathy. There were no statistically significant differences between the observing ostracism ($M = 24.39$, $SD = 5.65$) and the observing inclusion ($M = 27.00$, $SD = 6.12$) conditions on emotional empathy score ($t(50) = -1.60$, $p < .001$, $d = -0.44$, 95% CI [-5.89, 0.67]).

Mann Whitney U test was performed to determine the effect of observing ostracism on cognitive empathy and empathy total score. There were no statistically significant differences between the observing ostracism ($M = 16.57$, $SD = 4.56$; $M = 40.96$, $SD = 8.61$) and the observing inclusion ($M = 16.75$, $SD = 5.13$; $M = 43.75$, $SD = 9.34$) conditions on cognitive empathy and empathy total score ($z(50) = .657$, $p > .05$, 95% CI [-2.00, 2.00]; $z(50) = .312$, $p > .05$, 95% CI [-7.00, 2.00]).

3.2.5. The Effect of Being the Target of Ostracism on Cognitive Flexibility

An independent sample t-test was performed to examine the effect of being the target of ostracism on cognitive flexibility. In addition, the analysis was repeated with the Bayesian independent sample t-test.

Table 3.6. Being the target of ostracism and inclusion differences on cognitive flexibility task performance

	Group	M	SD	95% CI		t	df	p	Cohen's d
				Lower	Upper				
COGF	OST	4.54	2.76	-0.64	2.30	1.13	48	.263	0.32
	INC	3.71	2.39						

Note. COGF: cognitive flexibility, OST: being the target of ostracism, INC: inclusion, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test was conducted to determine the role of being the target of ostracism on the cognitive flexibility task. There were no statistical differences between the ostracism ($M = 4.54$, $SD = 2.76$) and the inclusion ($M = 3.71$, $SD = 2.39$) conditions on the cognitive flexibility task performance ($t(48) = 1.13$, $p > .05$, $d = 0.32$, 95% CI [-0.64, 2.30]).

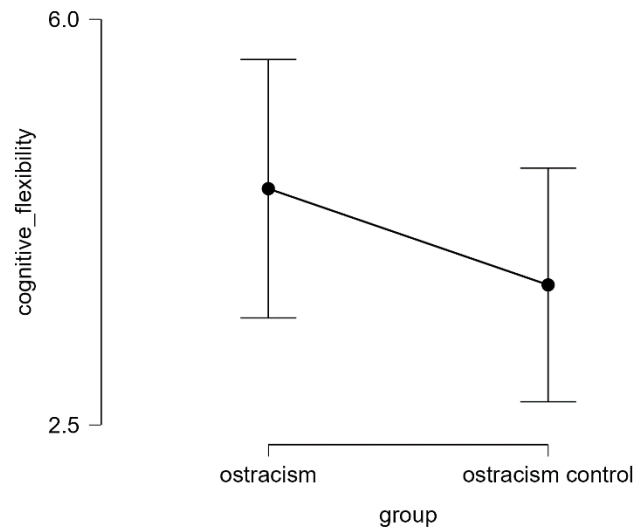


Figure 3.2. Cognitive flexibility task performances of being the target of ostracism and inclusion groups

The same analysis (being the target of ostracism and inclusion differences on cognitive flexibility task performance) was repeated with Bayesian independent sample t-test. According to the Bayes factor results, the effect of being the target of ostracism vs. inclusion on the cognitive flexibility task performance was insignificant ($BF_{01} = 2.09$, $BF_{10} = 0.48$). These results support null hypothesis (moderate).

3.2.6. The Effect of Being the Target of Ostracism on Need Threat and Empathy

Independent sample t-test was performed to examine the effect of being the target of ostracism on need threat and empathy level.

Table 3.7. Being the target of ostracism and inclusion differences on need threat scores

				95% CI		t	df	p	Cohen's d
	Group	M	SD	Lower	Upper				
NB	OST	9.77	2.83	-13.81	-10.65	-15.55	48	.000	-4.40
	INC	22.00	2.72						
SE	OST	10.38	4.04	-13.51	-9.13	-10.39	48	.000	-2.94
	INC	21.71	3.63						
ME	OST	12.54	4.61	-12.22	-7.87	-9.28	48	.000	-2.63
	INC	22.58	2.72						
CON	OST	12.38	3.87	-10.67	-6.64	-8.64	48	.000	-2.45
	INC	21.04	3.14						
CER	OST	15.04	4.86	-8.43	-3.91	-5.50	48	.000	-1.57
	INC	21.21	2.67						

Note. OST: being the target of ostracism, INC: inclusion, NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test were carried out to determine the effect of being the target of ostracism on need threat scores. The participants in the being the target of ostracism condition had statistically significantly lower need to belong score ($M = 9.77$, $SD = 2.83$) than the participants in inclusion condition ($M = 22.00$, $SD = 2.72$) ($t(48) = -15.55$, $p < .001$, $d = -4.40$, 95% CI [-13.81, -10.65].

The participants in the being the target of ostracism condition had statistically significantly lower self-esteem score ($M = 10.38$, $SD = 4.04$) than the participants in the inclusion condition ($M = 21.71$, $SD = 3.63$) ($t(48) = -10.39$, $p < .001$, $d = -2.94$, 95% CI [-13.51, -9.13]. The participants in the being the target of ostracism condition had statistically significantly lower meaningful existence score ($M = 12.54$, $SD = 4.61$) than the participants in inclusion condition ($M = 22.58$, $SD = 2.72$) ($t(48) = -9.28$, $p < .001$, $d = -2.63$, 95% CI [-12.22, -7.87].

The participants in the being the target of ostracism condition have statistically significantly lower control score ($M = 12.38$, $SD = 3.87$) than the participants in the inclusion condition ($M = 21.04$, $SD = 3.14$) ($t(48) = -8.64$, $p < .001$, $d = -2.45$, 95% CI [-10.67, -6.64]. The participants in the being the target of ostracism condition have statistically significantly lower certainty score ($M = 15.04$, $SD = 4.86$) than the participants in inclusion condition ($M = 21.21$, $SD = 2.67$) ($t(48) = -5.50$, $p < .001$, $d = -1.57$, 95% CI [-8.43, -3.91].

Table 3.8. Being the target of ostracism and inclusion differences on empathy scores

	Group	M	SD	95% CI		t	df	p	Cohen's d
				Lower	Upper				
EE	OST	24.15	6.03	-2.37	4.67	-0.66	48	.513	0.19
	INC	23.00	6.34						
CE	OST	15.69	4.00	-2.39	2.10	-0.13	48	.900	0.04
	INC	15.83	3.89						
ET	OST	39.85	8.14	-3.90	5.93	0.41	48	.681	0.12
	INC	38.83	9.15						

Note. OST: being the target of ostracism, INC: inclusion, EE: emotional empathy, CE: cognitive empathy, ET: empathy total, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test was performed to determine the effect of being the target of ostracism on emotional empathy. There were no statistically significant differences between the being the target of ostracism ($M = 24.15$, $SD = 6.03$) and the inclusion ($M = 23.00$, $SD = 6.34$) conditions on emotional empathy score. ($t(48) = -0.66$, $p > .05$, $d = 0.19$, 95% CI [-2.37, 4.67].

Independent sample t-test was performed to determine the effect of being the target of ostracism on cognitive empathy and empathy total score. There were no statistically significant differences between the being the target of ostracism ($M = 15.69$, $SD = 4.00$; $M = 39.85$, $SD = 8.14$) and the inclusion ($M = 15.83$, $SD = 3.89$; $M = 38.83$, $SD = 9.15$) conditions on cognitive and total empathy score. ($t(48) = -0.13$, $p > .05$, $d = 0.04$, 95% CI [-2.39, 2.10]; $t(48) = 0.41$, $p > .05$, $d = 0.12$, 95% CI [-3.90, 5.93].

3.3. Discussion for Study 2

In Study 2 aimed to examine the effects of observing ostracism and being the target of ostracism on cognitive flexibility separately. The results of Study 2 revealed that participants in the observing ostracism group showed better cognitive flexibility performance compared to the observing inclusion group. Observing ostracism also negatively affected basic psychological needs. However, observing ostracism had no effect on empathy.

Nevertheless, being the target of ostracism had no effect on cognitive flexibility. Similarly, being the target of ostracism had no effect on empathy. However, as in observing ostracism condition, being the target of ostracism has negatively affected the basic psychological needs. The better cognitive flexibility performance of the participants in the observing ostracism condition might be explained in terms of the evolutionary perspective, and temporal need-threat model of ostracism. As expressed in the temporal need-threat model, human beings have an alarm mechanism that helps them to anticipate exclusion, and this system has improved evolutionarily (Spoor & Williams, 2007; Williams, 2009). When a sign of ostracism emerges, the ostracism detect system takes an action. The individual evaluates whether exclusion is a real threat with the early detection system. Observing ostracism might also trigger an early ostracism detection system (Wesselmann et al., 2009). Triggering the early detect system may put the individual in an alarm state. With this readiness, the individual observing the ostracism may consider the possibility that s/he may be the next target. Therefore, they may prepare themselves cognitively to avoid ostracism or not to be a target. In this way, individuals who observe ostracism may exhibit better cognitive performance. The finding in this dissertation that observing ostracism increases cognitive flexibility also supports this idea.

The fact that ostracism itself does not affect cognitive flexibility can be explained from a different perspective. When an individual observes ostracism, they may think that they will be the next target of ostracism. However, when it comes to being the target of ostracism, the

individual has already been ostracized and ostracism is over. At this point, the reflexive and the short-term responses appear following ostracism. Since the individual is already the target of ostracism, s/he may not need to make any extra effort to avoid ostracism. The results achieved in Study 2 might be explained this way. However, it was necessary to conduct a third experiment with a different paradigm so that the results obtained in Study 2 could be discussed more vigorously and possible methodological problems could be detected into account. For this reason, a third experiment was conducted.



4. STUDY 3

4.1. Method

4.1.1. Participants

One hundred ninety undergraduate students participated in the study. The convenience sampling method was used. The inclusion and exclusion criteria were the same as for Study 2. According to these criteria, 63 participants were excluded. Finally, 127 undergraduate students (20 males, 107 females, ages 18 to 31, $M = 20.41$, $SD = 1.56$) participated in this study.

In total, four different main conditions were created, including two exclusions and two inclusions (40 participants observing ostracism and 34 participants observing inclusion; 28 participants being the target of ostracism and 25 participants inclusion). There are 74 participants (11 males, 63 females, ages 19 to 23, $M = 20.31$, $SD = 1.01$) in the observing ostracism condition, and 53 participants (9 males, 44 females, ages 18 to 31, $M = 20.55$, $SD = 2.12$) in the being the target of ostracism condition. Prior to data collection, an informed consent form stating the details about the study was provided to the participants; only those participants who volunteered for the study, approved the form, and consented to participate were included in the study. The participants were given an extra points for their courses as an incentive.

4.1.2. Measures

4.1.2.1. Demographic Information Form

A demographic information form was created that includes questions about age and gender.

4.1.2.2. Cyberball Paradigm (Being the Target of Ostracism Condition)

Cyberball is used for manipulation of being the target of ostracism. It is a virtual ball-tossing game. This game was developed by Williams, Cheung, and Choi (2000) and was used as an ostracism manipulation. Participants believe that they are going to play an online ball-tossing game with two individuals online. However, there are no real individuals in the Cyberball paradigm except for real participant. Actually, the real participant plays with a computer. The ostracized participants receives the ball less than the included group of participants do. The ostracized participants (target participants) usually get only one or two tosses at the beginning of the game. However, till the end of the game the ball does not come to the participant again. The Cyberball paradigm was used to manipulate being the target of ostracism in the current dissertation (see Appendix G for the paradigm).

4.1.2.3. Cyberball Paradigm (Observing Ostracism Condition)

Cyberball is also used for manipulation of observing ostracism. For this aim, two videos were created using Cyberball paradigm: observing ostracism and observing inclusion. These videos were about a minute long. Participants watch the video in both conditions. In these videos, the three imaginary players were labelled as Player A, Player B, and Player C. The Player B was the target and was placed at the center of the screen in the observing ostracism condition. In this condition, Player B receives the ball twice at the beginning of the game. Later, Player B was ostracized by the other players. The Player A and Player C throw the ball to each other for the rest of the game. In the observing inclusion condition, Player B received the same number of balls as the other players (see Appendix H for the paradigm).

4.1.2.4. Cognitive Flexibility Task

Cognitive flexibility task in the second study was used again in the Study 3.

4.1.2.5. Need Threat Scale

The Need Threat Scale in the first and second study was used again in the Study 3. For the observing ostracism condition, Cronbach Alpha values were found out as .85 for the need to belong, .85 for self-esteem, .76 for control and .88 for meaningful existence, and .82 for certainty in this experiment. McDonald's Omega reliability values were found out as .85 for the need to belong, .86 for self-esteem, .79 for control and .88 for meaningful existence, and .83 for certainty. For the being the target of ostracism condition, Cronbach Alpha values were found out as .90 for the need to belong, .86 for self-esteem, .80 for control and .91 for meaningful existence, and .68 for certainty in this experiment. McDonald's Omega reliability values were found out as .90 for the need to belong, .87 for self-esteem, .82 for control and .91 for meaningful existence, and .70 for certainty (see Appendix I for the scale).

4.1.2.6. Basic Empathy Scale

Basic Empathy Scale in the second study was used again in the Study 3. For the observing ostracism condition, Cronbach Alpha values were found out as .84 for the cognitive empathy, .77 for emotional empathy, .84 for total empathy score in this experiment. McDonald's Omega reliability values were found out as .85 for the cognitive empathy, .79 for emotional empathy, and .85 for total empathy score. For the being the target of ostracism condition, Cronbach Alpha values were found out as .85 for the cognitive empathy, .75 for emotional empathy, .84 for total empathy score in this experiment. McDonald's Omega reliability values were found out as .86 for the cognitive empathy, .78 for emotional empathy, and .86 for total empathy score (see Appendix F for the scale).

4.1.2.7. Manipulation Check

After the Cyberball game, the participants were asked the following questions for manipulation check in the being the target of ostracism condition: "I felt I was being ignored.",

“I felt I was being excluded.” (on a scale ranging from 1 (*not at all*) to 5 (*extremely*), “Assuming that the ball should be thrown to each person equally (33% if three people; 25% if four people), what percentage of the throws did you receive?” (between 0% and 100%) and in the observing ostracism condition: “Player B was being ignored”, “Player B was being excluded” (on a scale ranging from 1 (*not at all*) to 5 (*extremely*), and “Assuming that the ball should be thrown to each person equally (33% if three people; 25% if four people), what percentage of the throws did Player B receive?” (between 0% and 100%).

4.1.3. Design and Procedure

Participants were selected from undergraduate students studying at two state university in Turkey. Totally 127 participants were included. In total, four different main conditions were created, including two exclusions and two inclusions (40 participants observing ostracism and 34 participants observing inclusion; 28 participants being the target of ostracism and 25 participants inclusion). The experiments were carried out online via PsyToolkit (Stoet, 2010; 2017). The participants were randomly assigned to each group. Immediately after the manipulation, the manipulation control questions were asked. Afterwards, the participants were given the cognitive flexibility task. The participants who completed cognitive flexibility task filled in the the need threat scale, the basic empathy scale, and the demographic information form. The study took approximately 15 minutes. When the study was completed, participants were debriefed and thanked for their participation.

4.1.4. Data Analysis

Firstly, the manipulation check for ostracizing status was tested using independent sample t-test. Then, to investigate observing ostracism manipulation on cognitive flexibility, independent sample t-test analyses was performed. Independent sample t-test analyses also conducted to examine the effect of being the target of ostracism manipulation on cognitive flexibility. All analysis were conducted with the open access statistics program JASP.

4.2. Results

4.2.1. Manipulation Checks

Before the analyses, manipulation checks were investigated. The participants assigned to the observing ostracism condition reported that the target was more ignored ($M = 3.87$, $SD = 0.91$) and excluded ($M = 4.20$, $SD = 0.82$) than the participants assigned to the observing inclusion condition ($M = 2.23$, $SD = 0.92$; $M = 2.12$, $SD = 0.98$, respectively) ($t(72) = 7.67$, $p < .001$, $d = 1.79$, 95% CI [1.21, 2.07]; $t(72) = 9.95$, $p < .001$, $d = 2.32$, 95% CI [1.66, 2.50]. Furthermore, the participants assigned to observing ostracism condition reported that the Player B received fewer throws out of the total ($M = 12.10$, $SD = 8.34$) compared to the participants assigned to observing inclusion condition ($M = 31.91$, $SD = 17.17$) ($t(72) = -6.46$, $p < .001$, $d = -1.51$, 95% CI [-25.92, -13.70]).

The participants in the being the target of ostracism condition reported that the target was more ignored ($M = 4.43$, $SD = 0.63$) and excluded ($M = 4.43$, $SD = 0.74$) than the participants in the inclusion condition ($M = 2.24$, $SD = 0.83$; $M = 2.24$, $SD = 0.93$, respectively) ($t(51) = 10.85$, $p < .001$, $d = 2.98$, 95% CI [1.78, 2.59]; $t(51) = 9.54$, $p < .001$, $d = 2.63$, 95% CI [1.73, 2.65]). Furthermore, the participants in being the target of ostracism condition reported that the target received fewer throws out of the total ($M = 10.75$, $SD = 4.31$) compared to the participants in inclusion condition ($M = 26.88$, $SD = 9.93$) ($t(51) = -7.82$, $p < .001$, $d = -2.15$, 95% CI [-20.27, -11.99]). Taken together, these results affirmed the effectiveness of manipulations.

4.2.2. Descriptive Statistics

In this section, the descriptive statistics about observing ostracism and being the target of ostracism groups were presented. Moreover, skewness and kurtosis values were given to assess normal distribution assumption.

Table 4.1. Descriptive statistics about observing ostracism and being the target of ostracism

		Observing Ostracism (n = 40)	Observing Inclusion (n = 34)	Ostracism (n = 28)	Inclusion (n = 25)
COGF	M	4.35	3.15	3.54	4.92
	SD	1.85	1.79	1.97	2.18
NB	M	12.45	15.88	8.96	16.76
	SD	4.08	4.10	3.08	3.23
SE	M	11.50	13.97	9.79	16.12
	SD	3.69	4.14	3.22	3.18
ME	M	12.92	14.62	9.71	16.72
	SD	4.40	4.90	3.97	4.27
CON	M	11.37	12.00	8.93	14.12
	SD	3.56	3.96	3.09	3.93
CER	M	15.00	14.68	14.04	17.12
	SD	4.37	4.15	3.58	2.80
CE	M	16.82	17.85	16.36	16.44
	SD	4.49	4.68	4.00	4.04
EE	M	22.80	25.32	22.68	25.88
	SD	5.37	5.80	4.73	5.92
ET	M	39.62	43.18	39.04	42.32
	SD	8.47	8.32	6.67	8.82

Note. COGF: cognitive flexibility, NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, CE: cognitive empathy, EE: emotional empathy, ET: empathy total, M: mean, SD: standard deviation

Table 4.2. Skewness and kurtosis values of observing ostracism and being the target of ostracism

		COGF	NB	SE	ME	CON	CER	CE	EE	ET
	Skewness	.310	-.140	.196	.126	.213	.174	1.35	.737	1.12
Observing	SE	.279	.279	.279	.279	.279	.279	.279	.279	.279
Ostracism	Kurtosis	-.219	-.733	-.786	-.816	-.693	-.197	4.42	.620	3.06
	SE	.552	.552	.552	.552	.552	.552	.552	.552	.552
Being the	Skewness	.219	.108	.114	.175	.513	-.264	.263	1.48	1.14
Target of	SE	.327	.327	.327	.327	.327	.327	.327	.327	.327
Ostracism	Kurtosis	-.465	-1.15	-.961	-.741	-.104	-.302	.143	3.91	3.98
	SE	.644	.644	.644	.644	.644	.644	.644	.644	.644

Note. COGF: cognitive flexibility, NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, CE: cognitive empathy, EE: emotional empathy, ET: empathy total, SE: standard error

Skewness and kurtosis values were examined to assess normal distribution assumption. Most skewness and kurtosis values are in the range of +2 and -2. According to George and Mallery (2016), values between +2 and -2 are within acceptable limits. Therefore, it was decided to perform the analyses using the parametric test. Only because the empathy scores of the observing ostracism and being the target of ostracism groups were outside the +-2 range, it was assumed that they were not normally distributed.

4.2.3. The Effect of Observing Ostracism on Cognitive Flexibility

An independent sample t-test was performed to examine the effect of observing ostracism on cognitive flexibility with a different ostracism paradigm. In addition, the analysis was repeated with the Bayesian independent sample t-test.

Table 4.3. Observing ostracism and observing inclusion differences on cognitive flexibility task performance with the Cyberball paradigm

	Group	M	SD	95% CI		t	df	p	Cohen's d
				Lower	Upper				
COGF	OBS	4.35	1.85						
	OBIN	3.15	1.79	.355	2.05	2.83	72	.006	0.66

Note. COGF: cognitive flexibility, OBS: observing ostracism, OBIN: observing inclusion, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test was conducted to determine the role of observing ostracism in the cognitive flexibility task with a different ostracism paradigm. The participants in the observing ostracism condition had statistically significantly higher cognitive flexibility task performance ($M = 4.35$, $SD = 1.85$) than the participants in observing inclusion condition ($M = 3.15$, $SD = 1.79$) ($t(72) = 2.83$, $p < .01$, $d = 0.66$, 95% CI [.355, 2.05].

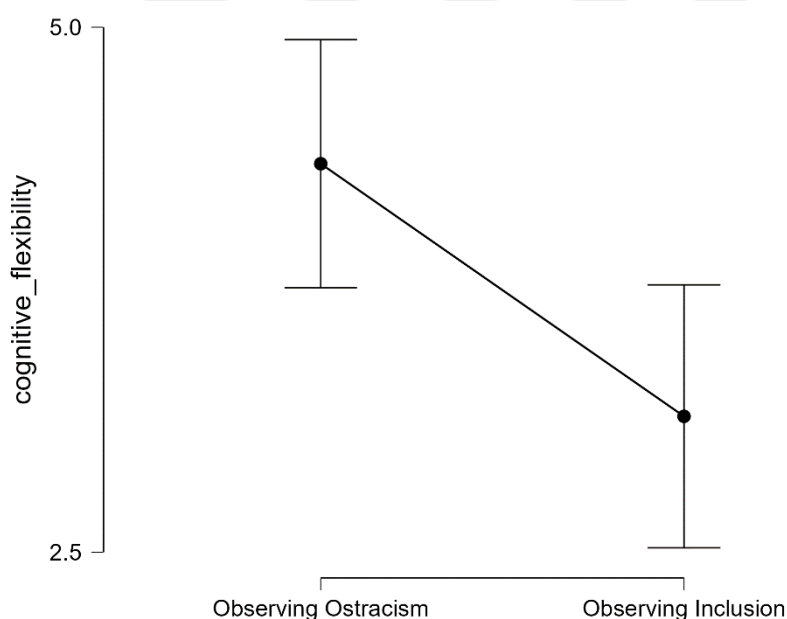


Figure 4.1. Cognitive flexibility task performances of observing ostracism and observing inclusion groups (Cyberball paradigm)

The same analysis (comparison of participants cognitive flexibility task performance by observing ostracism) was repeated with Bayesian independent sample t-test. “ BF_{01} is a ratio of the likelihood of observing the data given the null hypothesis relative to the likelihood of observing the data given the alternative hypothesis” (Juanchich et al., 2018, p. 612). If BF_{01} is

higher than 1, this means evidence in support of the null hypothesis. If BF_{01} values is lower than 1, this means evidence in favor of the alternative hypothesis. Furthermore, larger BF_{10} indicate more support for alternative hypothesis (Juanchich et al., 2018; van Doorn et al., 2021).

According to the Bayes factor results, the effect of the observing ostracism vs. observing inclusion on the cognitive flexibility task performance was statistically significant ($BF_{01} = 0.147$, $BF_{10} = 6.82$). These results support alternative hypothesis (moderate), which means the participants in observing ostracism condition show better cognitive flexibility task performance compared to the participants in observing inclusion condition.

4.2.4. The Effect of Observing Ostracism on Need Threat and Empathy

Independent sample t-test and Mann Whitney U analyses were performed to examine the effect of observing ostracism on need threat and empathy level.

Table 4.4. Observing ostracism and observing inclusion differences on need threat scores with the Cyberball paradigm

	Group	M	SD	95% CI		t	df	p	Cohen's d
				Lower	Upper				
NB	OBS	12.45	4.08	-5.33	-1.53	-3.60	72	.000	-0.84
	OBIN	15.88	4.10						
SE	OBS	11.50	3.69	-4.29	-0.66	-2.71	72	.008	-0.63
	OBIN	13.97	4.15						
ME	OBS	12.92	4.40	-3.85	0.46	-1.56	72	.122	-0.36
	OBIN	14.62	4.90						
CON	OBS	11.37	3.56	-2.37	1.12	-0.71	72	.477	-0.17
	OBIN	12.00	3.96						
CER	OBS	15.00	4.37	-1.66	2.31	-0.32	72	.746	0.08
	OBIN	14.68	4.15						

Note. OBS: observing ostracism, OBIN: observing inclusion, NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test were carried out to determine the effect of observing ostracism on need threat scores. The participants in the observing ostracism condition had statistically significantly lower need to belong score ($M = 12.45$, $SD = 4.08$) than the participants in observing inclusion condition ($M = 15.88$, $SD = 4.10$) ($t(72) = -3.60$, $p < .001$, $d = -0.84$, 95% CI [-5.33, -1.53].

The participants in the observing ostracism condition had statistically significantly lower self-esteem score ($M = 11.50$, $SD = 3.69$) than the participants in observing inclusion condition ($M = 13.97$, $SD = 4.15$) ($t(72) = -2.71$, $p < .01$, $d = -0.63$, 95% CI [-4.29, -0.66]. There is no statistically significant meaningful existence score differences between the observing ostracism condition ($M = 12.92$, $SD = 4.40$) and the observing inclusion condition ($M = 14.62$, $SD = 4.90$) ($t(72) = -1.56$, $p > .05$, $d = -0.36$, 95% CI [-3.85, 0.46].

There is no statistically significant control score differences between the observing ostracism condition ($M = 11.37$, $SD = 3.56$) and the observing inclusion condition ($M = 12.00$, $SD = 3.96$) ($t(72) = -0.71$, $p > .05$, $d = -0.17$, 95% CI [-2.37, 1.12]. There is no statistically significant certainty score differences between the observing ostracism condition ($M = 15.00$, $SD = 4.37$) and the observing inclusion condition ($M = 14.68$, $SD = 4.15$) ($t(72) = -0.32$, $p > .05$, $d = 0.08$, 95% CI [-1.66, 2.31].

Table 4.5. Observing ostracism and observing inclusion differences on empathy scores with the Cyberball paradigm

	Group	M	SD	95% CI		t / z	df	p	Cohen's d
				Lower	Upper				
EE	OBS	22.80	5.37	-5.11	0.07	-1.94	72	.056	-0.45
	OBIN	25.32	5.80						
CE	OBS	16.82	4.49	-3.16	1.10	-.962	72	.339	-
	OBIN	17.85	4.68						
ET	OBS	39.62	8.47	-7.47	0.37	-1.81	72	.075	-
	OBIN	43.18	8.38						

Note. OBS: observing ostracism, OBIN: observing inclusion, EE: emotional empathy, CE: cognitive empathy, ET: empathy total, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test was performed to determine the effect of observing ostracism on emotional empathy. There were no statistically significant differences between the observing ostracism ($M = 22.80$, $SD = 5.37$) and the observing inclusion ($M = 25.32$, $SD = 5.80$) conditions on emotional empathy score ($t(72) = -1.94$, $p > .05$, $d = -0.45$, 95% CI [-5.11, 0.07]). Mann Whitney U test was performed to determine the effect of observing ostracism on cognitive empathy and empathy total score. There are no statistically significant differences between the observing ostracism ($M = 16.82$, $SD = 4.49$; $M = 39.62$, $SD = 8.47$) and the observing inclusion ($M = 17.85$, $SD = 4.68$; $M = 43.18$, $SD = 8.38$) conditions on cognitive empathy and empathy total score. ($z(72) = -.962$, $p > .05$, 95% CI [-3.16, 1.10]; $z(72) = -1.81$, $p > .05$, 95% CI [-7.47, 0.37]).

4.2.5. The Effect of Being the Target of Ostracism on Cognitive Flexibility

An independent sample t-test was performed to examine the effect of being the target of ostracism on cognitive flexibility. In addition, the analysis was repeated with the Bayesian independent sample t-test.

Table 4.6. Observing ostracism and observing inclusion differences on empathy scores with the Cyberball paradigm

	Group	M	SD	95% CI		t	df	p	Cohen's d
				Lower	Upper				
COGF	OST	3.54	1.97	-2.53	-0.24	-2.43	51	.019	-0.67
	INC	4.92	2.18						

Note. COGF: cognitive flexibility, OST: being the target of ostracism, INC: inclusion, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test was carried out to determine the role of being the target of ostracism on the cognitive flexibility task. The participants in the being the target of ostracism condition was statistically significantly worse cognitive flexibility task performance ($M = 3.54$,

$SD = 1.97$) than the participants in inclusion condition ($M = 4.92$, $SD = 2.18$) ($t(51) = -2.43$, $p < .05$, $d = -0.67$, 95% CI $[-2.53, -0.24]$).

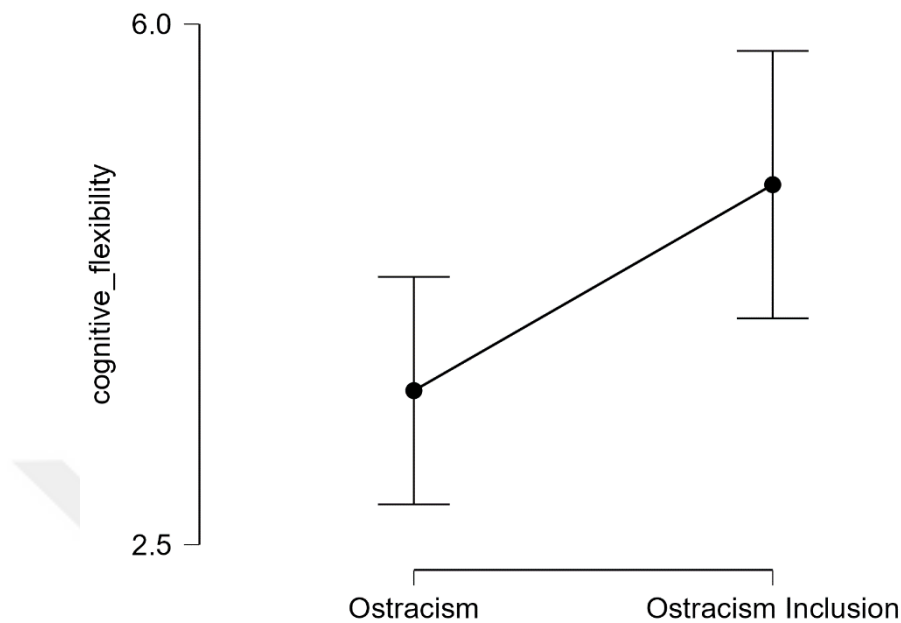


Figure 4.2. Cognitive flexibility task performances of being the target of ostracism and inclusion groups (Cyberball paradigm)

The same analysis (comparison of participants cognitive flexibility task performance by being the target of ostracism) was repeated with Bayesian independent sample t-test. According to the Bayes factor results, the effect of the being the target of ostracism vs. inclusion on cognitive flexibility task performance was statistically significant ($BF_{01} = 0.34$, $BF_{10} = 2.95$). These results support alternative hypothesis (moderate).

4.2.6. The Effect of Being the Target of Ostracism on Need Threat and Empathy

Independent sample t-test was performed to examine the effect of being the target of ostracism on need threat and empathy level.

Table 4.7. Being the target of ostracism and inclusion differences on need threat scores with the Cyberball paradigm

	Group	M	SD	95% CI		t	df	p	Cohen's d
				Lower	Upper				
NB	OST	8.96	3.08	-9.54	-6.05	-8.98	51	.000	-2.47
	INC	16.76	3.23						
SE	OST	9.79	3.22	-8.10	-4.56	-7.19	51	.000	-1.98
	INC	16.12	3.18						
ME	OST	9.71	3.97	-9.28	-4.73	-6.19	51	.000	-1.70
	INC	16.72	4.27						
CON	OST	8.93	3.09	-7.13	-3.25	-5.37	51	.000	-1.48
	INC	14.12	3.93						
CER	OST	14.04	3.58	-4.87	-1.29	-3.46	51	.000	-0.95
	INC	17.12	2.80						

Note. OST: being the target of ostracism, INC: inclusion, NB: need to belong, SE: self-esteem, ME: meaningful existence, CON: control, CER: certainty, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test were carried out to determine the effect of being the target of ostracism on need threat scores. The participants in the being the target of ostracism condition had statistically significantly lower need to belong score ($M = 8.96$, $SD = 3.08$) than the participants in inclusion condition ($M = 16.76$, $SD = 3.23$) ($t(51) = -8.98$, $p < .001$, $d = -2.47$, 95% CI [-9.54, -6.05].

The participants in the being the target of ostracism condition has statistically significantly lower self-esteem score ($M = 9.79$, $SD = 3.22$) than the participants in inclusion condition ($M = 16.12$, $SD = 3.18$) ($t(51) = -7.19$, $p < .001$, $d = -1.98$, 95% CI [-8.10, -4.56]. The participants in the being the target of ostracism condition had statistically significantly lower meaningful existence score ($M = 9.71$, $SD = 3.97$) than the participants in inclusion condition ($M = 16.72$, $SD = 4.27$) ($t(51) = -6.19$, $p < .001$, $d = -1.70$, 95% CI [-9.28, -4.73].

The participants in the being the target of ostracism condition had statistically significantly lower control score ($M = 8.93$, $SD = 3.09$) than the participants in inclusion

condition ($M = 14.12$, $SD = 3.93$) ($t(51) = -5.37$, $p < .001$, $d = -1.48$, 95% CI [-7.13, -3.25].

The participants in the being the target of ostracism condition had statistically significantly lower certainty score ($M = 14.04$, $SD = 3.58$) than the participants in inclusion condition ($M = 17.12$, $SD = 2.80$) ($t(51) = -3.46$, $p < .001$, $d = -0.95$, 95% CI [-4.87, -1.29].

Table 4.8. Being the target of ostracism and inclusion differences on empathy scores with the Cyberball paradigm

	Group	M	SD	95% CI		t/z	df	p	Cohen's d
				Lower	Upper				
EE	OST	22.68	4.73	-5.00	-4.04	-2.18	51	.030	-0.35
	INC	25.88	5.92						
CE	OST	16.36	4.00	-2.30	2.14	-0.07	51	.941	-0.02
	INC	16.44	4.04						
ET	OST	39.04	6.67	-6.00	1.00	-1.31	51	.192	-0.21
	INC	42.32	8.82						

Note. OST: being the target of ostracism, INC: inclusion, EE: emotional empathy, CE: cognitive empathy, ET: empathy total, M: mean, SD: standard deviation, df: degree of freedom

Independent sample t-test was performed to determine the effect of being the target of ostracism on cognitive empathy. There were no statistically significant differences between the being the target of ostracism ($M = 16.36$, $SD = 4.00$) and the inclusion ($M = 16.44$, $SD = 4.04$) conditions on cognitive empathy score ($t(51) = -0.07$, $p > .05$, $d = -0.02$, 95% CI [-2.30, 2.14].

Mann Whitney U test were performed to determine the effect of being the target of ostracism on emotional empathy and empathy total score. There were no statistically significant differences between the being the target of ostracism ($M = 39.04$, $SD = 6.67$) and the inclusion ($M = 42.32$, $SD = 8.82$) conditions on total empathy score ($z(51) = -1.31$, $p > .05$, $d = -0.21$, 95% CI [-6.00, 1.00]. The participants in the being the target of ostracism condition had statistically significantly lower emotional empathy score ($M = 22.68$, $SD = 4.73$) than the participants in the inclusion condition ($M = 25.88$, $SD = 5.92$) ($z(51) = -2.18$, $p < .05$, $d = -0.35$, 95% CI [-5.00, -4.04].

4.3. Discussion for Study 3

Study 3 was planned to replicate the results obtained in Study 2 with a different ostracism paradigm. There are many paradigms that can be used to manipulate ostracism. Sometimes different exclusion paradigms may produce different results. This situation causes some methodological problems. How the exclusion paradigm used affects the results, in other words, the validity and reliability of the results is an important issue. To reduce the problems arising from paradigms and to increase the reliability of these results, a multi-method approach was proposed by Williams and Zadro (2001). This approach involves using more than one exclusion paradigm in hypothesis testing. A multi-method approach was also applied in this dissertation. Study 3 was conducted with the Cyberball, i.e., a commonly used ostracism paradigm.

The effect of observing ostracism on cognitive flexibility is in line with the results of Study 2. In other words, observing ostracism manipulation with the Cyberball paradigm also increased cognitive flexibility performance. The participants in the observing ostracism condition exhibited better cognitive flexibility performance compared to the participants in the observing inclusion condition. Since there is no previous study that examines the relationship between observing ostracism and cognitive processes, it is technically impossible to discuss the results comparatively. Nonetheless, this result may also be explained evolutionarily, similar to Study 2. Observing ostracism might trigger the early detect ostracism system and make individuals ready to perform cognitively better. Also, observing ostracism did not affect empathy. Observing ostracism threatened only “the need to belong” and “self-esteem” from the psychological needs. This situation might be explained by the paradigm difference and the time elapsed between manipulation and filling the scale in.

Being the target of ostracism had an impairment effect on cognitive flexibility. The participants in the being the target of ostracism condition exhibited worse cognitive flexibility

performance compared to the participants in the inclusion condition. This result is congruent with the majority of studies in the literature examining the relationship between ostracism and cognitive processes (e.g., Baumeister et al., 2002, 2005; Buelow et al., 2015; Xu et al., 2018). It is an expected result that ostracism has a disruptive effect on cognitive performance. In Study 2, it was concluded that being the target of ostracism did not affect cognitive flexibility. However, the variation of the result in Study 3 could be explained by the used paradigm. The second study used scenarios for ostracism manipulation. However, in the third study, the participants were ostracized in a game they played (Cyberball). Therefore, compared to the threat posed by scenario reading, Cyberball might be more effective. The individuals may have felt more ostracized in Cyberball, which may explain the disruptive effect on cognitive functions. In addition, being the target of ostracism affects all psychological needs. The emotional empathy levels of the participants in the inclusion condition were higher compared to the ostracism condition.

5. GENERAL DISCUSSION

The aim of this research is to understand the effect of observing ostracism and being the target of ostracism on cognitive flexibility. For this purpose, observing ostracism and being the target of ostracism scenarios were adapted into Turkish to manipulate observing ostracism and being the target of ostracism in Study 1. Secondly, testing the effectiveness and the validity of the scenarios adapted in Study 1, Study 2 was conducted using these scenarios. In Study 2, the effects of observing ostracism and being the target of ostracism on cognitive flexibility were examined separately. In order to increase the reliability of the results obtained in the second study, Study 2 was replicated in the Study 3 with a multi-method approach. In this section, the results obtained from these three experiments are discussed separately and holistically. Next, the limitations of the research and suggestions for future studies, and conclusions are considered.

5.1. The Manipulation of Observing Ostracism and Being the Target of Ostracism

Study 1 was conducted to test the effectiveness of the adapted and developed ostracism scenarios (observing ostracism and being the target of ostracism). A classic scenario-based future life alone paradigm was also used to compare the scenarios of being the target of ostracism and observing ostracism. Within the scope of Study 1, three hypotheses were formed. In these three hypotheses, it was predicted that both observing ostracism scenario and being the target of ostracism and the future life alone paradigm would pose a need threat. The results showed that the scenarios were effective. In other words, all of the scenarios (observing ostracism, being the target of ostracism, and future life alone scenarios) negatively affected all basic psychological needs such as the need to belong, self-esteem, meaningful existence, control, and certainty. Therefore, all of the hypotheses of the Study 1 were supported.

Observing ostracism and being the target of ostracism scenarios tested in Study 1 were used in Study 2. Observing ostracism has been often manipulated using the Cyberball paradigm (Giesen & Echterhoff, 2018; Güroğlu et al., 2013; Salvati et al., 2019; Wesselmann et al., 2009). However, in this dissertation, observing ostracism was manipulated with the developed scenarios. There are many paradigms that can be used to manipulate being the target of ostracism (Wirth, 2016). However, it is not easy to use most of these paradigms as an observing ostracism paradigm. Cyberball paradigm is suitable for manipulating observing ostracism. For this reason, Cyberball can also be used as an observing ostracism paradigm easily and practically. However, in this dissertation, observing ostracism had to be manipulated with another method in addition to the Cyberball paradigm, since a multi-method approach would be followed. Therefore, scenarios were created and tested. Also, being the target of ostracism and observing ostracism scenarios are prepared similarly in terms of content. The topic includes the target's presentation in the lesson and the reactions they received as a result (see also Appendix A, and Appendix B). Thus, the differences obtained are not due to the methodology. As a result, it was concluded that the adapted being the target of ostracism scenarios and the developed observing ostracism scenarios were suitable to use in Study 2 and these scenarios were effective.

5.2. The Effect of Observing Ostracism and Being the Target of Ostracism on Cognitive Flexibility

The second and third studies were conducted to determine the effects of observing ostracism and being the target of ostracism on cognitive flexibility. This section includes a discussion of the results of these two studies.

5.2.1. The Effect of Observing Ostracism on Cognitive Flexibility

One of the research questions of the Study 2 and the Study 3 was about the effect of observing ostracism on cognitive flexibility. Results from these studies indicated that observing

ostracism increased cognitive flexibility performance. Therefore, research questions about the effect of observing ostracism on cognitive flexibility were answered.

In the Study 2, the participants in the observing ostracism condition showed better cognitive flexibility performance compared to the participants in the control condition. Within the scope of the multi-method approach, the results obtained in Study 2 were replicated in Study 3. Observing ostracism was manipulated with the scenario in the Study 2. In Study 3, the Cyberball paradigm, which is frequently used in exclusion studies, was used. The results of the Study 3 were also similar to the Study 2. The results of both studies show that observing ostracism increases cognitive flexibility performance. The similar results of two different studies using two different manipulations provide important evidence of the positive effect of observing ostracism on cognitive flexibility.

The experience of ostracism negatively affects individuals and threatens their basic human needs such as the need to belong, self-esteem, meaningful existence, control, and certainty. However, studies show that observing ostracism threatens needs just like ostracism does (e.g., Giesen & Echterhoff, 2018; Wesselmann, 2009, 2013a). In other words, observing ostracism causes social pain like ostracism. Observing ostracism also disturbs and negatively affects individuals as much as ostracism. Studies on ostracism and cognitive processes also showed that there is a relationship between ostracism and cognitive processes. Observing ostracism, which causes similar effects to ostracism, may also be associated with cognitive processes. However, as far as is known, there is no research in the literature examining the relationship between observing ostracism and any cognitive process. Therefore, in this dissertation, it is not possible to discuss the results achieved on the effect of observing ostracism on cognitive flexibility comparatively. Nevertheless, it is possible to make some inferences.

There are studies showing that ostracism is associated with cognitive processes. Although a significant number of these studies suggest that ostracism affects cognitive

performance negatively (e.g., Baumeister et al., 2002, 2005; Tobia et al., 2017; Reddy et al., 2019), there are also findings showing the opposite (Du et al., 2019; Juanchich et al., 2018; Otten & Jonas, 2013). In other words, the results are not consistent. From this point of view, a similar interpretation could be made for observing ostracism. Observing ostracism causes similar consequences as ostracism (Giesen & Echterhoff, 2018). Since observing ostracism and ostracism lead to similar results, it may be an expected result that observing ostracism is related to cognitive processes. At this point, the effect of observing ostracism on cognitive flexibility performance may be discussed.

The increased cognitive flexibility performance following observing ostracism manipulations might be explained within the framework of the temporal need-threat model proposed by Williams (2007, 2009). According to the temporal need-threat model, there is an alarm mechanism that evolves in humans and serves to anticipate exclusion. That system is called an early detect system. This alarm system ensures that individuals are alert to signs of exclusion (Williams & Zadro, 2001; Williams, 2009). Thus, with this early detect system, individuals can avoid the negative effects of ostracism. When a person is the target of ostracism, avoiding the negative consequences of ostracism might be difficult. However, different explanations for observing ostracism can be made. When the individual observes ostracism, the early detect system is likely to be activated. With this activation, the observer may seek information about ostracism. In other words, they might prepare themselves for ostracism even when they are not a target. Through this mental preparation and activation of the early detect system, observing ostracism may enable individuals to exhibit better cognitive performance. Individuals observing ostracism may be scanning around and checking for signs of ostracism. The increase in cognitive flexibility performance by observing ostracism can be explained by this readiness. The results from both Study 2 and Study 3 support this explanation.

In addition, when the definition of cognitive flexibility is examined, it can be understood that observing ostracism increases cognitive flexibility performance. It includes processes such as cognitive flexibility, creativity, ability to adapt to goal-directed behavior, ability to flexible switch perspectives, and ability to produce responses from a wide perspective (Diamond, 2013). Increasing cognitive flexibility performance may motivate individuals to avoid the negative consequences of observing ostracism with the help of these processes.

Another explanation could be made in the context of the goal-driven resource redistribution theory proposed by Shilling and Brown (2016). According to this theory, the way individuals will allocate their available physiological and psychological resources following ostracism varies according to their immediate and urgent cognitive goals. Shilling and Brown (2016) suggest that an experience of ostracism will generally make individuals' basic psychological needs a high priority and for this reason it causes individuals to show acute social perception, in other words, better cognitive performance. The resource redistribution theory proposes that ostracism triggers an emotional alarm (social pain, low self-esteem) that leads to an automatic appraisal process to prioritize an individual's goals. In many cases, the satisfaction of threatened needs becomes important. How people will use their resources (physiological and psychological) will change accordingly. This point is similar to Williams' (2007) need-threat model. For example, when self-esteem and the need to belong are threatened, the person may exhibit prosocial behaviors. When other needs (control, meaningful existence) are threatened, antisocial behaviors (aggression) that seem to be incompatible elicit goals such as self-protection.

The increase in cognitive flexibility performance following observing ostracism manipulations reached within the scope of this dissertation may be explained in the context of this theory. Because the needs of the participants who observe ostracism are threatened, they may act with the motive of satisfying their threatened needs. Observing ostracism will also

cause an emotional alarm like ostracism. By triggering an emotional alarm, observers can make cognitive appraisals to satisfy their needs (Shilling & Brown, 2016). As a result of these evaluations, it is possible for them to engage in a behavioral search. This search and being cognitively active may have enabled the participants to show better cognitive flexibility performance.

Another explanation can be made within the framework of the behaviors following observing ostracism suggested by Rudert and Greifeneder (2019). It could also be considered together with goal-driven resource redistribution theory. These behaviors are the punishment of sources and targets and self-protection. If observers attribute to a punitive motive, they will probably support the sources of ostracism. For instance, in a study conducted with Cyberball, observers tend to punish the target when the target starts to throw the ball late to other players (Wesselmann et al., 2013b). On the other hand, if observers attribute to a malicious motive, they may support the target. For this purpose, observers can try to compensate for the ostracism of the target by punishing the inappropriate behavior of the sources. This idea is also supported by the literature. In the study of Wesselmann et al. (2013b), it was shown that in Cyberball, when individuals observe that the target is ostracized without an apparent reason, they try to compensate by throwing more balls at the target. In addition, while the participants were throwing more balls at the target, they also punished sources by throwing fewer balls. However, this may not be the only explanation.

Another possible behavioral response to observing ostracism is self-protection. In the goal-driven resource redistribution theory, behaviors that seem to be antisocial may actually provide self-protection. Observers' supportive or punitive attitudes towards the target or source may have some consequences. Especially in case the observers are afraid that supporting the target will have negative consequences for them, they may act with the self-protection

motivation. Even if they do not support the source morally, they may side with the source in order to protect themselves. This makes them less likely to become targets of the source.

However, in this dissertation in both Study 2 and Study 3, the manipulations did not provide enough information to allow participants to make an explicit attribution. In other words, there is a neutral approach in the Cyberball paradigm, especially in Study 3. Nonetheless, despite this, participants may have attributed punitive or malicious motives. As a result of these attributions, they may have turned into self-protective behavior. For this, the alarm system, expressed both in the temporal need-threat model and the goal-directed theory, needs to be triggered. With the activation of the evolutionary alarm system, the individual will be motivated to show better cognitive performance for both self-protection and to satisfy threatened needs. Therefore, those in the observing ostracism condition in both Study 2 and Study 3 showed better cognitive flexibility performance.

5.2.2. The Effect of Being the Target of Ostracism on Cognitive Flexibility

One of the research questions of Study 2 and Study 3 was about the effect of being the target of ostracism on cognitive flexibility. The results obtained in Study 2 and Study 3 are inconsistent with each other. In the Study 2, being the target of ostracism had no effect on cognitive flexibility. However, being the target of ostracism had a disruptive effect on cognitive flexibility in Study 3. Therefore, research questions about the effects of being the target of ostracism on cognitive flexibility have been answered.

There was no statistical difference between the cognitive flexibility scores of the participants in being the target of ostracism condition and the control condition in Study 2. Within the scope of the multi-method approach, the results reached in Study 2 were replicated in Study 3. Being the target of ostracism was manipulated with the scenario in Study 2. In Study 3, the Cyberball paradigm, which is frequently used in exclusion studies, was used. In Study 3, the participants who were in being the target of ostracism condition showed worse cognitive

flexibility performance. As a results, different results were obtained with different ostracism manipulations. In addition, these different results show the importance of using the multi-method approach in exclusion studies.

In the literature, there are different studies on the effect of ostracism on different cognitive processes. A significant number of these studies state that ostracism has a negative effect on cognitive processes (e.g., Baumeister et al., 2002, 2005; Buelow et al., 2015; Fuhrman et al., 2019; Greitemeyer et al., 2012; Lustenberger & Jagacinski, 2010; Hawes et al., 2012; Tobia et al., 2017; Wang & Sha, 2018). However, there are also inconsistent results with this finding. In other words, there are findings showing that ostracism does not always negatively affect cognitive processes, but on the contrary, it may increase cognitive performance (e.g., Du et al., 2019; Gardner et al., 2000; Jamieson et al., 2010; Kiat et al., 2018; Otten & Jonas, 2013; Xu et al., 2016). There are also few studies stating that ostracism has no effect on cognitive processes (e.g., Bossi et al., 2018; Juanchich et al., 2018). The different results obtained regarding the relationships between ostracism and cognitive processes may also be related to the exclusion paradigm used. For this reason, conducting studies using a multi-method approach allows achieving high-reliability results. For example, in Study 2, ostracism was manipulated with the scenario and it did not affect cognitive flexibility. On the other hand, the Cyberball paradigm was used in Study 3. In Study 3, ostracism negatively affected cognitive flexibility performance. These different results might be explained by methodological problems. However, as mentioned before, a multi-method approach is recommended in exclusion studies to solve the problems arising from paradigms (Williams & Zadro, 2001). This approach has also been followed in this dissertation.

The ostracism manipulations used both in Study 2 and Study 3 were successful. The manipulation checks questions and need threat scale results to demonstrate these results. In other words, both the scenarios and the Cyberball paradigm were effective. The fact that

ostracism did not affect cognitive flexibility in Study 2 might be explained by the scenario manipulation. Although the scenarios were effective, the effect of being ostracized with the scenario may not have lasted long enough to affect cognitive flexibility. Therefore, the effect of ostracism on cognitive flexibility may not have been fully seen in the second experiment. However, the effect of the Cyberball paradigm used in the third experiment may have lasted long enough to affect cognitive flexibility. Because in the scenario, the participants read the scenario and visualize it in their minds. Nevertheless, in Cyberball condition, the participants play the game themselves and become a part of it. They think that they are ostracized by the real two players they think they are in the game. This situation may have ostracized the participants relatively more when compared to being the target of ostracism scenarios. Hence, in the third experiment, ostracism may have negatively affected cognitive flexibility. As a matter of fact, this result is compatible with most of the studies in the literature (e.g., Baumeister et al., 2002, 2005; Buelow et al., 2015; Fuhrman et al., 2019; Greitemeyer et al., 2012; Lustenberger & Jagacinski, 2010; Hawes et al., 2012; Tobia et al., 2017; Wang & Sha, 2018). Although these studies did not directly examine the relationships between cognitive flexibility and ostracism, they examined different cognitive processes such as confirmatory information processing (Greitemeyer et al., 2012), social information processing (Bossi, et al., 2018), visual working memory (Xu et al., 2018), working memory performance (Fuhrman et al., 2019), and selective attention (Xu et al., 2017). In addition, according to Diamond (2013, 2014), cognitive flexibility emerges based on the other two cores (inhibition and working memory) of the executive functions. For this reason, existing studies between ostracism and cognitive processes also support the achieved results.

The disrupting effect of ostracism on cognitive flexibility might be explained similarly by other cognitive processes. Disrupting effect of ostracism on cognitive flexibility could be due to the fact that being the target of ostracism could increase anxiety and negative mood.

Thus, the cognitive resources are allocated to manage this process (Tice & Baumeister, 1990) or ostracism may have decreased motivation for the cognitive tasks (Baumeister et al., 2002). Therefore, being the target of ostracism may have negatively affected cognitive flexibility performance. As far as is known, only one study examining the relationship between ostracism and cognitive flexibility has been found in the literature. In the aforementioned study, ostracism decreased cognitive flexibility performance (Mortezazadeh et al., 2021). This result supports the conclusion reached in this dissertation, as well.

5.2.3. The Effect of Observing Ostracism and Being the Target of Ostracism on Need Threat and Empathy

In the first experiment, it was determined that both observing ostracism and being the target of ostracism scenarios threatened all needs. The same negative effect on needs was observed in the second experiment, as well. These results are also in line with the literature (e.g., Holte et al., 2022; Lutz & Schneider, 2021; Royula-Colomer et al., 2022). According to the temporal need-threat model, an experience of exclusion negatively affects basic psychological needs such as the need to belong, self-esteem, control, meaningful existence, and certainty (Williams, 2007, 2009).

It is expected that the participants in the condition of being the target of ostracism will experience need threats. The crucial thing is that observing ostracism similarly affects needs negatively. Studies showed that observing ostracism affects needs negatively, just like ostracism does (Giesen & Echterhoff, 2018; Wesselmann et al., 2013a, 2013b). The negative effects of observing ostracism and being the target of ostracism reached in this dissertation are also supported by the literature. In the third experiment, which employed the Cyberball paradigm, being the target of ostracism negatively affected all of the needs, as in the other two experiments. However, the observing ostracism condition created with Cyberball only negatively affected the participants' need to belong and self-esteem. First, observing ostracism

affected the need to belong and self-esteem, but not other needs. However, the fact that it does not threaten all needs as in the second experiment could be explained by the Cyberball paradigm. In the condition of being the target of ostracism, the participants were directly involved in the game. The fact that they were ostracized from the game they played might have strongly affected the participants. As a matter of fact, this effect may have lasted long enough to affect the need-threat scale measurement. The negative effect of observing ostracism condition may have lasted only long enough to affect the need to belong and self-esteem. The effects of observing ostracism and being the target of ostracism on needs can be explained in this way.

Another explanation might be made within the framework of the order effect. Participants dealt with the cognitive flexibility task after manipulation in both Study 2 and Study 3. After the cognitive flexibility task, the need-threat scale and the empathy scale were filled in by the participants. Therefore, the effects of the manipulations of the need-threat scale and the empathy scale may not have lasted long enough to fully affect these measurements.

In order to examine the effect of observing ostracism and being the target of ostracism on empathy, the empathy measurements were taken from the participants at the end of the second and the third experiments. The results of the second experiment indicated that both observing ostracism and being the target of ostracism were not related to the empathy levels of the participants. From this point of view, the effect of observing ostracism on cognitive flexibility may have emerged independently of empathy. Similar results were obtained for observing ostracism in the third experiment. No relationship was found between observing ostracism and empathy. When the studies in the literature were examined, it is noticed that empathy is mostly related to observing ostracism (e.g., Bernstein et al., 2018; Giesen & Echterhoff, 2018; Poon et al., 2020; Wesselmann et al., 2009, 2013a). The question of why observing ostracism causes similar results to ostracism is explained by some scholars on the

basis of the concept of empathy. The observer who empathizes with the target may feel the threat of need as if s/he was the one being ostracized. In this dissertation, however, it was concluded that ostracism and observing ostracism had no effect on empathy. Thus, the relationship between ostracism (observing) and empathy should be carefully evaluated. The empathy measurements were taken at the end of the both second and third experiments. This may have caused the empathy scores not to be affected at all.

5.3. Limitations and Future Directions

This dissertation has several limitations. One of these limitations is that all of the experiments were conducted online due to the pandemic. There are some advantages and disadvantages of conducting experiments online. One of the major drawbacks can be that the participants could not be controlled during the experiment. Because what participants did during the experiment, how they behaved or how relevantly they did the experiment are controversial issues. In addition, being able to participate in the experiment online at any time of the day can be seen as another disadvantage. On the other hand, in both the second and the third experiments, many participants were excluded from the study due to exclusion criteria. Nevertheless, if this dissertation had been carried out in the laboratory, such a large number of participants would not have been excluded. However, even before the pandemic, there are researchers who conducted an online exclusion experiment (Giesen & Echterhoff, 2018). This shows that an online experiment is a method used in exclusion studies.

The need-threat scale and empathy measurements were taken at the end of the second and the third experiments. This is another limitation of the dissertation. It was not technically possible to take these measurements before the experiment or immediately after the manipulation. Therefore, these measurements were taken at the end of the experiments. But the effects of observing ostracism and being the target of ostracism manipulations may not have lasted long enough to affect both need-threat and empathy. For this reason, especially the results

related to empathy should be evaluated by considering this limitation. In addition, all of the participants were undergraduate students. This may also be considered a limitation, as well.

Studies on observing ostracism are already relatively limited. Although there are studies examining the relationship between ostracism and cognitive processes, as far as is known, there is no research on the relationship between observing ostracism and any cognitive processes. In the future, it may be useful to consider the relationship of observing ostracism with different cognitive processes. On the other hand, in this dissertation, it was concluded that observing ostracism increases cognitive flexibility performance. This result may be repeated with other studies or with different cognitive processes. In addition, new research could be carried out by using different cognitive flexibility tasks.

Due to the nature of observing ostracism and being the target of ostracism manipulations, the results of reflexive responses were examined in this dissertation. In the future, it may be useful to investigate the effects of the long-term consequences of exclusion on cognitive performance.

5.4. Conclusion

In the first experiment, the effectiveness of observing ostracism and being the target of ostracism scenarios was tested. The results show that scenario manipulations were effective. In future studies, observing ostracism can be manipulated by using these scenarios. In the second and the third experiments, the effects of both observing ostracism and ostracism on cognitive flexibility were examined. Observing ostracism increased cognitive flexibility performance. In the second experiment, ostracism had no effect on cognitive flexibility. In the third experiment, ostracism negatively affected cognitive flexibility performance. The effect of ostracism on cognitive flexibility has contributed to the literature with inconsistent results. In addition, as far as is known, there is no research on the relationship of observing ostracism with any cognitive process. Therefore, this dissertation also contributed to filling this gap in the literature.

6. REFERENCES

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7. APPENDICES

APPENDIX A. OBSERVING OSTRACISM SCENARIOS

Observing Ostracism Scenario

Bugün sınıfta Ali'nin dersi ile ilgili fikirlerini anlatacağı bir sunumu var. Bu sunum Ali için çok önemli ve Ali sunuma aylardır hazırlanıyor. Sunumunu yaptıktan sonra hem sınıf arkadaşları hem de dersin hocası Ali'ye soğuk ve ilgisiz bir şekilde tepki veriyor. Neredeyse hiç kimse Ali'nin sunumunu beğenmiyor ve sunum boyunca Ali'nin verdiği önerileri kabul etmiyor. Ali, hocası ve sınıf arkadaşları tarafından ciddiye alınmadığını ve yalnız kaldığını hissediyor. Bu sınıfın bir üyesi olarak Ali, kendini tamamıyla dışlanmış hissediyor.

Observing Inclusion Scenario

Bugün sınıfta Ali'nin dersi ile ilgili fikirlerini anlatacağı bir sunumu var. Bu sunum Ali için çok önemli ve Ali sunuma aylardır hazırlanıyor. Sunumunu yaptıktan sonra hem sınıf arkadaşları hem de dersin hocası Ali'ye meraklı ve istekli bir şekilde tepki veriyor. Neredeyse herkes Ali'nin sunumunu beğeniyor ve sunum boyunca Ali'nin verdiği önerileri kabul ediyor. Ali, hocası ve sınıf arkadaşları tarafından ciddiye alındığını ve yalnız olmadığını hissediyor. Bu sınıfın bir üyesi olarak Ali, kendini tamamıyla kabul edilmiş hissediyor.

APPENDIX B. BEING THE TARGET OF OSTRACISM SCENARIOS

Being the Target of Ostracism Scenario

Bugün sınıfta dersinizle ilgili çalıştığınız bir konuda fikirlerinizi anlatacağınız bir sunumunuz var. Bu sunum sizin için çok önemli ve sunuma aylardır hazırlanıyorsunuz. Sunumunuzu yaptıktan sonra hem sınıf arkadaşlarınız hem de dersinizin hocası size soğuk ve ilgisiz bir şekilde tepki veriyor. Neredeyse hiç kimse sunumunuzu beğenmiyor ve sunum boyunca verdiğiniz önerilerinizi kabul etmiyor. Hocanız ve sınıf arkadaşlarınız tarafından ciddiye alınmadığınızı ve yalnız kaldığınızı hissediyorsunuz. Bu sınıfın bir üyesi olarak kendinizi tamamiyle dışlanmış hissediyorsunuz.

Being the Target of Inclusion Scenario

Bugün sınıfta dersinizle ilgili çalıştığınız bir konuda fikirlerinizi anlatacağınız bir sunumunuz var. Bu sunum sizin için çok önemli ve sunuma aylardır hazırlanıyorsunuz. Sunumunuzu yaptıktan sonra hem sınıf arkadaşlarınız hem de dersinizin hocası size meraklı ve istekli bir şekilde tepki veriyor. Neredeyse herkes sunumunuzu beğeniyor ve sunum boyunca verdiğiniz önerilerinizi kabul ediyor. Hocanız ve sınıf arkadaşlarınız tarafından ciddiye alındığınızı ve yalnız olmadığınızı hissediyorsunuz. Bu sınıfın bir üyesi olarak kendinizi tamamiyle kabul edilmiş hissediyorsunuz.

APPENDIX C. FUTURE LIFE ALONE EXCLUSION PARADIGM

Future Alone Condition

Hayatınızın ilerleyen dönemlerinde yalnız kalacak kişilik tipindesiniz. Şu anda arkadaşlarınız ve ilişkileriniz olabilir, ancak 20'li yaşlarınızın ortalarına doğru bunların çoğu sizden uzaklaşacak. Hatta evlenebilir veya birkaç evlilik yapabilirsiniz, ancak bunlar muhtemelen kısa ömürlü olacak ve 30'larınıza kadar devam etmeyecek. İlişkileriniz uzun sürmeyecek ve insanların sürekli olarak yeni ilişkiler kurduğu yaşı geçtiğinizde, muhtemelen gittikçe daha çok yalnız kalacaksınız.

Future Belongingness Condition

Yaşamınız boyunca ödüllendirici ilişkilere sahip olan bir kişilik tipine sahipsiniz. Muhtemelen uzun ve istikrarlı bir evliliğiniz ve uzun yıllar boyunca sürecektir arkadaşlıklarınız olacak. Büyük olasılıkla her zaman çevrenizde sizi önemseyen insanlar ve arkadaşlarınız olacak.

APPENDIX D. THE NEED THREAT SCALE

Lütfen her bir soru için okuduğunuz metin boyunca deneyimlediğiniz hislerinizi yansıtacak en uygun yanıtı veriniz.	Hiçbir zaman				Aşırı derecede
Ait olma					
Kendimi kopuk hissettim.	1	2	3	4	5
Kendimi reddedilmiş hissettim.	1	2	3	4	5
Kendimi dışlanmış gibi hissettim.	1	2	3	4	5
Gruba ait olduğumu hissettim.	1	2	3	4	5
Diğerinin benimle çok etkileşime girdiklerini hissettim.	1	2	3	4	5
Benlik Değeri					
Kendim hakkında iyi hissettim.	1	2	3	4	5
Benlik değerim yüksekti.	1	2	3	4	5
Sevildiğimi hissettim.	1	2	3	4	5
Kendimi güvensiz hissettim.	1	2	3	4	5
Memnun hissettim.	1	2	3	4	5
Anlamli varoluş					
Kendimi görünmez hissettim.	1	2	3	4	5
Kendimi anlamsız hissettim.	1	2	3	4	5
Var olmadığımı hissettim.	1	2	3	4	5
Kendimi önemli hissettim.	1	2	3	4	5
Kendimi işe yarar hissettim.	1	2	3	4	5
Kontrol					
Kendimi güçlü hissettim.	1	2	3	4	5
Kontrolün bende olduğunu hissettim.	1	2	3	4	5
Olayları önemli ölçüde değiştirme yeteneğine sahip olduğumu hissettim.	1	2	3	4	5
Başkalarının eylemlerini etkileyemediğimi hissettim.	1	2	3	4	5
Her şeye diğerlerinin karar verdiğini hissettim.	1	2	3	4	5
Belirlilik					
Kendimden emin olamadığımı hissettim.	1	2	3	4	5
Kim olduğum konusunda kendime güvendim.	1	2	3	4	5
Beni ben yapan şeyin ne olduğundan emin değildim.	1	2	3	4	5
Ne yapacağımdan emindim.	1	2	3	4	5
Ne yapmam gerektiğini bilmiyordum.	1	2	3	4	5
Duygu durumu					
İyi	1	2	3	4	5
Kötü	1	2	3	4	5
Samimi	1	2	3	4	5
Samimiyetsiz	1	2	3	4	5
Öfkeli	1	2	3	4	5
Tatminkar	1	2	3	4	5
Mutlu	1	2	3	4	5
Üzgün	1	2	3	4	5

APPENDIX E. COGNITIVE FLEXIBILITY TASK TABLE OF WORDS

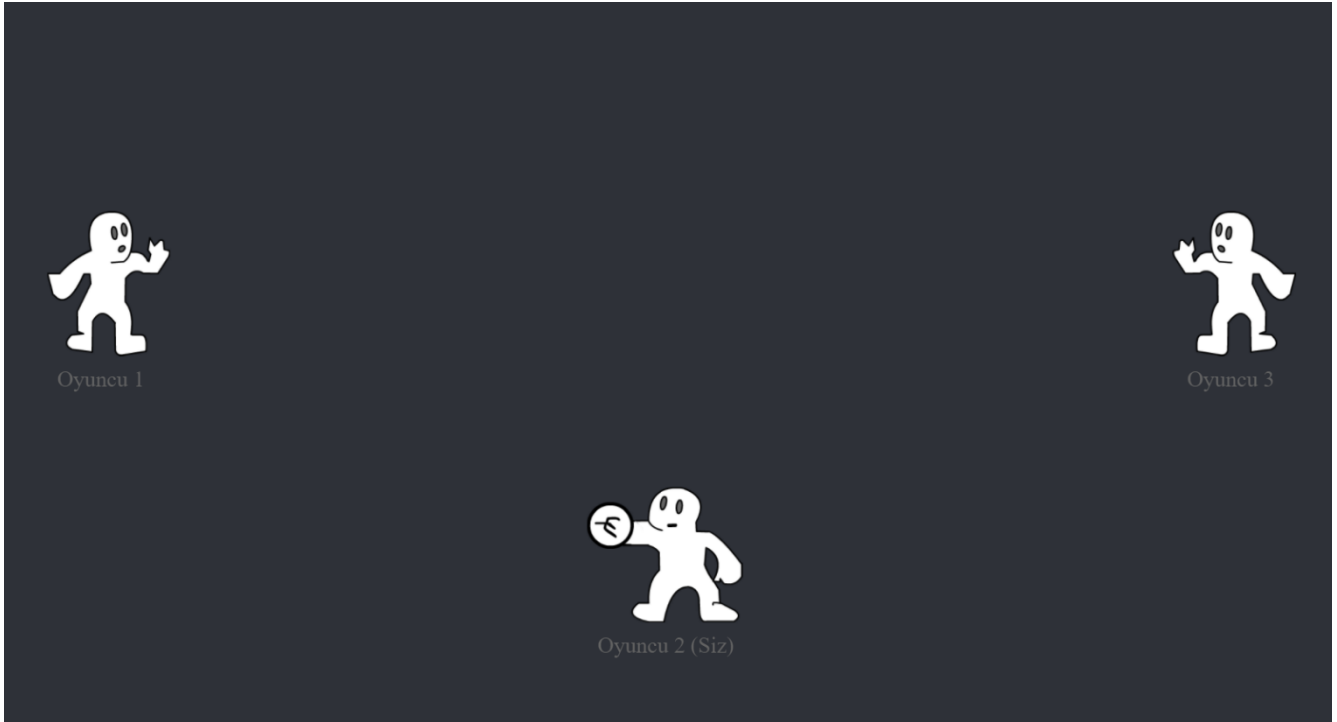
Sevinç	Gömlek	Tren	Gururlu	Etek
Yatak	İnek	Bilgisayar	Ceket	Bisiklet
Horoz	Sınav	Metro	Televizyon	Mutluluk
Neşe	Ders	Pantolon	Masa	Araba
Öfke	Kedi	Köpek	Keder	Öğrenci
Kamera	Tavşan	Kırgın	Telefon	Uçak
Sandalye	Dolap	Heyecan	Sınıf	Mutsuz
Tablet	Kanepe	Öğretmen	Hüzün	Kazak

APPENDIX F. BASIC EMPATHY SCALE

1 = Kesinlikle Katılmıyorum					
2= Katılmıyorum					
3= Ne katılıyorum Ne katılmıyorum					
4= Katılıyorum					
5 = Kesinlikle Katılıyorum					
	1	2	3	4	5
1) Arkadaşımın duyguları beni pek etkilemez.					
2) Üzgün olan bir arkadaşımınla vakit geçirdikten sonra genellikle üzgün hissederim					
3) Arkadaşım başarılı olduğunda onun ne kadar mutlu olduğunu anlayabilirim					
4) İyi bir korku filmindeki karakterleri izleyince korkarım.					
5) Başkalarının duygularından hemen etkilenirim.					
6) Arkadaşlarımın korktuğunu anlamakta güçlük çekerim.					
7) Başka insanları ağlarken gördüğümde üzülmem.					
8) Başka insanların ne hissettikleri beni çok fazla ilgilendirmez.					
9) Birisi kendini kötü hissettiğinde onun neler hissettiğini genellikle anlayabilirim					
10) Arkadaşlarımın korktuğunu genellikle anlarım					
11) Televizyonda ya da filmlerde üzüntülü bir şeyler izlerken çoğunlukla ben de üzülürüm					
12) İnsanların ne hissettiğini çoğunlukla onlar bana söylemeden anlayabilirim					
13) Kızgın birini görmek hislerimi etkilemez.					
14) İnsanların neşeli olduğunu genellikle anlarım.					
15) Bir şeylerden korkmuş arkadaşlarımla birlikteyken ben de korkarım.					
16) Arkadaşımın kızgın olduğunu genellikle hemen fark ederim					
17) Arkadaşlarımın hissettiklerine çoğunlukla kendimi kaptırırım.					
18) Arkadaşımın mutsuzluğu bana hiçbir şey hissettirmez.					
19) Arkadaşımın hissettiklerinin genellikle farkında değilimdir					
20) Arkadaşlarımın mutlu oldukları anları anlamakta zorlanırım.					

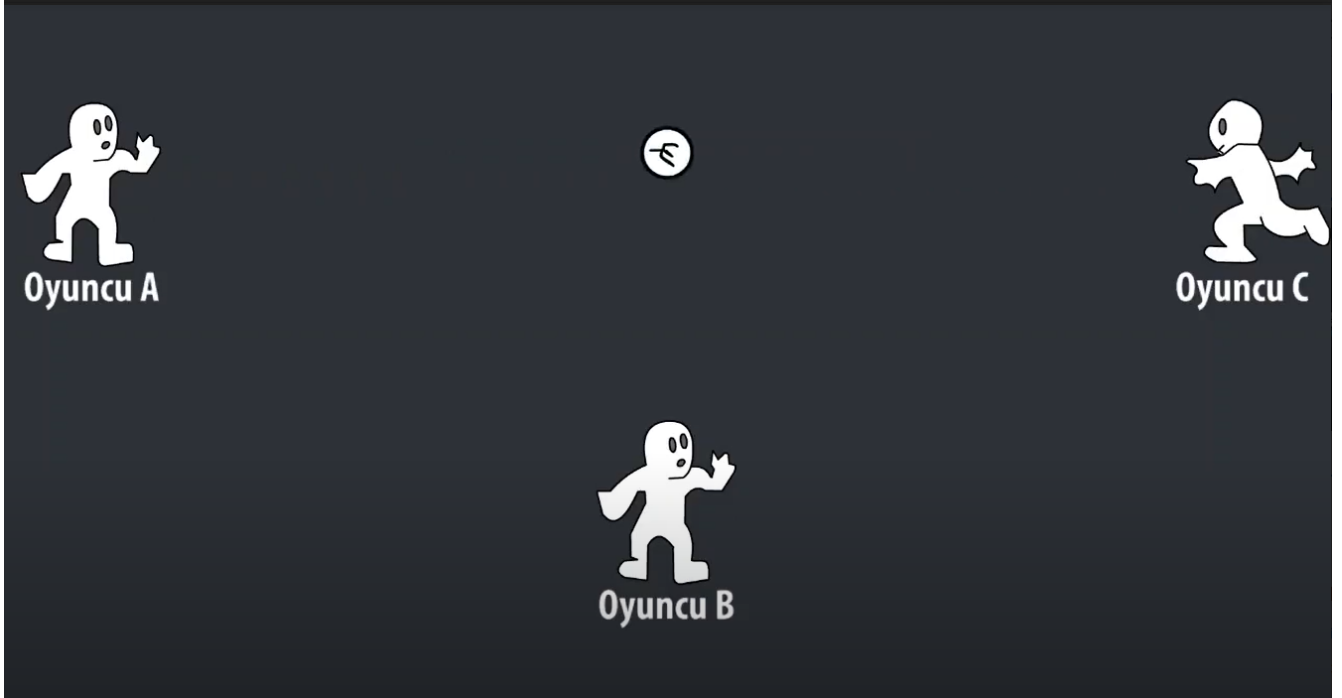
APPENDIX G. CYBERBALL PARADIGM BEING THE TARGET OF OSTRACISM CONDITION SCREENSHOT

The participants play the game (Cyberball) and are ostracized by the computer in this condition.



APPENDIX H. CYBERBALL PARADIGM OBSERVING OSTRACISM CONDITION SCREENSHOT

The participants observe that someone is ostracized in the Cyberball in this condition.



APPENDIX I. THE NEED THREAT SCALE

Lütfen her bir soru için oyun boyunca deneyimlediğiniz hislerinizi yansıtacak en uygun yanıtı veriniz.	Hiçbir zaman				Aşırı derecede
Ait olma					
Kendimi kopuk hissettim.	1	2	3	4	5
Kendimi reddedilmiş hissettim.	1	2	3	4	5
Kendimi dışlanmış gibi hissettim.	1	2	3	4	5
Gruba ait olduğumu hissettim.	1	2	3	4	5
Diğer oyuncuların benimle çok etkileşime girdiklerini hissettim.	1	2	3	4	5
Benlik Değeri					
Kendim hakkında iyi hissettim.	1	2	3	4	5
Benlik değerim yüksekti.	1	2	3	4	5
Sevildiğimi hissettim.	1	2	3	4	5
Kendimi güvensiz hissettim.	1	2	3	4	5
Memnun hissettim.	1	2	3	4	5
Anlamli varoluş					
Kendimi görünmez hissettim.	1	2	3	4	5
Kendimi anlamsız hissettim.	1	2	3	4	5
Var olmadığımı hissettim.	1	2	3	4	5
Kendimi önemli hissettim.	1	2	3	4	5
Kendimi işe yarar hissettim.	1	2	3	4	5
Kontrol					
Kendimi güçlü hissettim.	1	2	3	4	5
Kontrolün bende olduğunu hissettim.	1	2	3	4	5
Olayları önemli ölçüde değiştirme yeteneğine sahip olduğumu hissettim.	1	2	3	4	5
Başkalarının eylemlerini etkileyemediğimi hissettim.	1	2	3	4	5
Her şeye diğer oyuncuların karar verdiğini hissettim.	1	2	3	4	5
Belirlilik					
Kendimden emin olamadığımı hissettim.	1	2	3	4	5
Kim olduğum konusunda kendime güvendim.	1	2	3	4	5
Beni ben yapan şeyin ne olduğundan emin değildim.	1	2	3	4	5
Ne yapacağımdan emindim.	1	2	3	4	5
Ne yapmam gerektiğini bilmiyordum.	1	2	3	4	5
Duygu durumu					
İyi	1	2	3	4	5
Kötü	1	2	3	4	5
Samimi	1	2	3	4	5
Samimiyetsiz	1	2	3	4	5
Öfkeli	1	2	3	4	5
Tatminkar	1	2	3	4	5
Mutlu	1	2	3	4	5
Üzgün	1	2	3	4	5

APPENDIX J. ETHICAL COMMITTEE APPROVAL



ANKARA YILDIRIM BEYAZIT ÜNİVERSİTESİ (AYBÜ) ETİK KURULU PROJE ONAY BELGESİ



Ankara Yıldırım Beyazıt Üniversitesi Sosyal Bilimler Enstitüsü Psikoloji bölümü akademisyenlerinden/öğrencilerinden Mehmet Kavaklı'nın, "How Does Observing Ostracism Affect Ostracizing Others? Investigating the Roles of Response Inhibition, Empathy and Trait Self-Compassion" adlı araştırması değerlendirilmiştir. (Bu kısım başvuru sahibi tarafından doldurulmalıdır)

Proje etik açısından uygun bulunmuştur.

Proje etik açısından geliştirilmesi gerekmektedir.

Proje etik açısından uygun bulunmamıştır.

AYBÜ ETİK KURULU KARARI (Etik Kurul tarafından doldurulacaktır)	
Araştırma kodu (Yıl – Araştırma sıra no)	2021 – 162
Başvuru formunun Etik Kurula ulaştığı tarih	17.07.2021
Etik Kurul Karar toplantı tarihi ve karar no	16.04.2021 – 14
Yer	Yıldırım Beyazıt Üniversitesi, Esenboğa Külliyesi
Katılımcılar	Formda imzası bulunan üyelerimiz toplantıya katılmıştır.

KURUL BAŞKANI, BAŞKAN YARDIMCISI VE ÜYELER:

İMZA

Prof. Dr. Cem Şafak ÇUKUR

Üye

Prof. Dr. Muharrem KILIÇ

Üye

Doç. Dr. Behlül TOKUR

Üye

Doç. Dr. Birgül ÖZKAN

Üye

Doç. Dr. Yüksel Akay UNVAN

Üye

Dr. Öğr. Üyesi Şule KAYA

Üye

Dr. Öğr. Üyesi Ertuğrul DEMİRDEL

Üye

Dr. Öğr. Üyesi Nimet YILDIRIM TİRGİL

Üye

Note. Ethical committee approval was updated on 08/11/2021.

APPENDIX K. CURRICULUM VITAE

