RUNNING HEAD: THE SELF-OTHER DIFFERENCE IN FREE WILL PERCEPTION

The Self-Other Difference in Free Will Perception

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To Papushko, the academic, and to Akichi, the dimachikms.

Author Note

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Abstract

College students' choices show that the perception that one's choices are freely willed can be caused by the amount of thinking that precedes a choice. Actors chose between two alternatives with a severe or a slight time limit on their thoughts before choosing. In the first study, they chose which of two offers to make as dictators in the Dictator Game and, in the second study, they chose to which of two charities to donate. Actors with a slight time limit perceived that their choices were free willed to a greater degree than actors with a severe time limit and observers, who were aware of actors' time limits. Implications for real world phenomena are discussed.

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I Think, Therefore I (Free) Will: The Self-Other Difference in Free Will Perception

In 2012, suppose that Daniel Schachter, Jr., and his twin, Stanley Schachter, Jr., must choose the candidate for whom they will vote in the upcoming presidential election, which promises to be a close and heated race. As registered, middle-of-the-road independents and open-minded non-partisans, they are willing to consider voting for the Democratic nominee and the Republican nominee. To choose the candidates for whom they will vote, the twins decide to conduct painstaking research on the experience that the candidates have and the viability of their proposals. For a month, they give the candidates' platforms and their qualifications a lot of thought as they try to figure out the kind of policies that would be best for their country. The twins want to make their ultimate choices informed, objective ones because a lot is at stake. They avoid discussing their thoughts on the candidates with each other because they do not want to influence each other. This is a choice that they want to make independently. Election Day finally arrives and the twins meet up after voting in the morning to reveal to each other the candidate for whom they voted. As it turns out, they both voted for the Democratic candidate. Assuming that each twin believes that his choice was a result of free will, will each twin perceive as much free will in the choice of his twin as in his choice? Why?

Previous research on the perception of free will suggests that the answer to the first question is 'no.' People may have a proclivity to perceive a greater degree of free will in their lives than in the lives of others (Pronin & Kugler, 2009; Stroessner & Greene, 1990). The answer to the second question, however, is not known because the source of this self-other difference in the perception of free will is not yet understood. The present research seeks to explain why people have a tendency to perceive that their choices are more freely willed than the choices of others.

Free Will Perception

Free will is the capacity to choose a course of action from among alternatives in such a way that one can deliberate between the alternatives, control one's choices, and be the ultimate cause of a choice (O'Connor, 2008). On people's perception of free will, Kane (2000) writes:

> We see ourselves as free agents capable of influencing the world in various ways. Open alternatives seem to lie before us. We reason or deliberate among them and choose. We feel it is "up to us" what we choose and how we act; and this means that we could have chosen otherwise… This "up to us–ness" also suggests that the origins or sources of our actions are in us and not in something else over which we have no control (p. 5).

The perception of free will is readily prevalent in people's lives. People exaggerate their personal agency and assume that their wishes can influence chance or near–chance events (Langer, 1975; Matute, 1996; Taylor & Brown, 1988). Indeed, international surveys of people from Western countries and research with children, adolescents, and adults in the United States confirm the pervasiveness of the perception of free will (Graffin & Provine, 2007; International Social Survey Programme, 1998; Iyengar & Lepper, 1999; Nichols, 2004; Nichols & Knobe, 2007; Rakos, Laurene, Skala, & Slane, 2008). Though the perception of free will has significant implications for society in such disparate areas as jurisprudence, medical ethics, marketing, and public policy (Rakos et al., 2008; Stroessner & Greene, 1990; Tancredi, 2007), people's perception of free will has not been extensively researched. Philosophers, to whom the issue has been relegated for millennia, have operated under the assumption that their intuitions about free will suffice to explain people's perception of it (Nahmias, Morris, Nadelhoffer, & Turner, 2004; Turner & Nahmias, 2006). In addition, philosophers' recent studies on the subject have not been

experimental (Nichols, 2004; Nichols & Knobe, 2007). Consequently, a systematic collection of data about people's perception of free is needed (Nahmias et al., 2004). The dearth of research on the subject gives psychologists, who have a tradition of experimental research in areas that deal with free will perception indirectly, an opportunity to contribute to people's understanding of the perception of free will (Baumeister, 2008; Nichols, 2008; Swap, 1991).

A Self–Other Difference in Free Will Perception

Previously, psychologists have theorized about the existence of a self–other difference in the perception of free will. Bargh (2008) noted that people's experience of their behaviors is prospective. People think in reference to the future to a greater degree when they think about themselves than when they think about others (Williams & Gilovich, 2008). When they think about their behaviors, they have privileged access to the thoughts that precede them. This awareness of the deliberations that lead to choices makes their behaviors seem unpredictable. Bargh (2008) argues that, in contrast, the perspective of the behaviors of others is retrospective. People can think about the behaviors of others only once those behaviors have taken place. The perception of other people is anchored in others' past and, consequently, their intentions command less attention and are underweighted in value (Williams & Gilovich, 2008). This perspective allows perceivers to focus on causality and leads them to fall prey to the hindsight bias, the tendency to view events that have occurred as more predictable than they were before they took place (Fischhoff, 1975). It becomes easier for people to perceive that the actions of others are inevitable and, consequently, less freely willed than their actions.

Similarly, Pronin (in press) argued that the root of a self–other difference in the perception of free will may be the introspection illusion, people's proclivity to give undue weight to their introspections in self–assessment and to attend to the behaviors of other people to gain

insights about them. People's focus on their thoughts can lead people to overemphasize the importance that the intentions and desires that form part of their thought content play when they make choices. The perceived power of their intentionality may make them perceive their behaviors as expressions of their free will. Alternatively, others are evaluated in terms of their behaviors. People have no sense of the deliberation that precedes the choices of others. When they have access to introspective information, they tend to ignore it. Consequently, people may have a harder time believing that other people's intentions play a crucial role in explaining their behaviors. Indeed, people assign less weight to the future intentions of others than to their own future intentions (Williams & Gilovich, 2008).

Importantly, a self-other difference in the perception of free will has been demonstrated empirically. Research suggests that people may have a proclivity to perceive a greater degree of free will in their lives than in the lives of others (Pronin & Kugler, 2009; Stroessner & Greene, 1990). Stroessner and Greene (1990) surveyed over 500 undergraduates on their perceptions of free will using a scale that measures attitudes toward determinism and free will. The scale included items like "My behaviors are limited by my background" and "I have free will" and examined two domains of determinism: Psychosocial determinism, the belief that environmental factors determine behavior, and religious-philosophical determinism, the belief that a force such as God or fate acts to control behavior. Respondents perceived that they had more free will than people in general in the first domain but not in the second domain.

In contrast to Stroessner and Greene (1990), Pronin and Kugler (2009) examined people's perception of free will in a series of experiments. Participants viewed their pasts and futures as less predictable than those of people who hail from similar backgrounds and who have comparable life circumstances. Participants also maintained that a greater number of different

paths, desirable and undesirable, exist for them in the future compared to the number of paths that the futures of others hold. Finally, participants indicated that the most significant determinant of their post-college plans and their activities on a Saturday night were their intentions and desires whereas their roommates' post-college plans and activities on a Saturday night were, for the most part, determined by their roommates' personality.

In sum, research evidence has shown evidence in support of theorizing that a self-other difference in the perception of free will exists. It may be the case that people perceive that free will plays a greater role in their lives than in the lives of others. However, the cause of this asymmetry in free will perception is unclear.

The Cause of the Self-Other Difference in Free Will Perception

To understand why a self–other difference in the perception of free will would exist, it is necessary to have a sense of why people perceive that their behaviors are freely willed in the first place. Philosophers have theorized that the thinking that precedes actions causes people to perceive free will in them (Ayer, 1982 [1954]; Bargh & Ferguson, 2000; Campbell, 1951; Hodgson, 2005; Holbach, 1970 [1770]; Horgan, 2007; Horgan, Tienson, & Graham, 2003; Nichols, 2006; O'Connor, 1995; Reid, 1969 [1788]; Searle, 1984). Hume (1888 [1739]) went as far as to construct a definition of free will on the basis of its experience. He defined free will as the "*internal* impression we *feel* and *are conscious of* when we knowingly give rise to any new motion of our body or new perception of our mind" (p.399, emphasis added). Philosophers like him argue that people's thoughts do not give the impression that a behavior is determined. On the contrary, thoughts about the alternatives that people consider make all viable behaviors seem possible and create the impression that the choice of behavior is completely up to them. In this

way, thoughts and the subjective experience that they engender can lead people to experience free will when they act.

Psychologists have also studied the perception of free will and reached a similar conclusion. Wegner and Wheatley (1999) proposed the theory of apparent mental causation, which maintains that the perception of free will is a consequence of interpreting one's thoughts as the cause of a behavior. People will perceive free will in a behavior when their thoughts precede the behavior, are consistent with it, and are not accompanied by other causes (Wegner, 2002; Wegner, 2004). A series of experiments support the theory of apparent mental causation. When people suppress their thoughts before they perform behaviors, they report that their behaviors were less intentional than when they concentrate on their thoughts (Wegner & Erskine, 2003). People can experience free will for a behavior that they did not perform when they are primed with thoughts that are consistent with the behavior (Aarts, Custers, & Wegner, 2005). When people have thoughts that are related to an event before it happens, they believe that they played a role in engendering the event even though the thought–event link is rationally tenuous (Pronin, Wegner, McCarthy, & Rodriguez, 2006). People, then, use the presence of their action–relevant thoughts, the thoughts that precede behaviors, as a key indicator that they willed their behaviors (Wegner and Sparrow, 2004).

In sum, the philosophers and psychologists mentioned argue that, in one way or another, the experience of thinking that precedes a choice is a cause of the perception of free will. If (1) their assessment of the cause of the perception of free will is correct and (2) people focus on their thoughts in self–perception but not in the perception of others, then it follows that (3) Pronin's (in press) theorizing about the root of the self–other difference in the perception of free will is correct. In other words, people's inability to experience the thinking that precedes the actions of

others gives them an impression that other people's choices are less freely willed than theirs. The introspection illusion may be the basis of the self–other difference in the perception of free will.

Suggestive Self-Other Differences

Self–other differences in perception are systematic and prevalent (Pronin, 2008). Previously, researchers have discovered self–other differences that may operate similarly to the asymmetry in the perception of free will.

One of the reasons why people claim to be less biased than their peers involves their reliance on introspection to find evidence of bias in themselves but not in others (Pronin & Kugler, 2007). Similarly, people claim to be less susceptible to broad social influences and specific instances of conformity than their peers as a result of their tendency to rely on their thoughts when evaluating their level of conformity (Cohen, 2003; Douglas & Sutton, 2004; Pronin, Berger, & Molouki, 2007). People's tendency to claim that they are not susceptible to biases and social influences that might determine their behaviors in unwanted ways could be interpreted as an assertion of people's perception that their behaviors are willfully caused. The sources of their behaviors, in their eyes, are not to be found in elements that are unconscious and lie outside of their control. In contrast, people readily admit that these cognitive and situational factors do play a role in shaping how other people behave. People believe that the behaviors of others are not as freely willed as their own.

The actor–observer bias, people's tendency to provide dispositional causes to the behaviors of others and situational causes to their behaviors (Jones & Nisbett, 1972), could be construed as people's belief that they can respond to situations in a flexible, non–deterministic manner. Actors are aware that their behavior is variable in their pasts. This knowledge may prevent people from labeling themselves with dispositional attributions, which suggest that

behaviors are fixed (Jones & Nisbett, 1972). Importantly, Jones & Nisbett (1972) suggest that actors can perceive themselves as dynamic individuals because they have access to their "emotional state[s] and [their] intentions" (p. 85). It would follow, then, that people perceive that their behaviors are more freely wiled than the behaviors of others, whose behaviors are subject to fixed dispositions that can determine behavior. Indeed, people are more likely to attribute a personality trait to other people than to themselves (Nisbett, Caputo, Legant, & Marecek, 1973) and they are unwilling to describe themselves with a single personality trait because they believe that several apply to their behaviors (Sande, Goethals, & Radloff, 1988).

Kahneman and Lovallo (1993) proposed two modes of forecasting behavior that are used asymmetrically in predictions about self and other. The "inside view," which people readily adopt for themselves, emphasizes present intentions and construes the self as an exception to behavioral base rates even when these are available. Alternatively, the "outside view" does not emphasize present intentions and construes other people as cases that will conform to behavioral base rates. The asymmetrical use of the two modes of forecasting is prevalent. Indeed, people overestimate the likelihood that they will act generously and predict the generosity of others more accurately, in part, because people are unwilling to use population base rates to predict their own behavior, but they readily use it to predict the behavior of others (Epley & Dunning, 2000). In addition, people overestimate the importance of their intentions in predictions of their generous behavior. People's use of the "inside view" to understand their behaviors could suggest that they perceive that their behaviors are so freely willed, so "up to them" (p. 5) as Kane (2000) put it, that behavioral base rates, which suggest a situational explanation of behavior, do not apply to them. In contrast, people's use of the "outside view" to understand the behaviors of

others could suggest that they perceive that others' behaviors are determined by factors outside of the control of others. Others have less free will than them.

In sum, research on other self-other differences are suggestive that an asymmetry in the perception of free will could exist on the basis of people's tendency to overvalue the importance of their thoughts in the explanation of their present behavior and the prediction of their future behavior. Of course, previous research offers tentative suggestions rather than empirical evidence. The present research was designed to provide empirical evidence that the introspection illusion is at the root of the self-other difference in the perception of free will.

Present Research

If the experience of thinking that precedes a choice is a cause of the perception of free will and people focus on their thoughts in self–perception but not in the perception of others, then the introspection illusion is the basis of the self–other difference in the perception of free will. To test this explanation of the self–other difference, two experiments give time limits to actors, the participants who make a choice. Actors who have a slight time limit to choose will have an opportunity to think more than a participant who has a severe time limit before choosing. Therefore, actors who have a slight time limit should be able to focus on their thoughts for a longer period of time and, consequently, enjoy the subjective experience of free will for longer than actors with a severe time limit. The former group, then, should perceive that their choices are more freely willed than the latter group. A second group of participants, the observers, learn about the situational constraints under which actors chose. Because the observers will not have access to the thoughts of actors and would underweight their importance in understanding actors' choices, the severity of the time limit should not influence observers' perceptions of the degree to which actors' choices reflect free will. In both cases, observers should see less free will in the

choices of actors than do actors who have a slight limit to choose. Therefore, in the two experiments, it is hypothesized that actors who have ample time to think about their choices will report that their choices are more freely willed than will participants in any of the other conditions (actors with severe time limits and observers in the two time limit conditions).

Experiment 1: Free Will in the Dictator Game

Actors played one round of the Dictator Game, a behavioral economics game that involves the allocation of money between two players, as dictators. In the Dictator Game, one participant, the dictator, is given an amount of money and instructed to allocate any portion of it to another participant, the recipient, who must accept the allocation (Kahneman, Knetsch, & Thaler, 1986). Mean allocations tend to range from 10% to 52% of the money that the dictator receives (Camerer, 2003). Actors in this experiment were explicitly asked to offer either $15 or $30 of the $50. Actors in the *slight time limit* condition had 30 seconds to think about the two offers before they chose one. Actors in the *severe time limit* condition were asked to choose an offer immediately without being given an opportunity to spend much time thinking about their choice. Observers read descriptions of the experiment and the constraints under which actors chose offers. Observers in the *slight time limit* condition read about actors who had 30 seconds to think about the two offers before they chose one and observers in the *severe time limit* condition read about actors who were asked to choose an offer immediately without being given an opportunity to spend much time thinking about their choice. Each observer had access to a form in which an actor had indicated his choice. It is expected that the *slight time limit* condition will give actors the capacity to think a lot about their choices and, consequently, endow them with a perception that their offer choices are freely willed to a greater extent than actors in the *severe time limit* condition. Similarly, the perception of free will of actors in the *slight time limit*

condition should be greater than those of observers, who do not take the thoughts of actors into account when they perceive free will. Consequently, it is hypothesized that the perceptions of free will of actors in the *slight time limit* condition should be greater than those of participants in all other conditions.

Method

Participants

Seventy seven participants, 35 women, 40 men, and 2 participants who did not indicate their gender, were recruited from the dormitories of Princeton University's residential colleges. Actors participated in exchange for a 1-in-50 chance to win $50. Observers participated in exchange for pieces of candy.

Procedure and Materials

The participants who served as actors were approached in their dormitories to participate in the Dictator Game. They were told that they would participate in the "Sharing Exercise," which involves two participants: The allocator, who has access to a sum of money and must divide it into an amount to keep and an amount to give, and the recipient, who receives an offer from the allocator. Allocators, who would be given a choice: Keep $35 and give $15 or keep $25 and give $25, would be entered into a lottery to win $50 at the end of the experiment. The recipient of the money would be obligated to carry out the allocation made in the experiment. Actors were told that they had been randomly assigned to be allocators rather than recipients. They were told that the recipients would be approached in a different dormitory on the following day. After the two allocations from which actors could choose were explained to them once more, they were given a sheet of paper that described the two offers that they could make (Appendix A). Actors in the *slight time limit* condition were told: "I'm not in a rush, so take your

time to think about which option you'll circle. In fact, I won't give you a pen until 30 seconds have passed just to make sure that you have time to think about it first." The experimenter timed the participants with a stop watch unobtrusively. Alternatively, actors in the *severe time limit* condition were told: "I'm in a rush, so I need you to circle one of the options right now." To increase the immediacy of the choice, the experimenter held the sheet of paper that described the two offers that actors could make as they circled one of them. After circling one of the two options, actors were given a final questionnaire to complete (see below).

Observers were approached in their dormitories. First, they read a description of the "Sharing Exercise" that mirrored the explanation of the DG that the experimenter gave to actors and they were told that the exercise had taken place a week before. Observers in the *slight time limit* condition read a description that explained that participants who took part in the "Sharing Exercise" "were told to circle one of the two options after taking at least 30 seconds to think about the two options and they circled an option only after thinking about them." In contrast, observers in the *severe time limit* condition read that participants who took part in the "Sharing Exercise" "were told to circle one of the two options immediately after the exercise was explained to them and they circled an option as soon as they received the sheet." Each observer was also given the sheet of paper in which one of the actors had indicated her or his choice of offer (Appendix A). Finally, observers were given a final questionnaire that was similar to the actors' questionnaire to complete (see below).

Questionnaire.

Actors and observers completed similar questionnaires. However, the actors' version asked questions about the choices of the actors (Appendix B) and the observers' version asked questions about the participant that had been observed (see Appendix C). The wording

differences are bracketed below. The text that precedes the slash mark corresponds to the actors' questionnaire and the text that follows the slash mark corresponds to the observers' questionnaire. The top of the questionnaire asked participants to read a paragraph that attempted to reduce individual differences in the perception of free will by asking participants to situate the choice that is demanded by the experiment in the context of the decisions that they make on a daily basis.

Then, participants were asked the following questions: "How much time did [you/the student] have to make a choice?" (1 = *Not enough*, 7 = *Enough*); "[Did your choice feel constrained/Do you feel the student's choice was constrained]?" (1 = *Definitely not*, 7 = *Definitely yes*); "How much thinking did [you/the student] do before [you/they] made a choice?" (1 = *No thinking*, 7 = *A lot of thinking*); "What kind of influence do you feel that [your/the student's] thoughts had on [your/the] choice?" (1 = *No influence*, 7 = *Complete influence*); "Would [another student/you] have been able to predict [your/the student's] choice?" (1 = *Definitely not*, 7 = *Definitely yes*); "If [you/the student] had had more than two alternatives from which to choose, how likely is it that [you/the student] would have made the same choice?" (1 = *Not at all likely*, 7 = *Extremely likely*); "If [you/the student] participated in the experiment next week, how likely is it that [you/the student] would make the same choice?" (1 = *Not at all likely*, 7 = *Extremely likely*); "Do you [feel like your/think that the student's] choice was the result of free will?" (1 = *Definitely not*, 7 = *Definitely yes*).

Results

The mean values and the standard deviations of the dependent variables are provided in Table 1, Table 2, and Table 3. Skewness and kurtosis statistics indicated that all variables were normally distributed. Twelve participants made $15 offers and 36 participants made $25 offers,

$\chi^2(1, N = 96) = 24$, $p < .001$. Unless otherwise noted, results did not vary as a function of offer choice. A contrast analysis (3, -1, -1, -1) was carried out to compare actors in the *slight time limit* condition to actors in the *severe time limit* condition, observers in the *slight time limit* condition, and observers in the *severe time limit* condition. The contrast analysis was undertaken because a contrast effect in which actors in the *slight time limit* condition differ from participants in the other three conditions is hypothesized (cf. Abelson & Prentice, 1997). Nonetheless, results of a 2 (*actor, observer*) x 2 (*slight time limit, severe time limit*) multivariate analysis of variance (ANOVA) are also included. Unless otherwise noted, Levene's tests did not indicate violations of homogeneity of variance.

Manipulation check.

A contrast analysis was not carried out for the manipulation check because the hypothesis should yield a main effect of the time manipulation. The *severe time limit* condition was meant to limit the amount of time that actors had to choose to a greater degree than the *slight time limit* condition. Instead, an ANOVA was conducted. Mean values and standard deviations are provided in Table 1. Because homogeneity of variance was violated, α was set to .025 to keep the Type I error rate below the five percent level (cf. Keppel & Wickens, 2004). As expected, the different time limits were recognized as such by participants in each of the two conditions. In contrast to actors and observers in the *severe time limit* conditions, actors and observers in the *slight time limit* conditions thought that actors had more time to make a choice, $F(1, 76) = 6.39$, $p < .025$, $\eta = .08$. In addition, the time perceptions of actors and observers differed. Actors thought that they had less time to make a choice than observers did, $F(1, 76) = 5.47$, $p < .025$, $\eta = .07$. Finally, the effect of the severity of the time limit did not vary as a function of participants' roles as actors or observers, $F(1, 76) = 1.20$, $p = .28$, $\eta = .02$.

Perception of free will.

Mean values and standard deviations are provided in Table 2. As hypothesized, actors with a slight time limit to choose an offer perceived that their choices were more freely willed than the participants in all other conditions did, even actors who chose under the severe time limit. The contrast, which did not assume equal variances because homogeneity of variance was violated, was significant, $t(53.19) = 4.29$, $p < .001$. The results of the corresponding ANOVA were similar to those of the contrast. As expected, the effect that the severity of the time limit had on participants' perceptions that actors' choices were freely willed depended on the role that participants had in the experiment. The effect of the severity of the time limit varied as a function of participants' roles as actors or observers, $F(1, 76) = 4.38$, $p < .05$, $\eta = .06$. To pursue the interaction, which is displayed in Figure 1, two simple effects tests were conducted. The simple effects test on actors' perceptions of free will violated homogeneity of variance. Consequently, α was set to .025 to keep the Type I error rate below the five percent level. Actors' perceptions that their choices were freely willed were affected by the severity of the time manipulation. As expected, actors in the *slight time limit* condition felt that their choices were a result of free will to a greater degree than participants in the *severe time limit* condition did, $F(1, 47) = 5.71$, $p < .025$, $\eta = .11$. In contrast, observers in the *slight time limit* condition thought that the choices of actors were as much the result of free will as observers in the *severe time limit* condition did, $F < 2$. In sum, the perceptions of free will of actors in the *slight time limit* condition were greater than those of participants in other conditions. Finally, a main effect of the time limit manipulation, $F < 2$, and a main effect of participants' roles as actors or observers, $F(1, 76) = 3.03$, $p = .09$, $\eta = .04$, were not found.

Secondary dependent variables.

Mean values and standard deviations are provided in Table 3. As hypothesized, actors with a slight time limit to choose an offer indicated that they thought more before making their choices than the participants in all other conditions did. The contrast, however, was marginally significant, $t(73) = 1.70$, $p < .10$. The corresponding ANOVA revealed a main effect of the time limit manipulation, $F(1, 76) = 5.35$, $p < .05$, $\eta = .07$. However, it did not show a main effect of participants' roles as actors or observers, $F < 2$, or an interaction, $F < 2$.

It was expected that the perception of free will would be accompanied by a sense of unconstraint in choosing. As anticipated, actors with a slight time limit to choose an offer perceived that their offer choices were less constrained than the participants in all other conditions did. The contrast, however, was marginally significant, $t(92) = -1.67$, $p < .10$. The corresponding ANOVA revealed a main effect of participants' roles as actors or observers, $F(1, 76) = 11.82$, $p < .001$, $\eta = .14$, but it did not find a main effect of the time limit manipulation, $F < 2$, or an interaction, $F < 2$.

The perception of free will, it was expected, would be accompanied by the belief that a second opportunity to make the same choice could result in a different outcome. However, actors with a slight time limit to choose an offer believed that they would be more likely to make the same choice in the experiment if it was replicated in a week than the participants in all other conditions did. The contrast was significant, $t(92) = 2.62$, $p < .01$. The corresponding ANOVA did not reveal a main effect of the time limit manipulation, $F(1, 76) = 3.69$, $p = .06$, $\eta = .05$, or a main effect of participants' roles as actors or observers, $F(1, 76) = 2.65$, $p = .11$, $\eta = .04$. Additionally, an interaction was not found, $F < 2$.

It was expected that the perception of free will would be accompanied by the belief that, given more alternatives, the choice could have been different. However, actors with a slight time limit to choose an offer indicated that they would be more likely to make the same choice if they had been given more offers as alternatives from which to choose than the participants in all other conditions did. However, the contrast was marginally significant, $t(92) = 1.72$, $p < .10$. The corresponding ANOVA did not reveal a main effect of the time limit manipulation, $F(1, 76) = 2.53$, $p = .12$, $\eta = .03$, a main effect of participants' roles as actors or observers, $F < 2$, or an interaction, $F < 2$.

The perception of free will, it was expected, would be accompanied by the perception that one's thoughts are causal in yielding a choice. However, actors with a slight time limit to choose an offer did not perceive that their thoughts were more influential on their choices than the participants in all other conditions did. The contrast was insignificant, $t(92) = 1.50$, $p = .14$. The corresponding ANOVA revealed a main effect of participants' roles as actors or observers, $F(1, 76) = 8.02$, $p < .01$, $\eta = .08$. A main effect of the time limit manipulation, $F < 2$, and an interaction, $F < 2$, were not found.

Finally, it was expected that the perception of free will would be accompanied by the perception that one's choice is not predictable. However, actors with a slight time limit to choose an offer did not perceive that their offer choices were less predictable than the participants in all other conditions did. The contrast was insignificant, $t(92) = 1.04$, $p = .30$. Again, the ANOVA revealed a self-other difference such that actors felt that their thoughts were more predictable than observers did, $F(1, 76) = 11.82$, $p < .001$, $\eta = .10$. However, actors and observers responses depended on the offer that was chosen by actors. Participants' perceptions of the predictability of the choices of actors varied as a function of their role in the experiment and the offer under

consideration ($15 or $25), $F(1, 95) = 5.23$, $p = .03$, $\eta = .07$. Actors' offer choices did not impact their perception of the predictability of their choices, $F < 2$. In contrast, observers thought that actors' choices were less predictable when their offers were fair ($M = 2.94$, $SD = 1.54$) than unfair ($M = 4.5$, $SD = 2.15$), $F(1, 95) = 7.43$, $p = .009$, $\eta = .14$. A main effect of the time manipulation, $F < 2$, and an interaction, $F < 2$, were not found.

Discussion

As hypothesized, actors who had time to think about their choice of offer in the Dictator Game perceived a greater degree of free will in their choices than participants in all other conditions did. They also indicated that they thought more about their choices and they felt that their choices were less constrained than participants in all other conditions did. The perception of these actors that their choices were freely willed, then, was accompanied by a lot of thinking. In addition, the free will perceptions of actors who gave thought to their choices were also accompanied by a sense that their choices were up to them. The choices felt unconstrained. In contrast, actors who did not have time to think before choosing an offer did not seem to show a self–other difference in the perception of free will. Their perceptions of free will did not differ from those of observers in the two time limit conditions. These results provide evidence in support of the supposition that the asymmetry in the perception of free will arises from the introspection illusion. By limiting actors' thoughts about their choice of offer in the Dictator Game, their perceptions of free will fell in line with those of observers.

People's tendency to perceive themselves as lacking fixed behavioral tendencies (Jones & Nisbett, 1972) would suggest that they would not see their choices as indications that they will choose similarly in the future and in different situations. It seems surprising, then, that actors who had time to think about their choices perceived that they would be more likely to make the

same choice in the experiment if it was replicated in a week or if they had been able to choose from a larger set of alternatives than participants in all other conditions did. However, these results should be interpreted in light of the act that actors who had time to think about their choices perceived their choices as freely willed. People may assume that they have stable preferences and, consequently, their freely willed choices should lead them to make the same choice in different circumstances and in the future. In their eyes, a more erratic pattern of choices could be expected from a person who is influenced by changing situations.

Interestingly, actors thought that their actions were more predictable than observers did. Actors' judgments about predictability may be a function of naïve realism (Ross & Ward, 1996), people's mistaken belief that their perception of reality is objective. If they assumed that the option that they chose was intrinsically superior to its alternative, then they should expect others would have been able to predict their choices. Also, they should and did believe that they would make the same decision if the experiment was repeated a week later. However, it is also possible that observers believed that the choices of actors were less predictable than actors did because actors' preference for the $25 offer may have contradicted observers' assumption that the norm of self–interest governs people's behavior (Miller, 1999). Indeed, the offers that actors made did not impact actors' perceptions of their predictability. However, observers thought that actors' choices were less predictable when their offers were fair rather than unfair.

Experiment 1 shows that actors who had time to think about their choices perceived a greater degree of free will in their choices than participants in all other conditions did. This is evidence that the introspection illusion may be at the root of the self–other difference in the perception of free will. However, the results of this experiment raise two questions. First, were actors' perceptions of free will a consequence of their motivation to self–enhance? Most actors

distributed the $50 fairly by choosing the socially desirable offer, $25. Therefore, their perception that their choices were freely willed could have been adopted to portray themselves (either to the experimenter or to themselves) in a positive light. This alternative explanation does not undermine the results of the experiment because it cannot explain the fact that actors' perceptions of free will varied as a function of the severity of their time limit. Additionally, the account of free will perception that is proposed by the present research does not imply that motivational causes of the perception of free will do not exist. It would be disingenuous to presume that motivation does not play a role in participants' perceptions of free will because they live in a culture that values freedom and self–determination highly (Schwartz, 2004). Nonetheless, the second experiment addresses the motivational confound. Second, to what degree did observers' understand the difference between the two time limits? Observers' perceptions of the time limits may be different than actors' perceptions of them because observers did not experience what it is like to think about a choice under those time limits. Indeed, observers thought that actors had more time to make a choice than actors did. To understand the impact that situational experiences have on others, sometimes people have to share that experience (Balcetis & Dunning, in press). The second experiment addresses this question by giving observers the experience of the time constraints.

Experiment 2: Free Will in Charity Donations

Actors chose to donate money to one of two charities on the basis of information that they were given about the two charities (Appendix D). The motivational confound of the previous experiment is no longer present because participants will perform a socially desirable behavior, a charity donation, regardless of their choice. Actors stood a chance to win an amount of money that they could donate to the charity of their choice. Actors in the *slight time limit*

condition had one minute and 30 seconds to think about their choice of charity before they made them and actors in the *severe time limit* condition had 45 seconds to choose a charity. Observers read descriptions of the experiment, including the information about the charities that was given to actors, and the constraints under which actors made choices. Observers in the *slight time limit* condition read about actors who chose a charity with some time to think about their choices and observers in the *severe time limit* condition read about actors who had little time to think about their choices. In contrast to Experiment 1, observers experienced the time limits of the actors with whom they were matched. For example, an observer who was told that an actor had 45 seconds to read the information about the charities was given 45 seconds to read the same information. Each observer had access to a form in which an actor had ostensibly indicated his choice. It is expected that the *slight time limit* condition will give actors the capacity to think a lot about their choices and, consequently, endow them with a perception that their offer choices are freely willed to a greater extent than actors in the *severe time limit* condition. Similarly, the perception of free will of actors in the *slight time limit* condition should be greater than those of observers, who do not take the thoughts of actors into account when they perceive free will. Consequently, it is hypothesized that the perceptions of free will of actors in the *slight time limit* condition should be greater than those of participants in all other conditions.

Method

Participants

Seventy participants, 41 women and 29 men, were recruited from the residential colleges' dormitories and the student campus center of Princeton University. Actors participated in exchange for a 1-in-50 chance to win $50. Observers participated in exchange for pieces of candy.

Procedure and Materials

Actors were approached in their dormitories to participate in the experiment. They were told that they would be given information about two homeless-oriented charities that are located in New Jersey, their state of residence. Moreover, they were told that the charities are real charities and that the information that would be given to them (Appendix D) was obtained from charitynavigator.org, a website that collects information about charities to provide it to potential donors. Then, they were told that choose the charity to which they would prefer making a $50 donation. Actors were told that they had a 1-in-50 chance to win $50 in exchange for their participation, but they were told that they would not be bound to make a donation if they won $50. Actors in the *slight time limit* condition were told: "I'm going to give you one minute and 30 seconds to read about the two charities, but then we have to move on and you will have to select the one that you think should get $50." Alternatively, actors in *severe time limit* condition were told: "I'm going to give you 45 seconds to read about the two charities, but then we have to move on and you will have to select the one that you think should get $50." Actors in both conditions received information about two charities (Appendix D). The experimenter timed the participants with a stop watch unobtrusively. As soon as the time that actors had to read the information had elapsed, their materials were collected and they indicated which of the two charities they think should receive $50. Actors were given a final questionnaire to complete (see below).

Observers were approached in the student campus center. First, they were told that the experiment in which they would participate was based on a study that was conducted earlier in the semester. They were told that participants in that study had read information about two homeless-oriented charities that are located in New Jersey and were asked to select which one of

the two charities they thought should receive $50. Observers were told that the two charities are real charities and that the information with which they would be provided was obtained from charitynavigator.org, a website that collects information about charities to provide it to potential donors. Then, they received information about the two charities (Appendix D) and they were told that participants in the related study had been given access to the same information before they selected one of the two charities. In the *slight time limit* condition, participants were told that participants in the related study were given one minute and 30 seconds to read the information and, consequently, they would be given the same amount of time to read the information. In the *severe time limit* condition, participants received similar instructions. However, they were told that participants in the related study were given 45 seconds to read the information and, consequently, they would be given the same amount of time to read the information. The experimenter timed the participants with a stop watch unobtrusively and continued explaining the experiment once their time had elapsed. Each observer was given a piece of paper that ostensibly indicated the choice of a participant in the related study (Appendix E). Observers were given a final questionnaire to complete (see below).

Questionnaires.

Actors and observers completed similar questionnaires. However, the actors' version asked questions about the choices of the actors (Appendix F) and the observers' version asked questions about the participant who had been observed (Appendix G). The wording differences are bracketed below. The text that precedes the slash mark corresponds to the actors' questionnaire and the text that follows the slash mark corresponds to the observers' questionnaire. The top of the questionnaire asked participants to read a paragraph that attempted to reduce individual differences in perceptions of free will by asking participants to situate the

choice that is demanded by the experiment in the context of the decisions that they make on a daily basis.

Then, participants were asked the following questions: "How much time did [you/the student] have to choose between the two charities?" (1 = *A little*, 7 = *A lot*); "How much thinking did [you/the student] do before [you/they] made [your/their] choice?" (1 = *No thinking*, 7 = *A lot of thinking*); "How much would you say that [your/the student's] choice was random?" (1 = *Definitely not*, 7 = *Definitely yes*); "How much would you say that [your/the student's] choice was constrained?" (1 = *Definitely not*, 7 = *Definitely yes*); "How much would you say that [your/the student's] choice was a reflection of [your/the student's] true preferences?" (1 = *Definitely not*, 7 = *Definitely yes*); "How much would you say that [your/the student's] choice was a product of careful thinking?" (1 = *Definitely not*, 7 = *Definitely yes*); "Charities differ from each other in multiple ways. How confident are you that the one [you/the student] chose is the one [you/they] prefer?" (1 = *Not at all confident*, 7 = *Very confident*); "How strongly do you [feel/think that the student felt] about [your/their] choice?" (1 = *Not at all strongly*, 7 = *Very strongly*); "Do you feel [like your/ that the student's] choice was the result of free will?" (1 = *Definitely not*, 7 = *Definitely yes*).

Results

The mean values and the standard deviations of the dependent variables are provided in Table 4, Table 5, Table 6, and Table 7. Skewness and kurtosis statistics indicated that all variables were normally distributed. Forty-three participants chose Sheltering Solutions, Inc. and 25 participants chose Trenton Area Soup Kitchen, $\chi^2(1, N = 68) = 4.77$, $p < .05$. Results did not vary as a function of offer choice. As in the previous experiment, a contrast analysis (3, -1, -1, -1) was carried out to compare actors in the *slight time limit* condition to actors in the *severe time*

limit condition, observers in the *slight time limit* condition, and observers in the *severe time limit* condition. Nonetheless, results of a 2 (*actor*, *observer*) x 2 (*slight time limit*, *severe time limit*) ANOVA are also included. Unless otherwise noted, Levene's tests did not indicate violations of homogeneity of variance.

Manipulation check.

A contrast analysis was not carried out for the manipulation check because the hypothesis should yield a main effect of the time manipulation. The *severe time limit* condition was meant to limit the amount of time that actors had to choose to a greater degree than the *slight time limit* condition. Instead, an ANOVA was conducted. Mean values and standard deviations are provided in Table 4. The *severe time limit* condition was meant to limit the amount of time that actors had to choose to a greater degree than the *slight time limit* condition. As expected, the different time limits were recognized as such by participants in each of the two conditions. In contrast to actors and observers in the *severe time limit* conditions, actors and observers in the *slight time limit* conditions thought that actors had more time to make a choice, $F(1, 69) = 15.71$, $p < .001$, $\eta = .19$. As expected, actors' and observers' perceptions of the time that actors had to make a choice did not differ, $F(1, 69) = 1.06$, $p = .31$, $\eta = .02$. Finally, the effect of the severity of the time limit did not vary as a function of participants' roles as actors or observers, $F < 1$.

Perception of free will.

Mean values and standard deviations are provided in Table 5. As hypothesized, actors with a slight time limit to choose a charity perceived that their choices were more freely willed than the participants in all other conditions did, even actors who chose under the severe time limit and were asked to perceive their own free will. The contrast, which did not assume equal variances because homogeneity of variance was violated, was significant, $t(52.31) = 4.94$, $p <$

.001. The results of the corresponding ANOVA were similar to those of the contrast. Because homogeneity of variance was violated, α was set to .025 to keep the Type I error rate below the five percent level. As expected, the effect that the severity of the time limit had on participants' perceptions that actors' choices were freely willed depended on the role that participants had in the experiment. The effect of the severity of the time limit varied as a function of participants' roles as actors or observers, $F(1, 69) = 5.29$, $p < .025$, $\eta = .07$. To pursue the interaction, which is displayed in Figure 2, two simple effects tests were conducted. Actors' perceptions that their choices were freely willed were affected by the severity of the time manipulation. As expected, actors in the *slight time limit* condition felt that their choices were a result of free will to a greater degree than participants in the *severe time limit* condition did, $F(1, 38) = 11.99$, $p < .001$, $\eta = .25$. In contrast, observers in the *slight time limit* condition thought that the choices of actors were as much the result of free will as observers in the *severe time limit* condition did, $F < 2$. In sum, the perceptions of free will of actors in the *slight time limit* condition were greater than those of participants in other conditions. Finally, a main effect of participants' roles as actors or observers was found, $F(1, 69) = 10.35$, $p < .01$, $\eta = .14$, but a main effect of time limit severity was not obtained, $F < 2$.

Confidence that actor prefers choice.

Mean values and standard deviations are provided in Table 6. It was expected that the perception of free will would be accompanied by actors' confidence that their choices were the ones that they genuinely prefer. As expected, actors with a slight time limit to choose a charity indicated that they were more confident that they prefer their choice than the participants in all other conditions were. The contrast was significant, $t(66) = 4.89$, $p < .001$. The corresponding ANOVA showed similar results. As expected, the effect that the severity of the time limit had on

participants' confidence that actors preferred their choices depended on the role that participants had in the experiment. The effect of the severity of the time limit varied as a function of participants' roles as actors or observers, $F(1, 69) = 7.42$, $p < .01$, $\eta = .10$. To pursue the interaction, which is displayed in Figure 3, two simple effects tests were conducted. Actors' confidence that they prefer their choices was influenced by the severity of the time manipulation. As expected, actors in the *slight time limit* condition felt more confident the they prefer their choices than participants in the *severe time limit* condition did, $F(1, 38) = 12.33$, $p < .001$, $\eta = .25$. In contrast, observers in the *slight time limit* condition were as confident that actors preferred their choices as observers in the *severe time limit* condition did, $F < 2$. In sum, the actors in the *slight time limit* condition were more confident that they preferred their choices than participants in other conditions. Finally, main effects of time limit severity, $F(1, 69) = 4.92$, $p < .05$, $\eta = .07$, and participants' roles as actors or observers, $F(1, 69) = 9.76$, $p < .01$, $\eta = .13$, were found.

Secondary dependent variables.

Mean values and standard deviations are provided in Table 7. As hypothesized, actors with a slight time limit to choose a charity felt less constrained in making their choice than the participants in all other conditions did. The contrast was significant, $t(66) = -2.90$, $p < .01$. The corresponding ANOVA revealed a main effect of the time limit manipulation, $F(1, 69) = 10.91$, $p < .01$, $\eta = .14$. A main effect of participants' roles as actors or observers, $F < 2$, and an interaction, $F < 2$, were not found.

It was expected that the perception of free will would be accompanied by a belief that one feels strongly about her or his choices. As anticipated, actors with a slight time limit to choose a charity felt more strongly about their choice than the participants in all other conditions did. The contrast was significant, $t(66) = 5.22$, $p < .001$. The corresponding ANOVA revealed a main

effect of the time limit manipulation, $F(1, 69) = 5.32$, $p < .05$, $\eta = .08$, and a main effect of participants' roles as actors or observers, $F(1, 69) = 22.29$, $p < .001$, $\eta = .25$. An interaction was not found, $F(1, 69) = 2.51$, $p = .12$, $\eta = .04$.

The perception of free will, it was expected, would be accompanied by the belief that careful thought had gone into choosing. As anticipated, actors with a slight time limit to choose a charity indicated that their choice was a product of careful thinking to a greater degree than the participants in all other conditions did. The contrast was significant, $t(66) = 4.39$, $p < .001$. The corresponding ANOVA revealed a main effect of the time limit manipulation, $F(1, 69) = 10.83$, $p < .01$, $\eta = .14$, and a main effect of participants' roles as actors or observers, $F(1, 69) = 15.11$, $p < .001$, $\eta = .19$. An interaction was not found, $F < 2$.

In contrast to the hypothesis, actors with a slight time limit to choose a charity did not perceive that they thought more about their choices than the participants in all other conditions did. The contrast was not significant, $t(66) = 1.05$, $p = .30$. The corresponding ANOVA revealed a main effect of participants' roles as actors or observers, $F(1, 69) = 4.92$, $p < .05$, $\eta = .07$. A main effect of time limit manipulation, $F < 2$, and an interaction, $F(1, 69) = 2.68$, $p = .11$, $\eta = .04$, were not found.

Finally, it was expected that the perception of free will would be accompanied by a belief that one's choice was not random. However, actors with a slight time limit to choose a charity did not perceive that their thoughts were less random than the participants in all other conditions did. The contrast was insignificant, $t(66) = -1.34$, $p = .19$. Similarly, the corresponding ANOVA did not show a main effect of the time limit manipulation, $F > 2$, a main effect of participants' roles as actors or observers, $F < 2$, or an interaction, $F < 2$.

Discussion

As hypothesized, actors who had time to think about their choice of charity perceived a greater degree of free will in their choices than participants in all other conditions did. As in the previous experiment, they felt that their choices were less constrained than participants in all other conditions did. The free will perceptions of actors who gave thought to their choices, then, were accompanied by a sense that their choices were up to them. In contrast, actors who did not have time to think before choosing a charity did not seem to show a self–other difference in the perception of free will. Their perceptions of free will did not differ from those of observers in the two time limit conditions. These results provide evidence in support of the supposition that the asymmetry in the perception of free will arises from the introspection illusion. By limiting actors' thoughts about their choice of charity, their perceptions of free will fell in line with those of observers.

In addition, actors who had time to think about their choices indicated that their choices were products of deliberate thinking to a greater degree than participants in all other conditions did. This finding is consistent with the theory of apparent mental causation (Wegner & Wheatley, 1999) because it suggests that actors who saw a causal role for their thoughts in their choices also perceived free will in their choices to a greater degree than other participants did. Importantly, this finding confirms that the most significant challenge of the results of the previous experiment may have been unfounded. That experiment found that actors who had time to think about their choices perceived that their thoughts were no more influential on their choices than participants in all other conditions did. However, the means of the item in question were aligned in the right direction with actors who thought about their choices indicating that their thoughts influence their choices to a greater degree than participants in all other conditions

did. The second experiment's finding that actors who had time to think about their choices indicated that their choices were products of deliberate thinking to a greater degree than participants in all other conditions did suggests that the trend in the means of the item in question in the first experiment was not a statistical fluke.

The actors who had time to think about their choices also felt more confident that they preferred their charity of choice and felt more strongly about their choices than other participants did. This finding suggests an explanation for the fact that, in the previous experiment, actors who had time to think about their choices perceived that they would be more likely to make the same choice in the experiment if it was replicated in a week or if they had been able to choose from a larger set of alternatives than participants in all other conditions did. If actors who perceive that their choices are freely willed also feel strongly about their choices and they feel confident that they have made the right choice, then it makes sense that they would expect to make the same choices in different circumstances and future situations. Participants may perceive that, regardless of changes around them, they can assert their free will.

General Discussion

Previous theorizing (Bargh, 2008; Pronin, in press) and empirical research (Pronin & Kugler, 2009; Stroessner & Greene, 1990) suggests that people perceive more free will, the capacity to choose a course of action from among alternatives in such a way that one can deliberate between the alternatives, have control over one's choices, and be the ultimate cause of a choice (O'Connor, 2008), in their behaviors than in the behaviors of others. However, the root of this self-other difference in the perception of free will is not understood. The present research shows that the introspection illusion can explain the asymmetry in the perception of free will.

As hypothesized, actors who had time to think about their choices in two different experimental paradigms perceived a greater degree of free will in their choices than actors who had less time to think about their choices and observers who did not make choices did. The free will perceptions of actors who gave thought to their choices were accompanied by a sense that their choices were not constrained. These choices, in the eyes of actors, were up to them. By being given time to think about their choices before making them, actors perceived that their choices were freely willed. Being able to introspect, to focus on the subjective experience that choosing engenders, seemed to impact actors' perceptions that their choices are freely willed. Indeed, actors who did not have time to think before choosing a charity did not seem to show a self-other difference in the perception of free will. Their perceptions of free will did not differ from those of observers in the two time limit conditions. By constraining people's time to think about choices before they make them, then, one may be able to affect their perceptions of free will so that they resemble those of others.

Directions for Future Research

Future research could seek to determine whether the difference in the perception of free will can be attenuated in circumstances in which the self is seen as another person or others are perceived to be similar to the self. When their selves are perceived as another person, people make choices for their future selves and other people that differ from their decisions for their present selves. In part, this occurs because people focus on their internal, subjective experience only when they evaluate their present selves (Pronin, Olivola, Kennedy, 2008). In other words, people perceive future versions of themselves in ways that are congruent with the ways in which they perceive other people. It may follow, then, that people may perceive that the choices of their future selves are less freely willed than the choices of their present selves because of the

difficulty in the simulation of the introspections that future selves will have. If people think that others are less freely willed than they are, then they may also think that their future selves are less freely willed than their present selves are.

In contrast, people can perceive others as similar to themselves and show neural responses that seem to conflate self with other (Ames, Jenkins, Banaji, & Mitchell, 2008; Jenkins, Macrae, & Mitchell, 2008; Mitchell, Macrae, & Banaji, 2006). Under these circumstances, people may be able to think about the other as if it were the self. In such a case, it should be expected that people will perceive that their behaviors are endowed with as much free will as the behaviors of others as long as the reduction of the self–other differentiation leads people to assign significant causal value to the thoughts of other people in their behaviors. Similarly, people may show a similar reduction of the asymmetry of the perception of free will when they are familiar with the actor. Lack of familiarity with others can explain many self–other differences (Prentice, 1990). For example, people display the illusion of unique invulnerability, the tendency to see themselves as less vulnerable to victimization than other people (Perloff, 1983), to a lesser degree when the person with whom they compare themselves is familiar to them (Perloff & Fetzer, 1986). This self–other difference is consistent with the self–other difference in the perception of free will. Because people see themselves as more freely willed than others, they should be able to avoid being victimized to a greater degree than other people. It may be the case, then, that people perceive more free will in familiar others than in unfamiliar others if familiarity affords people a better understanding of others' thoughts before their choices and leads people to give more significant weight to those introspections.

In terms of the involvement of the introspection illusion in the self–other difference in free will perception, future research could seek to corroborate the present findings with

dissimilar experimental manipulations. The amount of attention that people can dedicate to their thoughts before a choice can be reduced in several different ways. First, participants could make a choice under cognitive load. This manipulation would reduce the quality of introspection by the impairment of participants' focus on their thoughts before choosing. Second, participants could be made to think about things that they would not ordinarily consider when choosing. This manipulation would impede their experience of free will by contaminating their thoughts with considerations that are not important to them. Third, participants could make a choice after reading disfluent text. This manipulation would increase the depth of thinking and, consequently, the experience of free will, because incidental experiences of disfluency lead to slow, analytical, and deliberate thinking (Alter, Oppenheimer, Epley, & Eyre, 2007). Finally, participants could make a difficult choice that requires a greater amount of thought than an easy choice. Choice difficulty has been shown to influence the types of attributions that people make about the chooser (Steffel, 2009). This effect could extend to the domain of the perception of free will.

Finally, because the perception of free will, agency, and choice can vary as a function of culture (Iyengar & Lepper, 1999) and social class (Snibbe & Markus, 2005), further research should confirm that the result of the present research generalize to people who hail from non–Western backgrounds and to people who have a low socioeconomic status, respectively. The degree to which the self–other difference in the perception of free will is a universal psychological phenomenon is unknown. In addition, the philosophers and psychologists who have theorized that introspection may be the source of the perception of free will and the participants who make up the sample of the present research do not comprise a group that is representative of non–Western cultures and all social classes. Consequently, cross–cultural generalizations are ethnocentric at this point in time.

Implications

Importantly, the self-other difference in the perception of free will that is reported in the present research and its suggested mechanism could call for a reinterpretation of one of the most important attributional biases (Fiske & Taylor, 2008), the actor-observer bias. In two experiments, observers were disinclined to perceive free will in the behavior of actors. Actors were perceived by observers to be incapable of acting in ways that are consistent with their disposition. Observers, therefore, failed to provide dispositional causes to the behaviors of others. In contrast, actors were willing to explain their behaviors with free will. They believed that they their choices had not been constrained and, instead, their choices were thought out exercises of their free will. Actors, therefore, failed to provide situational causes to their behaviors. Pronin and Kugler (2009) suggested previously that people do not see their behaviors as the result of deterministic situations and, instead, see them as chosen responses to a situation. People acknowledge situations, but they do not construe them as deterministic of their behavior. Such a perspective would allow for the existence of free will and explain the perception of actors in the present research that their choices were freely willed.

Any and all research that provides a better understanding of the degree to which free will is perceived has implications for Western societies in such areas as jurisprudence, medical ethics, marketing, and public policy because assumptions about free will underlie people's thinking in all of these areas (Rakos et al., 2008; Stroessner & Greene, 1990; Tancredi, 2007). The present research has specific behavioral implications. For instance, medical practitioners who make a concerted effort to avoid giving patients little time to choose between medical options may give patients a greater sense that they are active participants in their treatment. Indeed, not only do patients want to be involved in treatment decisions when more than one option exists, but their

participation is justified on humane grounds (Guadagnoli & Ward, 1998). The behavioral implications of the two experiments presented also extend to choice architecture. Exposure to deterministic messages increases the likelihood that people will commit unethical acts and exposure to messages that endorse free will encourage people to act ethically (Vohs & Schooler, 2008). Consequently, the institutionalization of procedures that give people time to think about their choices in domains that can result in unethical behavior may harness a perception of free will and encourage ethical behavior.

The interpersonal implications of the self–other difference in the perception of free will are not so clear. On the one hand, such a perception of others could result in interpersonal misunderstanding because actors and observers would construe the same behavior in contrasting ways. If such is the case, then situational experience, the act of "walking a mile in someone's shoes," may help to resolve the self–other difference in the perception of free will. Situational experience leads people to recognize the impact that situational experiences have on others (Balcetis & Dunning, in press). Consequently, it may lead people to see that the behaviors of actors are freely willed responses to situations. On the other hand, a self–other difference in the perception of free will may be beneficial. People's beliefs that they are free agents and that others are subject to situational influences that limit the free will of others can lay the foundation for empathy and the desire to carry out social reform (Myers, 2008). Future research will need to explore the degree to which a free will focus allows people to overcome the fundamental attribution error (Ross, 1977) and, consequently, think like situationists.

Finally, the present research has implications for the neurophysiology of free will, a growing area of study (cf. Hallett, 2007; Tancredi, 2007). The parietal lobe seems to be involved in people's perceptions that their behaviors are freely willed. In a positron emission tomography

(PET) experiment on the perception of agency (Farrer et al., 2003), participants' perception that they were in control of a movement was positively correlated with the activity of the right inferoparietal lobe. The same region was differentially activated when participants in a functional magnetic resonance imaging (fMRI) experiment were allowed to make a voluntary choice than when they were required to follow an instruction (Goldberg, Ullman, & Malach, 2008). Evidence that parietal lobe activity causes the perception of free will comes from an experiment in which patients with parietal lobe lesions showed a delayed awareness of voluntary action in comparison with controls in an electroencelography (EEG) experiment (Sirigu et al., 2004). The findings of the present research suggest that parietal lobe activity should moderate self–other differences in the perception of free will. Activity in the parietal lobes should be positively correlated with the severity of the time limit of choice deliberation.

Conclusions

People may perceive that their choices are more freely willed than the choices of others. The experiments that are presented in this research show that the introspection illusion can explain the asymmetry in the free will perception. In two different experimental paradigms, actors were presented with a situation in which actors had a slight or a severe time limit to make a choice. Actors perceived less free will in their choices when they had little time to think about their choices than actors who had more time to think about their choices did. The limitation of the amount of time that actors had to think before a choice reduced their perception of free will. In contrast, observers' perceptions of actors' free will were not influenced by the conditions under which actors made their choices.

In the introduction, the question was posed: Will Daniel Schachter, Jr., and Stanley Schachter, Jr., perceive as much free will in the choice of their twin as in their choice? Previous

research on the perception of free will in self and other suggest that each twin will perceive that the other twin's choice, though it may be identical, was not as freely willed as their own choice. Why? The present research suggests that people perceive more free will in their choices than in the choice of others because we have no access to the subjective experience that accompanies other's people thinking, which gives rise to their perception of free will.

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Table 1. Experiment 1: Amount of time to choose as a function of role and time limit.

Questionnaire item	Role	Time limit	Mean	SD	N
Amount of time to choose	Actor	Slight	6.80	.56	15
		Severe	5.43	1.83	14
		Total	6.14*	1.48	29
	Observer	Slight	5.50	1.74	24
		Severe	4.96	1.76	24
		Total	5.23*	1.75	48
	Total	Slight	6.00*	1.54	39
		Severe	5.13*	1.77	38

Note. * = $p < .025$.

Table 2. Experiment 1: Perception of free will as a function of role and time limit.

Questionnaire item	Participant	Time limit	Mean	SD	N
Choice was the result of free will	Actor	Slight	6.00*	1.20	15
		Severe	4.64*	2.02	14
		Total	5.34	1.76	29
	Observer	Slight	4.38	2.04	24
		Severe	4.79	1.72	24
		Total	4.58	1.88	48
	Total	Slight	5.00	1.92	39
		Severe	4.74	1.81	38

Note. * = $p < .025$.

Table 3. Experiment 1: Secondary dependent variables as a function of role and time limit.

Questionnaire item	Participant	Time limit	Mean	SD	N
Choice was constrained	Actor	Slight	2.27	1.20	15
		Severe	2.36	2.02	14
		Total	2.31***	1.76	29
	Observer	Slight	3.46	2.04	24
		Severe	3.88	1.72	24
		Total	3.67***	1.88	48
	Total	Slight	3.00	1.92	39
		Severe	3.31	1.81	38
Amount of thinking before choosing	Actor	Slight	3.87	1.20	15
		Severe	3.29	2.02	14
		Total	3.59	1.76	29
	Observer	Slight	3.67	2.04	24
		Severe	2.83	1.72	24
		Total	3.25	1.88	48
	Total	Slight	3.74*	1.92	39
		Severe	3.00*	1.81	38
Thoughts influenced choice	Actor	Slight	5.67	1.20	15
		Severe	5.00	2.02	14
		Total	5.34*	1.76	29
	Observer	Slight	4.50	2.04	24
		Severe	4.42	1.72	24
		Total	4.46*	1.88	48
	Total	Slight	4.95	1.92	39
		Severe	4.63	1.81	38

Questionnaire item	Participant	Time limit	Mean	SD	N
Choice was predictable	Actor	Slight	4.13	1.20	15
		Severe	4.79	2.02	14
		Total	4.45**	1.76	29
	Observer	Slight	3.13	2.04	24
		Severe	3.54	1.72	24
		Total	3.33**	1.88	48
	Total	Slight	3.51	1.92	39
		Severe	4.00	1.81	38
Same choice with more alternatives	Actor	Slight	4.80	1.20	15
		Severe	3.86	2.02	14
		Total	4.34	1.76	29
	Observer	Slight	4.29	2.04	24
		Severe	4.08	1.72	24
		Total	4.19	1.88	48
	Total	Slight	4.49	1.92	39
		Severe	4.00	1.81	38
Same choice in experiment repetition	Actor	Slight	6.33	1.20	15
		Severe	5.79	2.02	14
		Total	6.07	1.76	29
	Observer	Slight	5.88	2.04	24
		Severe	5.25	1.72	24
		Total	5.56	1.88	48
	Total	Slight	6.05	1.92	39
		Severe	5.45	1.81	38

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Table 4. Experiment 2: Amount of time to choose as a function of role and time limit.

Questionnaire item	Role	Time limit	Mean	SD	N
Amount of time to choose	Actor	Slight	3.80	1.36	20
		Severe	2.58	0.90	19
		Total	3.21	1.30	39
	Observer	Slight	3.43	1.45	14
		Severe	2.35	1.06	17
		Total	2.84	1.34	31
	Total	Slight	3.65***	1.39	34
		Severe	2.47***	0.97	36

Note. *** = $p < .001$.

Table 5. Experiment 2: Perception of free will as a function of role and time limit.

Questionnaire item	Participant	Time limit	Mean	SD	N
Choice was the result of free will	Actor	Slight	6.25***	1.02	20
		Severe	4.97***	1.27	19
		Total	5.62**	1.31	39
	Observer	Slight	4.29	1.59	14
		Severe	4.65	1.97	17
		Total	4.48**	1.79	31
	Total	Slight	5.44	1.60	34
		Severe	4.82	1.62	36

Note. ** = $p < .01$, *** = $p < .001$.

Table 6. Experiment 2: Confidence that actor prefers choice as a function of role and time limit.

Questionnaire item	Participant	Time limit	Mean	SD	N
Confidence that actor prefers choice	Actor	Slight	5.20***	1.11	20
		Severe	3.76***	1.44	19
		Total	4.50**	1.46	39
	Observer	Slight	3.50	0.94	14
		Severe	3.65	1.22	17
		Total	3.58**	1.09	31
	Total	Slight	4.50*	1.33	34
		Severe	3.71*	1.32	36

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Table 7. Experiment 2: Secondary dependent variables as a function of role and time limit.

Questionnaire item	Participant	Time limit	Mean	SD	N
Amount of thinking before choosing	Actor	Slight	3.65	0.99	20
		Severe	3.92	1.29	19
		Total	3.78**	1.14	39
	Observer	Slight	3.36	0.84	14
		Severe	2.82	0.81	17
		Total	3.06**	0.85	31
	Total	Slight	3.53	0.92	34
		Severe	3.40	1.21	36
Choice was random	Actor	Slight	2.40	1.39	20
		Severe	2.68	1.49	19
		Total	2.54	1.43	39
	Observer	Slight	2.86	1.03	14
		Severe	3.00	0.94	17
		Total	2.94	0.96	31
	Total	Slight	2.59	1.25	34
		Severe	2.83	1.25	36
Choice was constrained	Actor	Slight	3.05	1.36	20
		Severe	4.32	1.63	19
		Total	3.67	1.61	39
	Observer	Slight	3.57	1.34	14
		Severe	4.65	1.50	17
		Total	4.16	1.51	31
	Total	Slight	3.26**	1.36	34
		Severe	4.47**	1.56	36

Questionnaire item	Participant	Time limit	Mean	SD	N
Choice reflects actor's true preferences	Actor	Slight	5.15	1.27	20
		Severe	4.39	1.44	19
		Total	4.78	1.39	39
	Observer	Slight	4.50	1.09	14
		Severe	4.41	1.00	17
		Total	4.45	1.03	31
	Total	Slight	4.88	1.23	34
		Severe	4.40	1.24	36
Choice was product of careful thinking	Actor	Slight	4.60	1.39	20
		Severe	3.61	1.40	19
		Total	4.12***	1.47	39
	Observer	Slight	3.43	1.02	14
		Severe	2.47	0.94	17
		Total	2.90***	1.08	31
	Total	Slight	4.12**	1.37	34
		Severe	3.07**	1.32	36
Actor felt strongly about choice	Actor	Slight	4.90	1.21	20
		Severe	3.82	1.33	19
		Total	4.37***	1.37	39
	Observer	Slight	3.14	0.77	14
		Severe	2.94	1.14	17
		Total	3.03***	0.98	31
	Total	Slight	4.18*	1.36	34
		Severe	3.40*	1.30	36

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Figure 1. Experiment 1: Perception of free will as a function of role and time limit.

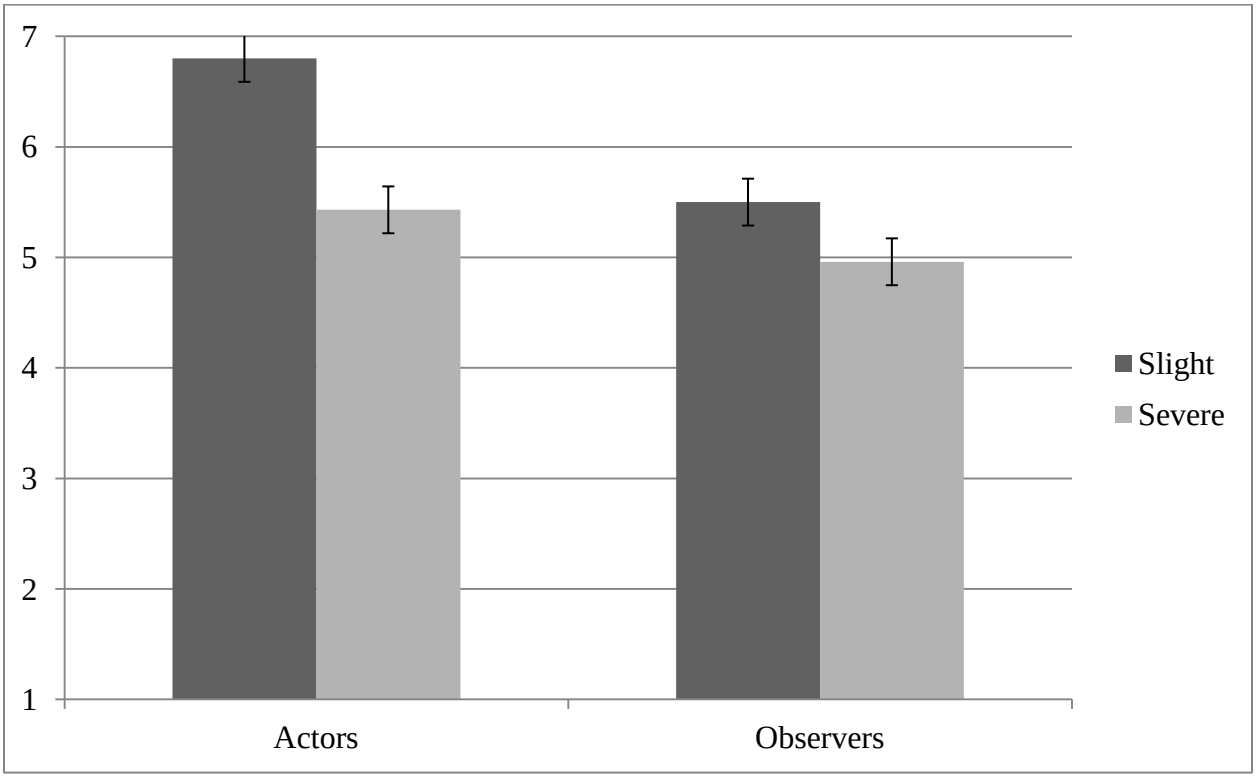


Figure 2. Experiment 2: Perception of free will as a function of role and time limit.

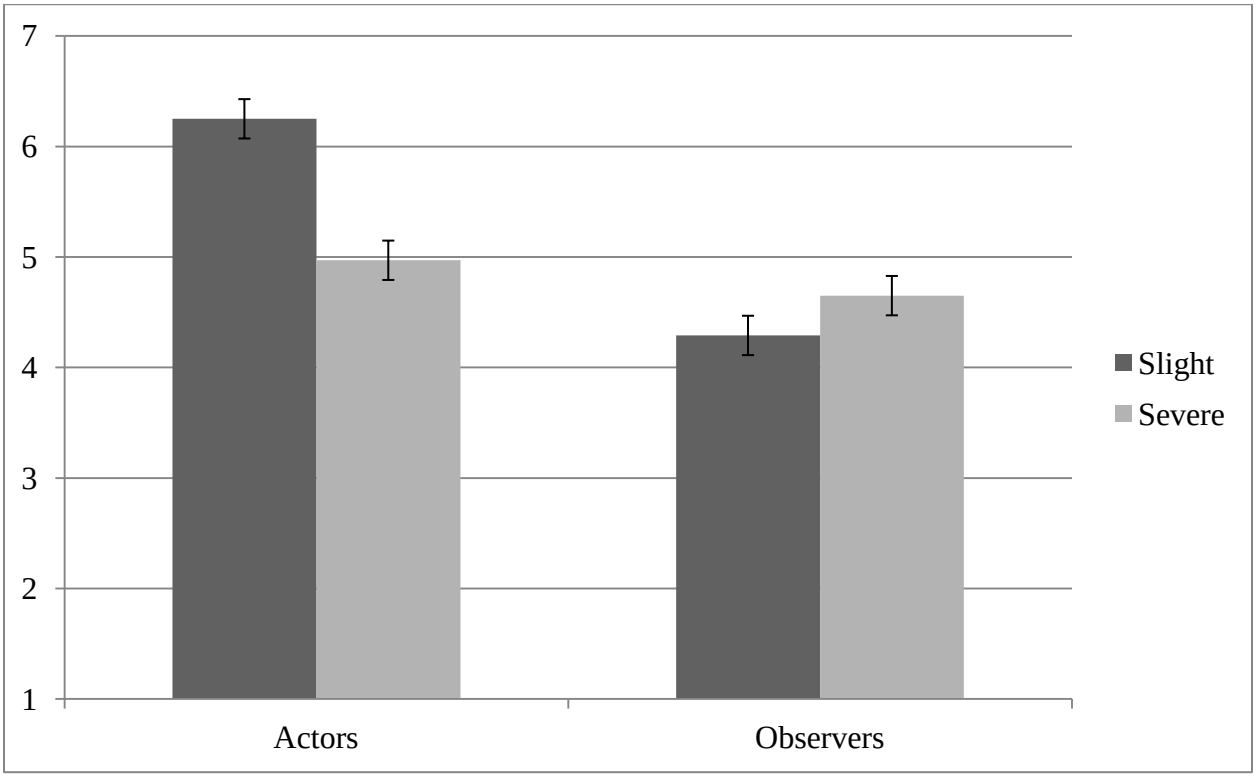
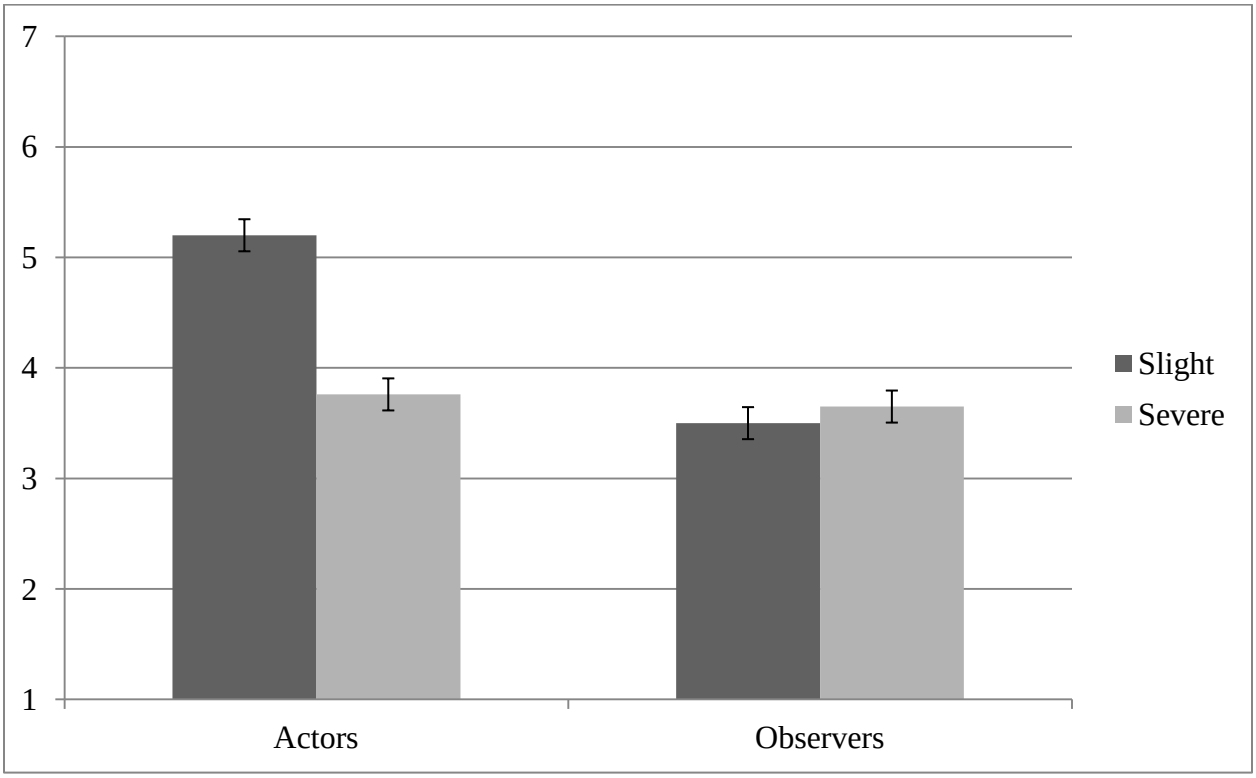


Figure 3. Experiment 2: Confidence that actor prefers choice as a function of role and time limit.



Appendix A

Experiment 1: Offer Selection Form

PLEASE CIRCLE ONE OF THE TWO PAIRS

I give $25

I keep $25

I give $15

I keep $35

Appendix B

Experiment 1: Actors' Questionnaire

READ THIS STATEMENT BEFORE ANSWERING THE QUESTIONS BELOW

"Some of the choices we make feel as if they are made more freely than others. As you answer the following questions, keep the different choices that you make on a daily basis in mind and think about how free this choice felt in comparison to some of the other ones that you make."

How much time did you have to make your choice?

1	2	3	4	5	6	7
Not enough						*Enough*

Did your choice feel constrained?

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

How much thinking did you do before you made a choice?

1	2	3	4	5	6	7
No thinking						*A lot of thinking*

What kind of influence do you feel that your thoughts had on your choice?

1	2	3	4	5	6	7
No influence						*Complete influence*

Would another student have been able to predict your choice?

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

If you had had **more than two** alternatives from which to choose, how likely is it that you would have made the same choice?

1	2	3	4	5	6	7
Not at all likely						*Extremely likely*

If you participated in the experiment next week, how likely is it that you would make the same choice?

1	2	3	4	5	6	7
Not at all likely						*Extremely likely*

Do you feel like your choice was the result of free will?

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

Appendix C

Experiment 1: Observers' Questionnaire

"Some of the choices we make feel as if they are made more freely than others. As you answer the following questions, keep the different choices that you make on a daily basis in mind and think about how free the student's choice may have felt in comparison to some of the other ones that the student makes."

How much time did the student have to make a choice?

1	2	3	4	5	6	7
Not enough						*Enough*

Do you feel the student's choice was constrained?

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

How much thinking did the student do before they made a choice?

1	2	3	4	5	6	7
No thinking						*A lot of thinking*

What kind of influence do you feel that the student's thoughts had on the choice?

1	2	3	4	5	6	7
No influence						*Complete influence*

Would you have been able to predict the student's choice?

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

If the student had had **more than two** alternatives from which to choose, how likely is it that the student would have made the same choice?

1	2	3	4	5	6	7
Not at all likely						*Extremely likely*

If the student participated in the experiment next week, how likely is it that the student would make the same choice?

1	2	3	4	5	6	7
Not at all likely						*Extremely likely*

Do you think that the student's choice was the result of free will?

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

Appendix D

Experiment 2: Charity Information[1]

Founded in Morristown, NJ, in 1983, **Sheltering Solutions, Inc.** provides shelter for 25 homeless men, four homeless women, 19 families, and 20 Safe Haven guests. Our guests receive services including case management, transportation to work and necessary appointments, money management and employment assistance, housing search assistance, and daily living skills training. Referral services for counseling, substance abuse intervention, and prevention are also provided. Our mission is to offer shelter, services, and supportive housing to homeless and low-income people.

The **Trenton Area Soup Kitchen** was founded in the early 1980's by a small group of individuals from local service organizations. Their goal was to feed the truly needy people of Trenton five days a week. The mission of the **Trenton Area Soup Kitchen** is to respond to the needs of people in the Trenton area by providing meals to all those who are hungry; providing services to encourage self-sufficiency and improve quality of life; informing the wider community of the needs of the hungry; and advocating for resources to meet these needs. **Trenton Area Soup Kitchen** provides more than 3,000 free meals per week. We direct our activities toward helping patrons achieve healthier lifestyles, increased self-esteem, and self-sufficiency.

[1] Information adapted from descriptions of Homeless Solutions, Inc. and Trenton Area Soup Kitchen on http://www.charitynavigator.org.

	Homeless Solutions, Inc.	**Trenton Area Soup Kitchen**
Location	Morristown, NJ	Trenton, NJ
Efficiency Rating (maximum 40) Measures how efficiently and responsibly a charity functions	37.87	35.28
Capacity Rating (maximum 30) Measures how well a charity can sustain itself over time	27.22	26.87
Overall Rating (maximum 70)	65.10	62.15

Appendix E

Experiment 2: Fictitious Participants' Charity Selection Sheet

Subject Number 20

Please indicate the charity to which you want to donate by circling its name below.

Sheltering

Solutions, Inc.

Trenton Area

Soup Kitchen

Appendix F

Experiment 2: Actors' Questionnaire

READ THIS STATEMENT BEFORE ANSWERING THE QUESTIONS BELOW: "Some of the choices we make feel as if they are made more freely than others. As you answer the following questions, keep the different choices that you make on a daily basis in mind and think about how free this choice felt in comparison to some of the other ones that you make."

How much time did you have to choose between the two charities?

1	2	3	4	5	6	7
A little						*A lot*

How much thinking did you do before you made your choice?

1	2	3	4	5	6	7
No thinking						*A lot of thinking*

How much would you say that your choice was…

…random

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

…constrained

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

…a reflection of your true preferences

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

…a product of careful thinking

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

Charities differ from each other in multiple ways. How confident are you that the one you chose is the one you prefer?

1	2	3	4	5	6	7
Not at all confident						*Very confident*

How strongly do you feel about your choice?

1	2	3	4	5	6	7
Not at all strongly						*Very strongly*

Do you feel like your choice was the result of free will?

1	2	3	4	5	6	7
Definitely not						*Definitely yes*

Appendix G

Experiment 2: Observers' Questionnaire

READ THIS STATEMENT BEFORE ANSWERING THE QUESTIONS BELOW: "Some of the choices we make feel as if they are made more freely than others. As you answer the following questions, keep the different choices that you make on a daily basis in mind and think about how free the student's choice felt in comparison to some of the other ones that the student makes."

How much time did the student have to choose between the two charities?

1 2 3 4 5 6 7
A little *A lot*

How much thinking did the student do before they made their choice?

1 2 3 4 5 6 7
No thinking *A lot of thinking*

How much would you say that the student's choice was…

…random

1 2 3 4 5 6 7
Definitely not *Definitely yes*

…constrained

1 2 3 4 5 6 7
Definitely not *Definitely yes*

…a reflection of their true preferences

1 2 3 4 5 6 7
Definitely not *Definitely yes*

…a product of careful thinking

1 2 3 4 5 6 7
Definitely not *Definitely yes*

Charities differ from each other in multiple ways. How confident are you that the one the student chose is the one they prefer?

1 2 3 4 5 6 7
Not at all confident *Very confident*

How strongly do you think that the student felt about their choice?

1 2 3 4 5 6 7
Not at all strongly *Very strongly*

Do you feel that the student's choice was the result of free will?

1 2 3 4 5 6 7
Definitely not *Definitely yes*