



Universidade de Brasília

Instituto de Psicologia

Programa de Pós-Graduação em Psicologia Social, do Trabalho e das Organizações

Does Uncertainty Impact How We Act?

**The Relationship Between Need For Closure, Moral Foundations and Prosocial
Behavior**

Mestrado

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Brasília, DF

2021



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Dissertação de Mestrado apresentada ao Programa
de Pós-Graduação em Psicologia Social, do
Trabalho e das Organizações como requisito
parcial à obtenção do grau de Mestre em Psicologia
Social, do Trabalho e das Organizações.

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Brasília, DF

Março de 2021

UNIVERSIDADE DE BRASÍLIA

INSTITUTO DE PSICOLOGIA

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Agradecimentos

O que eu vou falar agora pode parecer estranho no mundo da pós-graduação e tendo em conta o momento atual que vivemos, mas o meu processo de mestrado foi “tranquilo”. Isso se deu pelo fato de eu ter uma rede de suporte tão maravilhosa, que permitiu que eu me dedicasse inteiramente ao mestrado, com muito amor e apoio, e mantendo minha saúde mental (relativamente) intacta. Eu sou privilegiada, e por isso só tenho a agradecer.

Aos meus pais, Erli e Márcio, que mesmo não entendendo muito bem o que eu faço, sempre me apoiaram e me incentivaram incondicionalmente em todos os meus planos. Esse trabalho é dedicado a vocês. Aos meus irmãos, pelo companheirismo e pelos lindos sobrinhos que me deram.

Ao meu orientador, Prof. Dr. Ronaldo Pilati, por desmistificar a ideia que eu tinha de orientação na pós-graduação, e me conduzir pela pesquisa com respeito, abertura, exigência e gentileza. Aos colegas do Grupo de Estudos e Pesquisa em Psicologia Social (GEPS), por todas as contribuições que deram a este trabalho, em especial às amigas do subgrupo de pesquisa: Teresa, Natália, Manuela e Ana Beatriz. Ao João Modesto pela ajuda na coleta de dados desta pesquisa.

Aos amigos da vida, que são muitos, mas particularmente Beatriz, Giovanna e Rafaela, pela irmandade, por estarem sempre comigo, nos momentos bons e ruins, me escutando, me apoiando e me incentivando. Aos amigos que o PSTO me trouxe, particularmente Lara, Amanda e Gustavo, pela parceria, ajuda técnica e emocional.

Ao Pedro, pelo amor, paciência, e por ter sido uma luz que deixou mais leve meu ano de 2020.

Por fim, a todos os cientistas brasileiros que continuam fazendo ciência e lutando contra o negacionismo em tempos tão difíceis.

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RESUMO

Comportamento prosocial é normalmente descrito como atos de ajudar, confortar, compartilhar e cooperar que têm a intenção de beneficiar outras pessoas. Nesta dissertação, buscamos compreender melhor quais aspectos disposicionais e situacionais podem levar a atos de cooperação com o endogrupo e exogrupo. Estudos anteriores mostraram que vivenciar a incerteza pode constituir uma ameaça às pessoas e levar a sentimentos de medo, o que pode reduzir a ajuda e a cooperação. Ao mesmo tempo, a motivação de uma pessoa para processar e julgar informações sobre ambiguidade, ou seja, a necessidade de *closure* (NFC), e suas intuições morais inatas também podem impactar a cooperação. Para testar essas proposições, 1.182 alunos da Universidade de Brasília e do Centro Universitário de Brasília completaram o Priming de Incerteza Pessoal, jogaram o Jogo do Ditador, e responderam ao Questionário de Fundamentos Morais, a escala de *Need For Closure* e ao fator de Autoinvestimento da Escala de Identificação Multidimensional do Endogrupo. Uma Análise Multivariada de Covariância foi conduzida para verificar os efeitos do *Priming* de Incerteza e de NFC na cooperação com o endogrupo e exogrupo, controlando para os Fundamentos Morais Individualizantes e Autoinvestimento. Os resultados indicaram um efeito principal significativo de NFC na cooperação com o endogrupo e exogrupo, mas nenhum efeito significativo do *Priming* de Incerteza ou da interação. Além disso, as covariáveis apresentaram um efeito significativo. Tomados em conjunto, os resultados mostram que, embora ser lembrado de sua incerteza não afete a cooperação das pessoas neste caso, quanto menor a necessidade de alguém por respostas definitivas, em comparação à confusão e ambiguidade, mais eles tenderão a cooperar com o seu endogrupo e exogrupo.

Palavras-chave: incerteza, *need for closure*, fundamentos morais, cooperação, identificação grupal

ABSTRACT

Prosocial behavior is typically described as acts of helping, comforting, sharing, and cooperating that have the intention to benefit other people. In this dissertation, we aimed at understanding more what dispositional and situational aspects can lead to acts of cooperation with ingroup and outgroup. Previous studies have shown that experiencing uncertainty can constitute a threat to people and lead to feelings of fear, which can reduce helping and cooperation. At the same time, one's motivation in processing and judging information regarding ambiguity, that is, the Need For Closure (NFC), and their innate moral intuitions can also impact cooperation. To test these propositions, 1,182 students from the University of Brasilia and from the University Center of Brasilia completed the Personal Uncertainty Priming, played the Dictator's Game and completed the Moral Foundations Questionnaire, the Need For Closure Scale and the Self-Investment factor from the Multidimensional Ingroup Identification Scale. A Multivariate Analysis of Covariance was conducted to check for the effects of Uncertainty Priming and NFC on ingroup and outgroup cooperation, while controlling for the Individualizing Moral Foundations and Self-Investment. Results indicated a significant main effect of NFC on both ingroup and outgroup cooperation, but no significant effect of the Uncertainty Priming or the interaction. Moreover, the covariates presented a significant effect. Taken together, the results show that although being reminded of their uncertainty does not impact how people cooperate in this case, the lower someone's need for definite answers, compared to confusion and ambiguity, the more they are likely to cooperate with their ingroup and outgroup.

Keywords: uncertainty, need for closure, moral foundations, cooperation, group identification

“It is hard to be sure of anything among so many marvels.

The world is all grown strange...

How shall a man judge what to do in such times?”

J.R.R. Tolkien. (1966). *The Lord of The Rings. Part 2: The Two Towers.*

On February 11, 2019, many Brazilians were saddened by the news of the tragic death of famous journalist, Ricardo Boechat, when his helicopter crashed in a highway and was hit by a truck. At the same time, images of a street vendor named Leiliane Silva went viral on the internet, when she heroically jumped off her husband’s motorcycle to save the truck driver, who was trapped in the wreckage, by cutting his seatbelt with a knife she got from lawn mowers nearby, while many men were filming and taking pictures of the incident.

This event can lead to some questions: Why do some people help strangers while other do not? What personal characteristics can lead to such behavior? When are people most likely to help others? These questions have already been asked in important studies that helped elucidate situational and dispositional aspects that could lead to prosocial behavior, such as Darley and Latané’s (1968), Bickman’s (1971), Cialdini et al.’s (1987), and many others.

The present research aimed to further understand those aspects that can promote such behaviors. Particularly, we intended to investigate if people’s feeling of being uncertain about something, their epistemic motivation to reach closure, and their moral intuitions used for making judgements can influence cooperation towards the ingroup and the outgroup.

Prosocial Behavior

Before answering those previous questions about *helping*, it is necessary to understand what “Prosocial Behavior” is, since it encompasses the term helping. Prosocial Behavior is a broad category of acts a share of the society (or in the social group one is inserted in) considers as generally beneficial to others (Penner et al., 2005). For Batson and Powell

(2003), those acts with the intention to benefit one or more individuals can be deeds of helping, comforting, sharing, and cooperating. *Altruism* is also a subtype of prosocial behavior, only it is motivated by factors other than egoistic or pragmatic concerns and a desire for other's approval (Batson, 2010), and will not be addressed in this study.

Furthermore, Prosocial Behavior can be understood and studied based on levels of analysis. The micro level of analysis refers to the origins of prosocial tendencies, that is, dispositional factors that relate to the act of behaving prosocially. The meso level regards the study of dyads, in a context where there is a "giver of help" and recipient to that help. Finally, the macro level refers to prosocial actions in bigger contexts, such as groups and organizations (Penner et al., 2005). Figure 1 shows what forms each level.

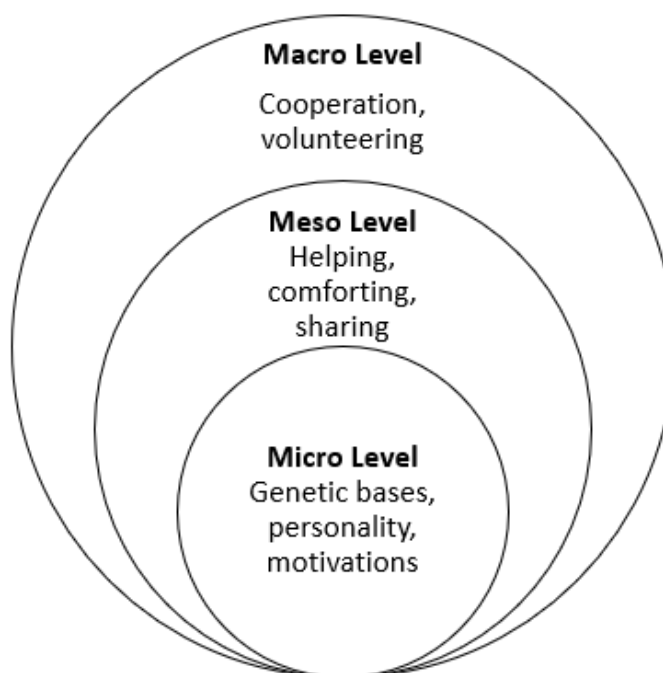


Figure 1. Prosocial Behavior's different levels of analysis.

According to Bar-Tal (1982), helping consists of acts, such as sharing, aiding, supporting, and donating, that intend to benefit others, with the condition of having no external rewards promised beforehand. Although there is a large body of literature regarding

helping behavior, that does not mean there are indubitable conclusions about its process and characteristics, probably due to it being highly influenced by situational and individual cues.

Individuals face different situations every day and they might react differently depending on their personality, epistemic motives, emotional state, and specific situation characteristics, such as the presence of other people or even on the person who is in need of help, if they belong to the helper's ingroup or outgroup, for example. All the stated points make helping a difficult behavior to predict and generalize. Thus, the best answer for the questions in the second paragraph, regarding why some people help strangers, what personal characteristics can lead to prosocial behavior and when are people most likely to help others might be: it is complicated.

It is also worth mentioning that in the macro level of analysis there are the acts of cooperation, which differ from helping in a way that there is not a figure of a "helper" and someone in need of assistance, but rather, there are two or more people working together, as partners, towards a common goal that will eventually benefit them all (Penner et al., 2005). Fehr and Fischbacher (2003) highlight the importance of cooperation stating that human societies represent an anomaly in the animal world, since they are based on a division of labor and cooperation between individuals that are not related to each other, while cooperation in species such as ants and bees depend on their genetic inheritance.

Worchel (1984) compares helping and cooperation and states that differently from helping, cooperation does not separate helper from recipient. Therefore, the relationship between parties cooperating does not involve a "give-and-take of power" the same way helping does, so to this extent, cooperation can facilitate intergroup relation to a greater degree. Halabi and Nadler (2010) have examined that premise at the intergroup level and have concluded that the way in which high and low status groups interpret and react to assistance from higher status groups can possibly intensify intergroup tensions rather than quench them.

That tension can be explained by the processes of social identity, due to the fact that being dependent of other's assistance can be a threat to one's self-esteem, since it emphasizes the power discrepancies between the groups (Halabi & Nadler, 2010). However, according to Penner et al. (2005), in the context of social dilemmas, social identity is only one of the factors among many, that might influence cooperation.

Need For Closure and Uncertainty

Dovidio et al. (2017) explain that the variation in someone's prosocial behavior can also depend on the situation's demand. Meaning that in situations where there is clear and unambiguous information about how a person should behave, individual differences will not have much influence on the behavior. On the other hand, when the environmental information is weak and the norms about how a person is expected to act are ambiguous, individual differences will be the main predictor of the behavior.

Smith (2015) has argued that prosocial behaviors are more likely to happen in circumstance where there are fewer reasons to be fearful, and that uncertainty can enhance those feelings. In that manner, in a cross-cultural study, he has found that nations with higher scores of uncertainty avoidance have lower donor frequencies, incidence of volunteering and helping strangers.

However, people have different levels of tolerance for uncertainty and ambiguity. Specifically, in this study, we discuss the need individuals have for answers on any given topic compared to confusion and ambiguity, a concept described by Kruglanski (1990) as the Need For Closure (NFC). This need varies on a continuum that goes from a strong need for closure, where they have an intense motivation to gather information, generate hypothesis and reach firm knowledge, to a strong avoidance of closure, where they do not (Roets, 2017). All the stated serves as a way of avoiding aversive feelings of uncertainty and might vary depending on the situation.

Although they might be similar, the need for closure has important differences from intolerance of uncertainty. Intolerance of Uncertainty is a construct that refers to people's view of uncertainty as something that leads to the inability to act, that is stressful, upsetting, unfair and should be avoided (Buhr & Dugas, 2002), and therefore, it refers to individual's emotional, cognitive and behavioral reaction to uncertainty. NFC, however, concerns a dimension of individual differences related to people's active motivation regarding information processing and judgement (Webster & Kruglanski, 1994) that will help avoid uncertainty and ambiguity, and so, it reflects how individuals deal with uncertain information. Berenbaum et al. (2006) have found some moderate associations between both scales.

To be able to measure NFC quantitatively, Webster and Kruglanski (1994) have developed a 42-item scale, that assess it through five factors: preference for order and structure, discomfort with ambiguity, need for stable knowledge and predictability, decisiveness, and close-mindedness. Seeing that some studies were using indiscriminately parts of the scale, with no information regarding the validity of these parts, Roets and Van Hiel (2011b) formulated a reduced version, with 15 items and only one factor. This version has been adapted to the Brazilian context in a previous study (Reis & Pilati, 2020).

The NFC has been typically linked to phenomena such as religious fundamentalism (Brandt & Reyna, 2010), racism (Van Hiel et al., 2004), sexism (Roets et al., 2012), anti-immigrant prejudice (Dhont et al., 2013), negative attitudes towards bisexual people (Burk et al., 2017) and prejudice in general (Roets & Van Hiel, 2011a). Dugas et al. (2018) argue that there are group-centric attitudes that act as underlying mechanisms in the relationship between NFC and hostility towards outgroups. More specifically, they assert that people high in NFC prefer aggressive conflict management when dealing with outgroups, as a quick and decisive way to achieve results for the ingroup. This is in line with Dhont et al. (2011) finding that NFC moderates the relationship between intergroup contact and prejudice.

Forsberg et al. (2018) suggested that intolerance for ambiguity engenders moral dichotomization of humanity into categories, such as “good and bad”, “hero and villain”, since those categories can serve as clear, certain, and external moral orders, and that can lead to prejudice in its most diverse expressions. Moreover, people with high NFC not only have an urgency tendency to achieve definite knowledge, that is, to *seize* on closure quickly, but they also have a permanency tendency, to preserve and freeze that knowledge (Kruglanski & Webster, 1996). That can make it more difficult for those people to review their judgement, and therefore, they become more intolerant towards outgroups.

In addition, Nelson et al. (2003) have found that under high NFC, people have more trouble adopting the perspective and being more empathetic to those dissimilar from the Self. Those arguments may also help explain why people with higher NFC are less likely to treat others with justice (Shteynberg, 2017), and more prone to intergroup bias and competitiveness (Golec & Federico, 2004).

Van den Bos’ Uncertainty Management Model argues that experiencing uncertainty can constitute a threatening event to people, and when experienced, they process information in an experiential-intuitive way, which leads them to react in positive terms to individuals in consonance to their worldviews, and negatively to people who violate those worldviews (van den Bos, 2009).

In this sense, Sleesman and Colon (2017) propose that when confronted with the decision to act prosocially, the extent of the uncertainty experienced leads to an aversion of this uncertainty, which makes people want to maintain the status quo, therefore refraining from prosocial action. Orehek et al. (2010) theorize that events evoking uncertainty through threat can help increase identification with the ingroup and accentuate differentiation between ingroup and outgroup. These authors have found that in response to a terrorist attack, people

high in need for closure tend to favor and be more solidary to the ingroup, and in return, show more negative attitudes towards the outgroup.

Brizi et al. (2016) have found that under uncertainty salience, people with lower NFC levels tend to act like those high in NFC, that is, with increased discrimination against outgroups. These results implicate when under uncertainty salience, NFC may have a moderation role, affecting the direction or intensity of prosocial behaviors as well.

Moral Foundations

The Moral Foundations are the five sets of innate, automatic, moral intuitions that help guide the development of several culture-specific virtues categorized by Haidt and Joseph (2004). Each of the five sets or categories is divided based on the concerns, vices and virtues associated with it. They are: a) harm/care, that covers concerns regarding cruelty, suffering of others, compassion, caring and kindness; b) fairness/reciprocity, which includes issues of injustice, unfair treatment, reciprocity, equality, cheating, and individual rights; c) ingroup/loyalty, that worries about loyalty, group membership, self-sacrifice, and betrayal; d) authority/respect, which reflects concerns with social order, hierarchical relationships, obedience and respect for authority; and e) purity/sanctity, that concerns contagion, self-control, innocence and wholesomeness (Haidt & Joseph, 2007; Wheeler et al., 2019).

Afterwards, these sets were found to be more accurately represented, both theoretically and structurally, in two major clusters: the individualizing foundations, aggregating the harm/care and fairness/reciprocity categories and focusing on the rights of the autonomous individual; and the binding foundations, comprising of the ingroup/loyalty, authority/respect, and purity/sanctity categories, and concentrating on group cohesion (Graham et al., 2009; Silvino et al., 2016).

Evidence linking NFC to MFT suggests that individuals high on NFC tend to relate more to binding foundations, but relate to individualizing foundations as well, just not as

strongly (Federico et al., 2016). Similarly, in a preliminary study (Reis & Pilati, 2020), where we adapted to the Brazilian context and evaluated the psychometric properties of the brief NFC scale, we found that the binding moral foundations emerged as a significant predictor of NFC. Federico et al. (2016) argue that this happens because the binding foundations provide certainty in the form of clear, consistent, and broadly applicable external guidelines that help ensure that following the rules is good, which those individuals value.

Furthermore, Baldner and Pierro (2018) have found that the binding moral foundations moderate the relationship between NFC and negative attitudes toward women leaders. They claim that NFC's motivation for "groupness" to create a firm shared reality that can serve as a base for stable knowledge can be manifested in the endorsement of the binding foundations, which are generally supportive of attitudes and judgements toward predominant cultural standards, including those that stereotype women. Similar results were found in De Cristofaro et al. (2019), where they found a mediating role of the binding foundations in the relationship between NFC and collective action intentions towards immigrants.

Giacomantonio et al. (2017), similarly, have found a link between NFC and endorsement of utilitarian punishment, which also has a focus on a shared social reality, norm compliance, social consensus, and groupness as a way to reduce uncertainty, with no regard for the moral implication at the individual level. They also identified the binding moral foundations to mediate this relationship. Additionally, Forsberg et al. (2018) have found correlations between both moral foundations and intolerance of ambiguity, positive correlations between general prejudice and the binding foundations, and negative correlations with the individualizing foundations.

Penner and Orom (2010) argue that the moral reasoning oriented towards others always appears as a dispositional characteristic in individuals who present prosocial behaviors. This may help explain why the binding moral foundations have a positive

relationship with negative behavioral intentions towards Muslim people (Hadarics & Kende, 2018), and why, in comparison to people who are high on the binding moral foundations, individuals high on individualizing foundations report stronger prosocial intent (Süssenbach et al., 2019).

Similarly, Nilsson et al. (2016) have discovered that the support for different moral foundations can lead to prosocial behaviors towards different causes. They have found that people who value individualizing foundations donate to organizations regardless of the group membership, while people who value binding foundations tend to donate more to ingroup causes.

Clark et al. (2017) using economic game such as the Prisoner's Dilemma have found that people who endorse the individualizing foundations over the binding ones cooperate to a greater extent but have prompted that more experimental research is needed to evaluate if group membership changes that relationship. Taking all the stated in consideration, the research here presented aims to further understand how people react to being reminded about their personal uncertainties, and the relationship with NFC and the moral foundations.

The study has three specific goals: (1) to evaluate if uncertainty salience can cause a decrease in cooperation towards the ingroup and the outgroup; (2) to investigate if NFC if NFC influences the scores of cooperation with ingroup and the outgroup; and (3) to evaluate if the Moral Foundations impact the relationship between these variables.

Taken all the studies mentioned into consideration, we believe that regarding Uncertainty Salience, (H1) people in the experimental condition will cooperate less with both ingroup and outgroup. In relation to NFC, (H2.1) we expect people with low NFC to cooperate more in general, but (H2.2) we believe people with high NFC will prioritize cooperating with their ingroup more than people with low NFC.

Regarding the interaction, (H3) we believe that uncertainty salience will not significantly change the degree in which people high in NFC cooperate, but it will cause people with low NFC to behave like those with high NFC, cooperating less with the outgroup, and more with the ingroup. Moreover, (H4) we believe the binding moral foundations will act as covariate for ingroup cooperation and the individualizing foundations as a covariate for both ingroup and outgroup cooperation.

Method

Participants

We conducted an estimation of the sufficient sample size using the software G*Power (version 3.1.9.4), and estimated that to reach a power of 0.95, with an alpha of 0.05, anticipating for a small effect size ($f^2 = 0.02$), a number of 575 participants would be needed. The total non-probabilistic sample consisted of 1,182 students from the University of Brasília - UnB (N = 1063) and from the University Center of Brasília – UniCeub (N = 119). Two participants reported studying both at UnB and UniCeub. Since one of the focus of analysis was to evaluate ingroup and outgroup behavior, and these two participants belonged to the ingroup and outgroup studied, they were removed from analysis. Out of the total, 66.9% were women, 32.1% men, and 1% non-binary. The sample comprised of students from 79 undergraduate courses, the majority being from Psychology (6.5%) and Law (5.8%).

As for the political position, 65.8% considered themselves to be left and center-left wing, 19.4% center, and 14.8 right and center-right wing. For religion, 20.6% were agnostic, 19.7% were catholic, 13.7% atheistic and 14.4% reported having another religion. Participants' age went from 17 to 68 years old, but since it was required of them to be 18 or more, the 17-year-old was removed from analysis. The mean age was of 24.74 (SD = 7.77).

Measures

Personal uncertainty priming.

Uncertainty salience was manipulated using Van den Bos' (2001) procedure, with two conditions. In the control condition, participants were asked to answer the following open-ended questions: (1) Please describe briefly the emotions that the thought of watching TV arouses in you, and (2) Please write down, as specifically as you can, what you think happens to you when you watch TV. Participants in the experimental condition were asked to answer (1) Please describe briefly the emotions that the thought of being uncertain arouses in you, and (2) Please write down, as specifically as you can, what you think happens to you physically when you feel uncertain.

Moral Foundations Questionnaire (MFQ).

The MFQ is a 30-item questionnaire, created by Graham et al. (2011) and adapted to the Brazilian context by Silvino et al. (2016). It consists of two parts where in one, the person needs to evaluate each item in terms of relevance when deciding whether something is right or wrong, rating from 1 (not relevant) to 6 (extremely relevant); and in the other, they evaluate if they agree with the assertive or not, rating from 1 (strongly disagree) to 6 (strongly agree). Although the original study consisted of five separate scales, the adaptation, our previous study (Reis & Pilati, 2020), and Exploratory Factor Analysis revealed that a two-dimension structure was a better fit, with two factors: Binding Foundations and Individualizing Foundations. In this sample, the two factors presented alphas of .87 and .81, respectively. See Appendix 1 for the complete questionnaire.

Dictator's Game.

A reiterated Dictator's Game, following the procedures described on Brocklebank et al. (2011) was used, with six rounds relating to "pairing" with someone from the University of Brasília, and the last six rounds to pairing with someone from the University Center of Brasília. In the game, the participant could either choose the most cooperative choice, or the

one that would benefit him the most. Procedures are described in the next session; choice options are described in Appendix 2.

Need For Closure Scale (NFC).

The NFC short version is a scale created by Roets and Van Hiel (2011b). In this study, we used the version adapted to the Brazilian context by Reis and Pilati (2020), with 15 items rated on a 6-point Likert scale ranging from 1 (completely disagree) to 6 (completely agree). The scale can be seen in Appendix 3. The alpha in this sample was of .82.

Multidimensional in-group identification scale (MGIS).

The MGIS is a 14-item scale adapted to the Brazilian context by Souza et al. (2019), and it consists of five components (satisfaction, centrality, solidarity, self-stereotyping, and in-group homogeneity) and two second-order factors (self-investment and self-definition). This scale can be adapted to the ingroup of interest, and its responses range from 1 (completely disagree) to 6 (completely agree). In this study, participants from each university completed the scale adapted to their ingroup. We chose to use the second-order factor Self-Investment, which relates to the positive feelings of the individuals regarding their group belonging, as well as the saliency and importance they give to belonging to that group. This factor presented an $\alpha = .91$ in this sample.

Dictator's Game Manipulation Check.

Participants were asked the following questions and required to answer with Yes/No. (1) Did you really feel that you were responsible for deciding the number of chips that the other player would receive?; (2) Did you really feel that you would be paired with someone from your university?; and (3) Did you really feel that you would be paired with someone from another university? A Sociodemographic Questionnaire was also used, composed of questions of sex, age, semester, college major, political stance, and religion.

Personal Uncertainty Priming Manipulation Check.

To verify if the personal uncertainty priming task produced the expected responses, we coded the participant's answers based on what were the feelings the questions were supposed to evoke for both conditions. The task was coded as "successful = 1", when in the control condition participants described neutral and/or pleasant feelings, and when in the uncertainty priming condition they described feelings revolving around anxiety, fear, and insecurity. The task was coded as "unsuccessful = -1" when in the control condition participants described feelings relating to sadness, anxiety and stress, and when in the priming condition they described positive content in their answers.

Procedure

Data collection was carried out online. First, participants were required to read and agree to the informed consent. Then, they completed the sociodemographic questionnaire, and were randomly assigned to one of two groups from the Personal Uncertainty Priming task: the control group and the uncertainty salience group. Aside from that difference, all participants completed the same tasks and questionnaires. After completing the task, participants completed the MFQ, since Van den Bos (2001) has encountered evidence that the uncertainty effects are typically activated after a delay, and then played the Dictator's game afterwards.

In the game, participants were informed that they would play a game where they could earn chips for a chance to win a gift-voucher of R\$ 200 from a bookstore (Livraria Cultura). They were informed that the game would consist of them making decisions for different situations and that each decision was independent of the other decisions. The participants also read that they would be paired anonymously with another person from their own university and from another university, and that they would be randomly assigned the role of "chip allocator" or "recipient". Participants designated as "recipient" (player A), would receive the chips that someone else assigned them, and participants designated as "allocator" (player B) would decide for them and for the other player. Following the instructions, two attention

checks were put, to check whether participants knew who was going to decide the chip allocation, and who was going to get chips without being able to choose. However, all participants were allocators, and they were not paired with anyone.

Figure 2 shows how the participants viewed the choice options. Each round relating to the pairing with the person's own university or the other contained the respective logo for the university. Options B1 and B2 varied across rounds.

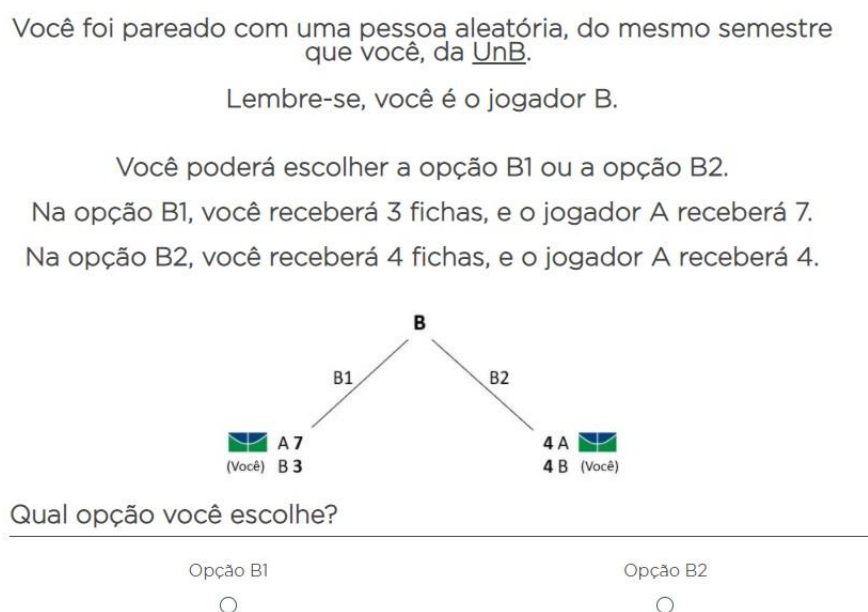


Figure 2. Sample screenshot of the Dictator's game as presented to the participants.

Finally, participants completed the NFC and MGIS scale, and answered the Dictator's Game Manipulation Check.

Data analysis procedure.

Primarily, we coded participants into three groups according to their answers on the Dictator's Game manipulation check. Then, to check if the participant's feelings of having played or not with people from their/other university affected the results on Cooperation with the ingroup and the outgroup, we conducted two one-way Analyses of Variance (ANOVA).

Then, we made word clouds from participants answers in the Uncertainty Priming Task's questions to get a better view of the answers' content. Based on that, each participant

was coded manually into two groups, one where the question evoked the feelings it was supposed to, and one where it did not. Again, two one-way Analyses of Variance (ANOVA) were conducted to check for group differences regarding Cooperation with ingroup and outgroup. NFC was transformed into a categorical variable, with Low, Medium, and High levels. Then, a Multivariate Analysis of Covariance was performed to check for the effects of the independent variables (NFC and the Uncertainty Priming) on the dependent variables (Cooperation with the Ingroup and Cooperation with the Outgroup), while controlling for the effect of Self-Investment and the Moral Foundations.

Results

Manipulation Checks

First, in order to examine if there were any differences on ingroup and outgroup cooperation between participants in the manipulation checks, we coded the participants into three groups based on their responses to the Dictator's Game manipulation checks: (1) those who believed they were being paired with someone from their university and from another university ($N = 570$); (2) those who believed they were being paired with someone from their university but not from another university, or vice versa ($N = 143$); and (3) those who did not believe they were being paired with someone from their university and from another university ($N = 440$). Results of the one-way ANOVA indicated no significant differences between the three groups for both ingroup cooperation ($F(2,1150) = .683, p = .51$) and outgroup cooperation ($F(2,1150) = 2.585, p = .08$). Means, standard deviations and confidence intervals for each group can be seen on Table 1.

Table 1

Descriptive statistics for Dictator's Game Manipulation Check.

	Unsuccess	1.54	.22	1.51	1.57
CooperationOut	Success	1.50	.23	1.49	1.51
	Unsuccess	1.51	.23	1.47	1.54

Note. CooperationIn = Cooperation with the ingroup; CooperationOut = Cooperation with the outgroup. Success = Priming Successful; Unsuccess = Priming Unsuccessful.

Main analysis

A Multivariate Analysis of Covariance (MANCOVA) model was conducted to assess if there was an effect of NFC (low, medium, and high) and the Uncertainty Priming (control vs. uncertainty) on cooperation with the ingroup and cooperation with the outgroup in the Dictator's Game, with self-investment and the individualizing moral foundations as covariates. Self-investment was inserted to control for possible effects.

The binding foundations were initially meant as one of the covariates in the model and part of H4, but upon assessing the covariates beforehand, it was verified that it did not meet the assumptions for covariance analysis, since it was not correlated to the dependent measures. Hence, it was not used as a covariate. In addition, though it is not recommended for the dependent variables to be highly correlated, Tabachnick and Fidell (2013) argue that statistical problems created by singularity only occur when correlations are higher than .90, and since SPSS protects against multicollinearity and singularity by computing the pooled within cell tolerance for each DV, and there were theoretical reasons to do so, we decided to maintain both DVs. Correlations can be seen on Table 3.

Table 3

Bivariate correlations and descriptive statistics.

Variable	M	SD	1	2	3	4	5
1. NFC	3.94	0.75					
2. Binding	2.58	0.88	.285*				

3. Individualizing	5.06	0.61	.241*	.186*		
4. Self-Investment	5.01	1.34	.133*	.079**	.227*	
5. Coop. Ingroup	1.54	0.21	-.117*	-.009	.044	-.051
6. Coop. Outgroup	1.50	0.23	-.126*	-.013	.072**	-.090** .760*

Note. * $p < .001$; ** $p < .05$

The two-way MANCOVA indicated that after adjusting for self-investment and the individualizing moral foundations, there was a significant main effect of NFC (H2) on the combined dependent variables (Wilk's $\Lambda = .977$, $F(4,2288) = 6.682$, $p < .001$, $\eta^2 = .012$). However, according to the estimation of the effect size, the variance in the derived dependent variable was only accounted for 1.2% of NFC. Regarding H1, the results indicated no main significant effect of the Uncertainty Treatment (Wilk's $\Lambda = .998$, $F(2,1144) = .890$, $p = .411$, $\eta^2 = .002$) and no significant interaction effect (H3) between NFC and the Uncertainty Treatment (Wilk's $\Lambda = .995$, $F(4,2288) = 1.294$, $p = .270$, $\eta^2 = .002$) on the combined dependent variables, which also means NFC does not moderate the relationship between Uncertainty and Cooperation. Descriptive data can be seen on Table 4.

Table 4

Means and standard deviations for Ingroup and Outgroup Cooperation.

DV	Groups	NFC	M	SD
Cooperation with the ingroup	Uncertainty	Low	1.56	.20
		Medium	1.51	.22
		High	1.52	.19
		Total	1.53	.20
	Control	Low	1.59	.20
		Medium	1.54	.20
		High	1.50	.21
		Total	1.54	.21
	Total	Low	1.58	.20
		Medium	1.53	.21
		High	1.51	.20
		Total	1.54	.21

Cooperation with the outgroup	Uncertainty	Low	1.53	.21
		Medium	1.47	.23
		High	1.47	.21
		Total	1.49	.22
	Control	Low	1.55	.23
		Medium	1.49	.22
		High	1.48	.24
		Total	1.51	.23
	Total	Low	1.54	.22
		Medium	1.48	.22
		High	1.48	.23
		Total	1.50	.23

The results also showed the covariates (H4), self-investment (Wilk's $\Lambda = .989$, $F(2,1144) = 6.303$, $p < .05$, $\eta^2 = .011$), from the MGIS, and the individualizing foundations (Wilk's $\Lambda = .986$, $F(2,1144) = 8.005$, $p < .001$, $\eta^2 = .014$) to be significant, meaning they have an effect on cooperation when the other predictors are kept constant.

Furthermore, univariate tests between-subjects showed a significant main effect of NFC on both Cooperation with the ingroup ($F(2,1145) = 12.403$, $p < .001$, $\eta^2 = .021$) and the outgroup ($F(2,1145) = 10.314$, $p < .001$, $\eta^2 = .018$). Similarly, the Individualizing Foundations had a significant effect on Cooperation with the ingroup ($F(1,1145) = 8.242$, $p < .05$, $\eta^2 = .007$) and the outgroup ($F(1,1145) = 15.976$, $p < .001$, $\eta^2 = .014$). Self-investment, however, did not present a significant effect on Cooperation with the ingroup ($F(1,1145) = 2.547$, $p = .111$, $\eta^2 = .002$) but it did with the outgroup ($F(1,1145) = 10.801$, $p < .001$, $\eta^2 = .009$).

Follow-up comparisons using Tukey's HSD post-hoc tests contrasting the NFC levels on cooperation showed that the mean scores for cooperation were statistically significant between every pair of NFC level, except for the difference between medium and high NFC on both Cooperation with the Ingroup and the Outgroup. Table 5 displays the mean difference and levels of significance between each NFC level for ingroup and outgroup cooperation.

Table 5

Means and levels of significance for NFC levels on the dependent variables.

DV	NFC		Mean diff.	95% CI	<i>p</i>
Cooperation with the ingroup	1. Low	2	.052	.017, .088	.001
		3	.072	.036, .108	.000
	2. Medium	1	-.052	-.088, -.017	.001
		3	.020	-.016, .056	.551
	3. High	1	-.072	-.108, -.036	.000
		2	-.020	-.056, .016	.551
Cooperation with the outgroup	1. Low	2	.059	.020, .098	.001
		3	.069	.030, .109	.000
	2. Medium	1	-.059	-.098, -.120	.001
		3	.011	-.029, .050	1.000
	3. High	1	-.069	-.109, -.030	.000
		2	-.011	-.050, .029	1.000

Figure 5 and Figure 6 show the means of cooperation with the ingroup and outgroup, respectively, as a function of NFC and the Uncertainty Treatment, controlling for Self-investment and Individualizing Foundations.

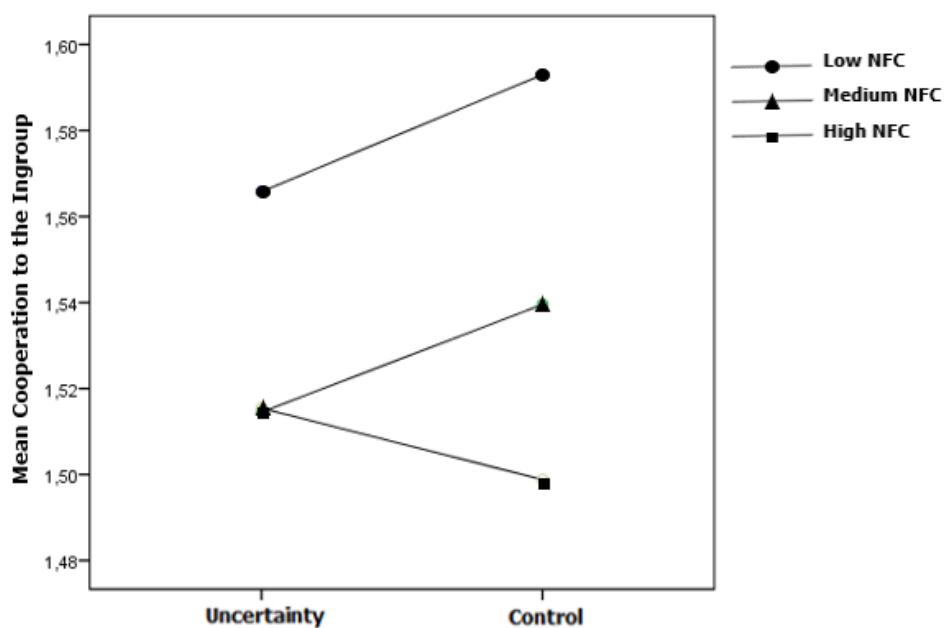


Figure 5. Means of cooperation to the ingroup as a function of NFC and the Uncertainty Saliency Treatment.

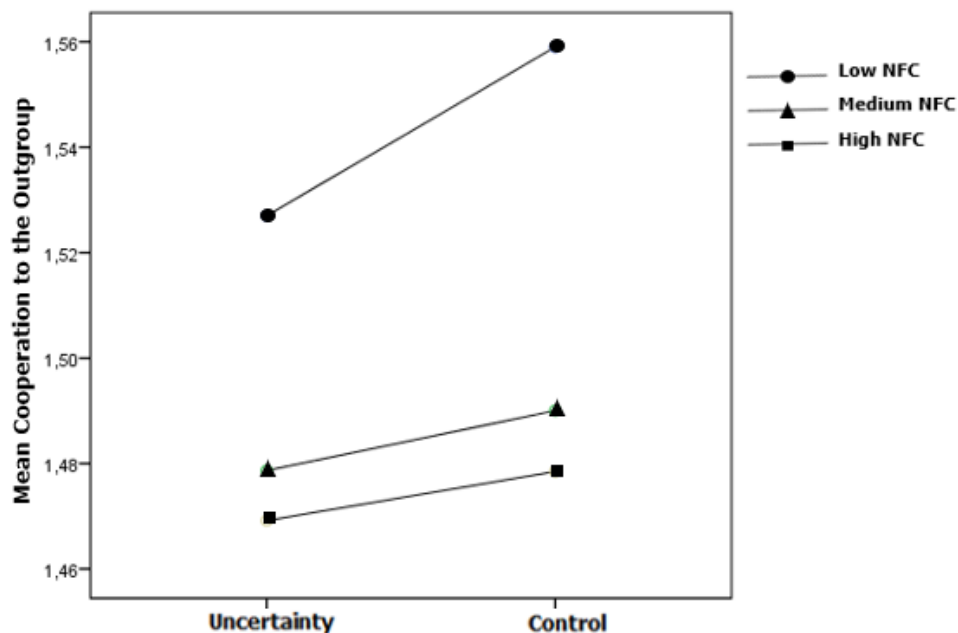


Figure 6. Means of cooperation to the outgroup as a function of NFC and the Uncertainty Saliency Treatment.

Although it looks like there is a slight difference in the cooperation means in the Uncertainty and the Control conditions, these differences were not found to be significant. However, as can be seen in Figure 6 and Figure 7, the levels of cooperation to both ingroup and outgroup, depend on the levels of NFC, meaning that people with low NFC cooperate more regardless of group membership (H2.1), and that people with high NFC do not prioritize cooperating with their ingroup more than people with low NFC (H2.2).

Discussion

We started the work here presented with a quote from J.R.R. Tolkien's famous novel "*The Lord of The Rings*" (1966) to illustrate the research problem. To give it some context, the character Éomer, who had been experiencing a series of unusual events, most of which defy his previous beliefs, expresses his concerns about those uncertain times, and asks another

character, *Aragorn*, how a man can judge what to do in times like this. Interestingly, *Aragorn* replies that a man must judge what to do “as he ever has judged” (pp. 427), implying that no matter how strange times get, one should maintain their choices and courses of action.

Although that quote goes against previous literature regarding behavior under uncertainty, it turned out to be true in this study.

Several studies (Brizi et al., 2016; Orehek et al., 2010; Sleesman & Colon, 2017; Smith, 2015) indicated that experiencing feelings brought up by a state of uncertainty could lead people to behave more negatively to people of their outgroup and more positively to people in their ingroup. However, although it looks like there is a tendency for individuals to cooperate more in the control condition, we did not find that effect to be significant. Nonetheless, one point to be considered is that most of these studies, except for Smith (2015), were conducted with WEIRD samples, and there is evidence suggesting that WEIRD societies behave differently when it comes to cooperation, for example by taking revenge or shaming those who do not cooperate, while other societies see that as an anti-social attack (Enke, 2019). For that reason, further research could benefit from the analysis of these phenomena in non-WEIRD samples.

In addition, we have reasons to believe this lack of effect was due to the Control group also presenting aversive feelings, when we expected that to happen only in the experimental condition. Van den Bos’ (2001) task was designed to have one condition reminding participants of their uncertainties and one condition that did not remind them about their uncertainties, but in this sample, we observed that a lot of participants associated “watching TV” to watching the news. Considering the data was collected during the coronavirus pandemic and analyzing the number of people who expressed negative feelings, we believe watching the news evoked feelings of fear and uncertainty regarding the disease, even if the manipulation check analysis did not point out significant differences between people who

wrote down those feelings, and people who did not. In addition, the task was constructed 20 years before this study, so we believe “watching tv” does not constitute a neutral or entertaining activity for the sample’s mean age anymore. Further studies could adapt the task to represent more the current generation’s interests, such as watching *Netflix*, or a TV show they like.

On the other hand, results indicated a significant effect of NFC on cooperation with both ingroup and outgroup, meaning that people with lower levels of NFC tended to cooperate more with their ingroup and outgroup than people with higher levels. This may happen because people with high NFC have difficulties when taking the perspective of others (Nelson et al., 2003), which can make them more competitive (Golec & Federico, 2004). So, the lower the individual’s need for answers on any given topic, compared to confusion and ambiguity (Kruglanski, 1990), the easier it is for them to be empathetic and cooperate with others.

Although the result for people with high NFC to cooperate less with their outgroup was expected, due to previous studying linking high NFC to negative attitudes towards outgroups (Burke et al., 2017, Dhont et al., 2013; Orehek et al., 2010; Roets & Van Hiel, 2011; Van Hiel et al, 2004), we also expected them to cooperate more with their ingroup than people with low NFC, as a result of the group-centric attitudes that act as underlying mechanisms (Dugas et al., 2018), since the ingroup constitutes a source of social reality, but that was not the case.

Considering that, Kruglanski et al. (2002) argue that people with high NFC are more oriented towards ingroups perceived as sources of consensual realities, and so, diverse groups, with individuals differing on several characteristics such as viewpoints, attitudes, and opinions, might not be as appealing. In this study, we used the participants’ university as their ingroup, a place that might not be perceived as homogenous, since UnB has over 35,000

students, and UniCeub has 17,000, so that may help explain why people with high NFC did not cooperate more with their ingroup.

We found self-investment to be a significant covariate of the relationship between NFC and cooperation with the outgroup, meaning the more people felt positive towards their ingroup, had a sense of link to it and felt the importance of belonging to that group (Souza et al., 2019), the less they cooperated with their outgroup, which gives more evidence to how social identity influences prosocial behavior (Penner et al., 2005). However, we did not include the facet ingroup homogeneity in our analyses.

Kruglanski et al. (2002) state that negative feelings towards outgroups are more likely to happen when the contrast to the ingroup is stronger and we did not evaluate to which extent participants felt the outgroup to be a different and contrasted group. Since we evaluated universities from the same state (Federal District), we believe further studies could benefit from exploring different groups of contrast.

Since there is not much literature regarding NFC and prosocial behavior, our hypotheses were mostly based on NFC's relationship with prejudice and outgroup derogation, so in the same way people with low NFC are less likely to portray negative attitudes towards several outgroups, in this study we found them to be more likely to behave more cooperatively with ingroups and outgroups. In a previous study (Reis & Pilati, 2020), we hypothesized this negative relationship between NFC and prosociality and found no significant results. We argued that happened due to prosociality being a construct highly subject to social desirability, and so, should be tested empirically, and the present study gave evidence for that.

Then, considering the evidence in the literature suggests NFC is linked to the binding foundations, due to the appreciation of clear guidelines, rules, and structure (Baldner & Pierro, 2019; De Cristofaro et al., 2019; Federico et al., 2016), and that Nilsson et al. (2016)

has found that individuals who value the binding foundations are more likely to foster donation to ingroup-focused causes, we expected the binding foundations to be a significant covariate in the relationship between NFC and cooperation with the ingroup, but the results showed no significant correlations for both cooperation with the ingroup and outgroup. However, our sample consisted mostly of left and center-left people regarding politics, and studies show that liberals tend to consistently endorse more of the individualizing foundations, in comparison to binding (Graham et al., 2009), and that could have affected the results. We believe further research could benefit from evaluating cooperation to more contrasted groups, while doing so in a more diverse sample.

Although the bivariate correlations showed no significant relationship between the Individualizing Foundations and Ingroup Cooperation, the bivariate correlations table (Table 3) indicated that the relationship between the Individualizing Foundations and Outgroup Cooperation is positive, so in junction with the MANCOVA results, it may indicate that the more people value the rights of the autonomous individual, the more they cooperate with their ingroup and outgroup, being that effect bigger for the outgroup.

This finding regarding the individualizing foundations is in consonance with some studies. Nilsson et al. (2016) encountered that the individualizing foundations foster donations to outgroup and ingroup causes; Hadarics and Kende (2018) found a positive relationship with positive intentions towards an outgroup, more specifically Muslim people; Süssenbach et al. (2019) found that people who value individualizing foundations over binding are more likely to engage in helping; and Clark et al. (2017) found evidence that during economic games, the individualizing foundations are linked to more cooperation as well.

This relationship might be explained by the individualizing foundations' focus on caring for other individuals, kindness, and compassion (the harm/care facet), and its valorization issues regarding injustice, the unfair treatment of others, reciprocity, and equality

(the fairness/reciprocity facet) (Haidt & Joseph, 2007), and so, the general concern for other people's wellbeing may foster prosocial behavior tendencies, regardless of group membership.

Taken together, we believe the results here presented can contribute to answering some of the questions mentioned initially, such as "Why do some people help while others do not?" and "What personal characteristics can lead to prosocial behavior?", as well as help understand prosocial behavior as a product of epistemic motivation, that is, Need For Closure, which is commonly linked to more negative attitudes. We also believe this work can help further understand how people's innate moral intuitions guide their attitudes towards other people.

Although the answer to this study's title ("Does Uncertainty impact how we act?"), in this context, is "it does not", we have found evidence that how people deal with that uncertainty, that is, their motivation to process and judge new and conflicting information, does impact. In sum, when controlling for the individualizing foundations and self-investment, the higher people's motivation to avoid ambiguity and their discomfort with cognitive uncertainty, the less they are likely to cooperate.

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Appendix 1

Questionário de Fundamentos Morais

Quando você decide se algo é certo ou errado, até que ponto as seguintes considerações são relevantes para o seu raciocínio?

Por favor, considere:

1 – Não é nada relevante (esta consideração não tem nada a ver com os meus julgamentos sobre o que é certo ou errado); e

6 – Extremamente relevante (este é um dos fatores mais importantes quando eu julgo certo ou errado)

1. Se alguém teve ou não seus direitos negados.
2. Se alguém agiu ou não de forma injusta.
3. Se alguém foi cruel ou não.
4. Se algumas pessoas foram ou não tratadas diferentemente das outras.
5. Se alguém sofreu ou não emocionalmente.
6. Se alguém mostrou ou não falta de lealdade.
7. Se alguém cuidou ou não de alguém fraco ou vulnerável.
8. Se alguém fez ou não alguma coisa para trair o seu grupo.
9. Se alguém agiu ou não de um jeito que Deus aprovaria.
10. Se alguém violou ou não padrões de pureza e decência.
11. Se as ações de alguém mostraram ou não amor por seu país.
12. Se alguém se adequou ou não às tradições da sociedade.
13. Se alguém fez ou não algo nojento.
14. Se alguém mostrou falta de respeito por autoridade.
15. Se alguma ação causou ou não caos ou desordem.

Por favor, leia as seguintes frases e indique a sua concordância ou discordância:

Considere:

- 1 – Discordo fortemente; e

6 – Concordo fortemente

16. A justiça é o requisito mais importante para uma sociedade.
17. Quando o governo cria leis, o princípio fundamental deve ser garantir que todos sejam tratados de forma justa.
18. Compaixão por aqueles que estão sofrendo é a virtude mais importante.
19. Uma das piores coisas que alguém poderia fazer é ferir um animal indefeso.
20. As pessoas não deveriam fazer coisas nojentas, mesmo que ninguém seja prejudicado.
21. A castidade é uma virtude importante e valiosa.
22. Se eu fosse um soldado e discordasse do meu comandante, eu o obedeceria de qualquer forma, pois esse é o meu dever.
23. Eu julgaria alguns atos como errados, alegando que não são naturais.
24. As pessoas deveriam ser leais a seus familiares, mesmo que tenham feito algo errado.
25. Homens e mulheres têm papéis diferentes para desempenhar na sociedade.
26. Nunca pode ser correto matar um ser humano.
27. Eu tenho orgulho da história do meu país.
28. É mais importante trabalhar em equipe do que agir individualmente.
29. Respeito por autoridade é algo que todas as crianças precisam aprender.
30. Eu acho que é moralmente errado crianças ricas herdarem muito dinheiro enquanto crianças pobres não herdam nada.

Appendix 2

Participants' choice options for the Dictator's Game. The six rounds repeated one time, for the other university, forming a total of 12 rounds.

Round	Player	Options	
		B1	B2
1.	A	7	4
	B	3	4
2.	A	0	8
	B	0	2
3.	A	4	7
	B	4	4
4.	A	6	2
	B	6	7
5.	A	0	4
	B	8	4
6	A	2	1
	B	2	2

Appendix 3

Escala Breve de Need For Closure

Leia as seguintes afirmações e decida o quanto você concorda com cada uma, de acordo com suas crenças e experiências. Por favor responda de acordo com a escala a seguir:

1 – Discordo completamente

2- Discordo moderadamente

3- Discordo levemente

4- Concordo levemente

5- Concordo moderadamente

6- Concordo completamente

1. Eu não gosto de situações de incerteza.

2. Eu não gosto de perguntas que possam ser respondidas de muitas maneiras diferentes.

3. Eu acho que uma vida bem ordenada, com horários regulados, combina com o meu temperamento.

4. Sinto-me desconfortável quando não entendo o motivo pelo qual um evento ocorreu na minha vida.

5. Sinto-me irritado(a) quando uma pessoa discorda do que todos os outros em um grupo acreditam.

6. Não gosto de entrar em uma situação sem saber o que eu posso esperar dela.

7. Quando eu tomo uma decisão, sinto-me aliviado(a).

8. Quando me deparo com um problema, fico morrendo de vontade de achar uma solução rapidamente.

9. Eu ficaria impaciente e irritado(a) com rapidez se eu não encontrasse a solução para um problema imediatamente.

10. Eu não gosto de estar com pessoas que são capazes de atos inesperados.
11. Eu não gosto quando a afirmação de alguém pode significar várias coisas diferentes.
12. Considero que estabelecer uma rotina consistente me permite aproveitar mais a vida.
13. Eu gosto de ter um estilo de vida claro e estruturado.
14. Eu geralmente não consulto muitas opiniões diferentes antes de formar a minha própria opinião.
15. Eu não gosto de situações imprevisíveis.

Appendix 4

Escala multidimensional de identificação com o endogrupo

1. Eu acho que as pessoas do [UniCEUB/UnB] têm muito do que se orgulhar.
2. É muito bom ser do [UniCEUB/UnB].
3. Eu me sinto bem em ser do [UniCEUB/UnB].
4. Eu sou feliz por ser do [UniCEUB/UnB].
5. Muitas vezes eu paro para pensar no fato de que sou uma pessoa do [UniCEUB/UnB].
6. Ser do [UniCEUB/UnB] é uma parte importante de como eu me defino.
7. Ser do [UniCEUB/UnB] é uma parte importante de como eu me vejo.
8. Eu sinto que tenho um vínculo com as pessoas do [UniCEUB/UnB].
9. Eu sinto que faço parte da comunidade de pessoas do [UniCEUB/UnB].
10. Eu me sinto comprometido com as pessoas do [UniCEUB/UnB].
11. Eu tenho muito em comum com a típica pessoa do [UniCEUB/UnB].
12. Eu sou parecido com a típica pessoa do [UniCEUB/UnB].
13. As pessoas do [UniCEUB/UnB] têm muitas características em comum entre si.
14. As pessoas do [UniCEUB/UnB] são muito parecidas umas com as outras.