

The Effect of Ostracism on the Accessibility of Uncertainty-Related Thoughts

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ABSTRACT

Introduction: Humans have a need to belong a group to survive. For this reason, people have enhanced cognitive abilities to detect cues about rejection. Thus, rejection from our group is a threatening situation like feeling personal uncertainty. According to Temporal Need Threat Model, ostracism may lead to personal uncertainty and situational ambiguity. Since being ostracized threatens people's need to understand their world, and to control how they should behave, it confronts people with personal uncertainty. According to our knowledge, there is no experiment providing a direct empirical evidence of this proposition about the role of uncertainty in ostracism. Thus, the goal of the present study was to assess the accessibility of uncertainty-related thoughts following ostracism manipulation.

Methods: In order to manipulate ostracism, participants played a Cyberball game. Besides, they executed a distracter task either before or after the game depending on the experiment condition they are in. Then,

all participants completed the lexical decision task, which was used to measure the accessibility of uncertainty-related thoughts.

Results: The results of this study revealed that ostracized participants reacted faster to uncertainty-related words than to abstract ones. As expected, we did not find any significant difference between uncertainty-related and abstract response latencies in the inclusion condition.

Conclusion: Based on these results we might conclude that being ostracized leads to an increase in uncertainty accessibility. If this interpretation is correct, this would suggest that our findings provide an empirical support for the proposition by temporal need threat model that uncertainty concerns may be a key antecedent of reactions to being ostracized.

Keywords: Ostracism, uncertainty management, accessibility of uncertainty-related thoughts, lexical decision task

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INTRODUCTION

As was put forth by many thinkers throughout the history of humanity, humans have a need to belong to a group in order to be able to survive. Hence, threats to the relationship with the group are aversive (1, 2) and should be taken under control as soon as possible (3). According to Williams (4, 5), one of these threats is ostracism which can be defined as the ignoring, disregarding or exclusion of an individual or a group by another individual or group (5, 6). Ostracism, social exclusion and rejection concepts are generally used as synonyms in social psychology literature (7). However, Leary (7) puts forth that these three concepts have different meanings. Accordingly; whereas social exclusion carries a wide meaning expressing the singling out of an individual by way of blocking social communication, rejection is frankly expressing to the individual that he/she is unwanted (7, 8). Whereas ostracism is acting as if the individual is not there or is invisible (4). The common point of these three types of exclusion is that all threaten the sense of belonging that every individual needs as well as their self-worth (7). However, the concept of ostracism can be separated from social exclusion and rejection due to the uncertainty it possesses. In ostracism, the individual is excluded by not greeting or answering the questions he/she asks etc. In such a circumstance, the reason for the exclusion is not clear for the excluded individual. In short, being ostracized results in the feeling of personal uncertainty.

The goal of this study was to examine whether being ostracized increases the accessibility of thoughts on personal uncertainty or not. If ostracism leads to a feeling of uncertainty then being ostracized should increase the accessibility of uncertainty-related thoughts. The most important contribution of this study is that the aforementioned relationship that is not examined much in ostracism literature shall be tested via latent measurement.

The Temporal Need-Threat Model (TNTM): Ostracism

Natural sciences show us that we as humans are motivated belong to a group and to preserve our relations with that group in order to be able to survive and reproduce (9). Since the satisfaction of this motive is related closely with staying alive, it not desired for the relationship with the group to be under threat and should be detected as quickly as possible. One of these threats is being ostracized that is one is neglected by an individual or a group (5, 6). According to the Temporal Need-Threat Model (TNTM) developed by Williams (e.g., 10, 11, 12), the effects of ostracism on individuals remains the same over time; these effects may be changed over time via individual or situational factors. These changes are collected under three stages in the model: reflexive stage, reflective stage, and resignation stage.

In the first stage that is the reflexive stage, it was observed that the individual who is sensitive to the smallest ostracism clues determines that he/she is ostracized. When rejection is detected, it is felt that the four basic needs (belonging, self-esteem, control and meaningful existence) are not satisfied as a result of which negative mood is put forth together with physical and social pain. In accordance with the arguments of the model, it has been put forth as a result of many studies that the individual who feels ostracism during this first stage of rejection puts forth highly negative moods and a perception as to feeling threatened with regard to basic needs (10, 12). This effect on negative mood and need threat perception that appears right after being ostracized is observed even when ostracism is manipulated via a computer (13), over the internet (14), social media (15) or face to face (16). In addition, these effects that emerge during the reflexive stage have also been determined during the study carried out in Turkey (17).

According to the model, the individual focuses all his/her attention to the process of rejection during the reflective stage which is the second stage of the rejection process in order to be able to cope with the negative effects of being ostracized and evaluates what this process means (10, 12). Contrary to the reflexive stage, situational and individual differences regulate the rate of psychological recovery. In various studies, it was determined that people with high social anxiety levels recover slower than those who have lower social anxiety levels when rejected by a group of people (18) and that they put forth less self-regulatory behavior (19).

In the final stage, TNTM argues that some people might be ostracized continuously throughout their lives. In several studies, it was found that people feel emotionally numb or depressive (20) during this resignation stage of ostracism and that his/her psychological resources are depleted (5, 10).

In short, ostracism affects the psychological well-being of the individual over time. In addition, a meta-analysis study carried out by Hartgerink, Van Baest, Wicherts and Williams (21) using results acquired from 120 studies shown that the ostracism effect is strong regardless of the dependent variable measurement used, participant properties (e.g., gender, age, country) and the structural properties of the manipulation used. This strong effect of ostracism on mood and four basic needs is explained by the fact that the rejection experience is the same as social death for people. However, as was demonstrated by Wesselmann et.al. (11) and Chen et.al. (22), ostracism deprives the individual of an explanation regarding the reasons for his/her state. People who are ostracized in their daily lives have sufficient knowledge on neither the reasons for the state they are in nor how long it will last and the future of the relationship in question. Being deprived of this information is defined in the Uncertainty Management Model (UMM) as personal uncertainty.

Personal Uncertainty and Ostracism

UMM developed by Van den Bos and Lind (23, 24) which explains the effects of uncertainty on human psychology. According to the model, personal uncertainty is defined as a sense of doubt in goals, self-views, worldviews and the interrelation between the three (23, 25). People need to think that they are living in a stable and predictable world in order to be able to feel safe. Personal uncertainty is an aversive or disturbing state since it threatens these fundamental needs of the individual. The individuals have to do something to manage this situation when they are faced with personal uncertainty. One of the means of eliminating personal uncertainty or at least make it tolerable is to protect more our cultural values and thus reestablish the sense of safety by proving to ourselves that we still have shared values.

As mentioned before, being ostracized threatens the need of the individual to make sense of the world and to control how he/she will

behave. This leads the emergence of personal uncertainty. Furthermore, Chen et.al. (22) noticed that the effects of ostracism as well as the reactions that occur afterwards might be due to personal uncertainty (see, e.g., 11). However, there is no experiment testing this proposed relationship between ostracism and uncertainty.

Based on this, the purpose of the present study was to examine whether being ostracized increases the accessibility of uncertainty-related thoughts. If ostracism results in a feeling of uncertainty then the accessibility of uncertainty-related thoughts will tend to increase following ostracism. In addition, as was put forth in UMM, if the feeling of personal uncertainty results in an aversive state then the process of suppress these thoughts outside of the conscious should start and the accessibility of these thoughts should increase when this process is completed. Thus, allowing time enough to suppress these aversive thoughts right after ostracism manipulation should be increase the accessibility of uncertainty-related thoughts.

METHOD

Approval was taken from the Hacettepe University Ethics Committee in accordance with the article numbered 433-710.

Participants and Experimental Design

A total of seventy-five undergraduate students (56 women, 19 men) at the Hacettepe University participated in the study. The mean age of the female participants was 21,34 (SD = 2,41) and the age interval was 18-30; whereas the mean age of the male participants was 20,84 (SD = 1,77) and the age interval was 18-24. They were randomly assigned to one of four conditions of the 2 (inclusionary status: ostracism versus inclusion; between participants) x 2 (delay: delay vs. no delay; between participants) x 2 (accessibility: uncertainty-related vs. abstract; within participants) mixed factorial design. Either 10 TL or course credit was given to each participant for their participation based on their preference.

Materials

Cyberball Game

The Internet game entitled Cyberball developed by Williams, Cheung and Choi (14) is used to manipulate the ostracism. The game consists of three players including the participant throwing a ball to each other. The person who takes the ball decides to whom he/she will pass the ball after which he/she throws the ball by clicking on the symbol of the selected player.

Prior to the start of the game, the participants are informed that they will be playing an Internet game together with two participants who also participate in the experiment from other research laboratories. In reality, the movements of the other participants (of the virtual players) in the game were generated by the computer. All participants were randomly assigned to be ostracized or included condition. In the ostracism condition, the virtual players throw the ball twice to the participant at the beginning of the game, however they do not throw the ball to the participant during the remainder of the game. Whereas in the inclusion condition, 10 (33%) of the 30 ball throws are made to the participant throughout the game, meaning that the participant makes the same rate of throws with the other two players (14, Study 1).

Distracter Task

The objective of this task developed by Kaynak and Cangöz (26) is to provide the time required to suppress aversive thoughts. The task is comprised of 50 simple arithmetical operations [e.g., $3 \times (5 + 13) = \dots$, $(12 - 8) \times 4 = \dots$]. The participants are asked to solve as many arithmetical operations as possible without any mistake in 3 minutes.

Lexical Decision Task

Lexical decision task developed by Hill and Kemp-Wheeler (27) for evaluating the accessibility of thoughts. In this task the participants were asked to decide, as quickly as possible, whether a letter string on the computer screen was a meaningful word or a non-word. The participants were asked to press the 'M' key if the letter string they see on the computer screen was a meaningful word and to press the 'Z' key if it was a non-word. The task consisted of a total of 40 words 10 of which were related with uncertainty, 10 of which had abstract meanings and 20 of which were non-word. The words used along with their numbers of letters and syllables of the words, the frequency of usage in daily language and mean abstractness and negativity values list have been given in Table 1.

Uncertainty-related words were selected at the end of a careful pilot study that consisted of four steps. In the first step, the Turkish Dictionary (2009) was scanned for selecting words related to uncertainty. At the end of this process, a total of 69 words with meanings close to uncertainty were determined. In the second step, this list of words was given to three independent judges who were asked to evaluate whether the words in the list were related with uncertainty or not (0 = *unrelated*, 1 = *related*). A total of 32 words were determined which were specified by at least two of the three judges.

According to in the relevant literature, there are several stimuli characteristics that need attention when using reaction time measurements as dependent variable. These characteristics include the number of letters, number of syllables, abstract/concrete meaning and negative/positive meaning of words (see, 28, 29, 30). In the third step of our pilot study the list of words was distributed to 250 university students (151 female, 70 male, 29 gender unspecified) in order to determine how often a university student use these words in their daily lives (1 = *never*, 7 = *very frequently*). The obtained results were evaluated to determine the 10 words that were most frequently used.

In the final stage, the number of letters and number of syllables of the 10 uncertainty words were calculated after which the abstraction/concreteness values were determined using the list of Turkish Word Norms (31). The mean of the abstraction/concreteness values of the words was 2.14 on a 7-point scale (1 = *abstract*, 7 = *concrete*) and the mean of the positiveness/negativeness values was 3.11 (1 = *negative*, 7 = *positive*).

In our main study were used 10 abstract words having moderately negative meaning in order to compare the accessibility of the uncertainty words. The number of letters and syllables of these 10 words along their frequency of use were matched by these properties of the words related with uncertainty.

All non-words included in the lexical decision task were generated based on these 20 meaningful words. A method that common to literature was used (32) and one of the consonants of the meaningful words was changed on the condition that it is not the last letter of the word. The word has to become meaningless following this change of letter but it should still be pronounceable. For instance, the word 'muamma' related with uncertainty was changed as 'muavma'; whereas the word 'şüphe' was changed as 'küphe'.

In the lexical decision task used in our main experiment, all letter strings were written in small caps, 24 point, white color and 'Times New Roman' font. There are four blocks of 10 trial in the task. Each trial is comprised of 1000 ms black screen, 70 ms a centered fixation cross (XXXXXX) and after this the target letter string displayed on the screen until one of the 'Z' or 'M' keys were pressed. All trials were shown to all participants in the same random pattern. The time between the time that the participants

Table 1. Means of Number of Letters, Number of Syllables, Frequency, Abstractness, and Negative Value by Word Category

Word Category	Number of Letters	Number of Syllables	Frequency	Abstract Value	Negative Value
Uncertainty-Related Words					
Possibility	7	3	87	2.38	4.39
Uncertain	8	3	41	1.99	2.48
Doubt	5	2	82	1.95	2.24
Unbeknown	6	2	19	2.32	2.41
Mystery	5	2	7	1.89	4.07
Indecision	8	3	22	2.38	2.40
Likely	5	2	725	2.11	3.12
Suspicion	5	2	70	2.20	2.67
Hidden	5	2	205	2.17	3.53
Puzzlement	6	3	7	1.99	2.78
Mean	6	2.4	126.5	2.14	3.01
Abstract Words					
Decision	5	2	622	2.47	5.10
Humanity	8	3	119	1.95	5.70
Unjust	6	2	55	2.30	1.94
Sadness	5	2	75	1.68	2.10
Depression	7	3	51	1.94	1.39
Scary	7	2	91	2.30	2.07
Omission	5	2	19	2.24	1.81
Contrarian	6	3	50	2.15	3.48
Insistence	5	2	52	2.04	3.11
Longing	5	2	73	1.64	3.80
Mean	5.9	2.3	120.7	2.07	3.05

abstractness and negativity valences were measured on 7-point scales, with higher values indicating more concrete (1 = abstract, 7 = concrete), and positive words (1 = negative, 7 = positive).

saw the word on the screen and pressing one of the keys was measured as the dependent variable measurement.

Manipulation Check

In order to test whether the ostracism variable is successfully manipulated or not, the following question was asked to the participants: "each participant should have received the ball in the same ratio during the game (33%), what do you think the ratio of you receiving the ball during the game is".

Experimental Procedure

The participants who came to the social psychology laboratory were informed that the experiment was aimed to examine the relationship between mental visualization skills and linguistic skills. The participants were informed that they would play a ball tossing game for three people via the Internet with two other participants in the other laboratory in order to examine the mental visualization skills. The participants were asked to think not about their own performance during the game, but about the thoughts of the other people they are playing with, the place where the game is played, the weather condition etc. Following the completion of the game, they were informed that this time they would complete the lexical decision task used for measuring linguistic skills. The participants who signed the voluntary participation form following these explanations were then taken to the private cubicles which all contained a computer. All instructions and questionnaires related with the experiment were presented on these computers using the MediaLab v2010 (Emprisoft,

New York) software. This computer software was developed in order to provide the stimulus presentation in psychological studies. However, the lexical decision task was presented using the DirectRT v2010 (Emprisoft, New York) software since it allows for a more precise measurement of participants response latencies.

All participants completed a practice task comprised of 10 trials of lexical decision task in order to ensure that they are familiar with the lexical decision task. Following the practice task, the participants received a message that the experiment is completed and that they have to leave their room and meet with the experimenter. The participants who came out of their rooms were asked whether they had experiencing any problems during the practice session and whether they could clearly understand what was expected of them or not. The participants who were sure that they had no difficulty in completing the task were taken into their cubicles again and the experiment session was started.

The experiment session starts with a Cyberball game in the delaying condition. The game in the ostracism condition was adjusted so that the player will receive the ball once at the beginning of the game and will never receive the ball again until the end of the game. Whereas in the inclusion condition, the participants received a ball toss on 10 of the 30 total throws during the game. The game lasts about 5-7 min. depending on the speed with which the participant throws the ball. The participants answered the simple arithmetic questions in the delaying task following the completion of the game after which they were presented the instruction screen about the lexical decision task.

Whereas in the nodelay condition, the experiment session started with the delaying task after which the participants played the Cyberball game. Following the completion of the game, instructions of the lexical decision task appeared on the screen. Finally, measurement was taken for the control of manipulation. After all questions and tasks were completed, the participants were informed that the experiment objectives and debriefed after which they were asked to read the informed consent form and sign it if they allow the data to be used. Either a participation fee or course credit was given to each participant for their participation based on their preference.

RESULTS

Control of Demographic Variables

Age (divided into three categories), gender and class variables (includes five categories) were handled as independent variables in order to examine the confounding effect of the demographic variables on the dependent variable scores and three different three-way variance analysis (ANOVA) was conducted on the reaction time scores. The results of these analyses revealed no significant main effects or interaction effects of age, gender and class variables, $F < 1.5$. Hence, the impacts of these variables were not examined in the analyses to be reported.

Manipulation Check

The estimations of the participants regarding the percentage of the ball thrown at them during the cyberball game were subject to one-way variance analysis (ANOVA) in order to examine whether the ostracism variable is successfully manipulated or not. The results found that the main effect of only the ostracism variable was significant, $F(1, 65) = 50.14$, $p < 0.001$, $\eta_p^2 = 0.44$. Accordingly, the participants in the ostracism condition ($M = 10.4$, $SD = 14.1$) reported that the percentage for them to receive the ball was lower compared to the participants in the inclusion condition ($M = 30.8$, $SD = 9.1$). The main effect of the delaying variable and the interaction effect of the ostracism and delaying variables were not significant, $F_s < 1$.

Table 2. Means and Standard Deviations of Reaction Time Scores as a Function of Inclusionary Status, Delay, and Accessibility

Delay	Accessibility	Inclusionary Status	
		Ostracized (SD)	Included (SD)
After Manipulation	Uncertainty	676.88 (59.6)	688.24 (87.4)
	Abstract	693.5 (77.1)	690.56 (77.6)
Before Manipulation	Uncertainty	680.47 (75.1)	695.66 (81.8)
	Abstract	720.23 (71.7)	696.51 (88.0)

Lower mean values indicate faster reaction times (in milliseconds). SD, standard deviation.

Table 3. Means and Standard Deviations of Reaction Time Scores as a Function of Inclusionary Status and Accessibility

Accessibility	Inclusionary Status	
	Ostracized (SD)	Included (SD)
Uncertainty	678.58 (66.5) _a	691.65 (83.7) _a
Abstract	706.11 (74.8) _b	691.71 (82.7) _{a,b}

Means with no subscripts in common differ significantly ($p < 0.01$). Bonferonni Correction was made when multiple paired comparisons were conducted. SD, standard deviation.

Accessibility of Uncertainty-Related Thoughts

Before conducted our main analyses on the accessibility of uncertainty-related thoughts, we excluded scores that are below 300 ms. and above 2000 ms. in reaction time measurements. In addition, based on the suggestions of Bargh and Chartrand (30), two words were removed from both the list related with uncertainty and the list of words with abstract meanings for which the false responses to these two words were higher than 5%. In order to examine the effects of uncertainty-related thoughts on ostracism and delaying variables, we computed mean of reaction time scores for uncertainty words and abstract words. A 2 (inclusionary status: ostracism vs. inclusion) \times 2 (delaying: before manipulation, after manipulation; between subjects) \times 2 (accessibility: uncertainty, abstract; within subjects) mixed ANOVA on the reaction time scores revealed significant main effect of the accessibility and a significant interaction effect of accessibility and inclusionary status, respectively $F(1, 71) = 3.952$, $p < 0.05$, $\eta_p^2 = 0.05$, $F(1, 71) = 3.884$, $p < 0.05$, $\eta_p^2 = 0.05$. There were no significant effects of delay manipulation ($F_s < 1$). The cell means and standard deviations are presented in Table 2.

In order to assess whether this significant interaction effect corresponded with our predictions, firstly we tested the effect of inclusionary status within each of the two accessibility measures. This analysis yielded that there was no significant effect in the uncertainty words condition. Similarly, the main effect of inclusionary status on the reaction time scores for the abstract words was not significant, $F_s < 1$. Secondly we assessed the effect of accessibility manipulation in inclusionary status conditions. As expected, this analysis yielded significant accessibility effects in the ostracism condition, Wilk's $\lambda = 0.899$, $F(1, 71) = 7.957$, $p < 0.01$, $\eta_p^2 = 0.10$, which indicated that ostracized participants reacted faster to uncertainty-related words ($M = 678.8$, $SD = 66.48$) than abstract words ($M = 706.16$, $SD = 74.81$) (see Table 3). However, as was expected, there was no significant difference in the inclusion condition, $F < 1$.

DISCUSSION

In this study, our main goals were to investigate the effects of ostracism on the accessibility of uncertainty-related thoughts as assessed by means of response latencies to uncertainty words in a lexical decision task. To put it in a more detailed manner, it was expected that the participants in the

ostracism condition would react faster to uncertainty-related words in lexical decision task when compared to participants who were included in the Cyberball game. Moreover, it was expected that these participants would react faster to uncertainty-related words in comparison with abstract words. The findings presented indicate that the first hypothesis is not verified but that the second hypothesis is supported. In addition to these two basic hypotheses, it was also examined whether giving a break which allows the aversive thoughts following ostracism manipulation to be suppressed outside of the conscious level increases the effect on the accessibility of uncertainty-related thoughts or not. However, the results indicated that completing a delaying task following an ostracism manipulation was no effects on the reaction time measurements.

Taken together, these findings acquired as a result of testing the two basic hypotheses seem contradictory. This indicates that if ostracism increases the accessibility of uncertainty-related thoughts, the mean response latencies in the ostracism conditions should be differ significantly from responses in the inclusion condition and in addition to this, the reaction times given to uncertainty words should be faster in comparison with those for abstract words in the ostracism condition. The fact that our findings support the second expectation but not the first makes it more difficult to interpret these findings such that ostracism increases uncertainty-related thoughts. However, it was observed that there was a tendency between the reaction time scores obtained in the ostracism condition and the inclusion condition as expected. The number of participants may be increased in future studies considering that the measurement of the response latencies as a dependent variable is a very sensitive measurement. Greater number of participants will increase the strength of the analyses carried out.

This finding, that is contrary to our expectations, might be due to the number of participants as well as the possibility that some of the abstract words used for control might have been related with rejection. The fact that abstract words such as 'unfair', 'possibility', 'depression' affected the accessibility of thoughts related with rejection may explain why there was no statistically significant difference between the reaction times scores of the ostracism condition and the inclusion condition. The reason why such words are included in the list of abstract words will be mentioned later when the limitations of the study are discussed.

Another important finding was that the participants in the ostracism condition react faster to abstract words in comparison with uncertainty-related words; however, there was no difference between the participants in the inclusion condition regarding the reaction times to these two word types. This finding can be interpreted as an indication that ostracism increases the accessibility of uncertainty-related thoughts and hence was in accordance with ostracism literature. As was put forth especially by Chen et.al. (22) and Wesselman et.al. (11), being ostracized prevents the individual from making an inference regarding the relationship they are rejected from as well as the skill for predicting why they are subject to such a rejection and how long this will last; thereby resulting in a feeling of personal uncertainty. This finding indicates that the feeling of uncertainty mentioned by Wesselman et.al. (11, 22) emerges at least in a latent manner.

Finally, an additional goal of our study was to examine whether allowing the aversive thoughts to be removed from consciousness by completing a delaying task prior to measuring the dependent variable and right after ostracism manipulation leads to an increase of the accessibility of uncertainty thoughts. We found that there was no significant main effect of distracter or an interaction effect. However, the feeling of uncertainty is a aversive feeling that should be eliminated or at least minimized to a tolerable level as is put forth commonly by theories and models that explain the effects of uncertainty (e.g., 23, 33). In addition, it was

determined that aversive thoughts are removed from the consciousness in order to remove their negative impacts, but that their accessibilities increased following this removal (34). Indeed, it was put forth by researchers that allowing time enough to push these thoughts outside of consciousness in order to be saved from the negative impacts of thinking about uncertainty increases the accessibility of such thoughts (35, 36). Contrary to these findings, it was surprising that the delaying task in this study had no statistically significant effect. This may be explained by the fact that ostracism manipulation does not result in the emergence of an aversive level of thoughts on uncertainty at the consciousness level. However, it was not measured within the scope of this study whether the participants think about uncertainty at the consciousness level or not. Hence, it will be beneficial in future studies to measure whether conscious thoughts on uncertainty are produced or not right after ostracism.

In addition, the limitations of the study should also be taken into consideration when discussing the results acquired. As was mentioned previously, one of the most important limitations was that some of the words in the list of abstract words used for comparing the response latencies given to uncertainty words might be related with rejection. The fact that especially abstract words like 'unjust', 'neglect', 'depression' had similar properties with words related with uncertainty with regard to frequency of use, level of abstraction resulted in their inclusion in the comparison list. However the fact that these words have a lexical meaning related with rejection and that, as a result, may have affected the measurements of the accessibility. Hence, care should be given in future studies when generating the control word lists that the lexical meaning of the words included are not related in any way with the independent variable.

In summary, the results of this study provide partial support for the claims of the temporary need threat that ostracism increases the accessibility of uncertainty-related thoughts (11, 22). In this light, it can be stated that there is a need for further studies examining the relationship between ostracism and uncertainty.

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