THE ILLUSION OF EXPLANATORY DEPTH IN MORAL VERSUS NON-MORAL ISSUES

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DECLARATION OF ORIGINALITY

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ABSTRACT

The Illusion of Explanatory Depth in Moral Versus Non-Moral Issues

Fernbach, Rogers, Fox, and Sloman (2013) found that extremity of people's political attitudes can be reduced by confronting them with their lack of understanding of political issues. Considering the crucial implications of these findings, we conducted two replications of Fernbach et al.'s experiment 2 (study 1: $N = 241$; study 2: $N = 250$). We also differentiated issues based on their morality as moral and non-moral in a pilot study. In these studies, participants were randomly assigned to either mechanistic explanation or reason (control) conditions. In both conditions, participants provided their understanding and position on two moral and two non-moral issues. Then, in the mechanistic explanation condition, participants explained four policies' effects (two moral and two non-moral) in a step-by-step manner with causal relations. In contrast, in the reasons condition, they generated reasons for their positions. After providing explanations, participants were asked to rate both understanding and attitudes on the policies. We expected that for non-moral issues, asking for a mechanistic explanation would lead to a greater decrease in reported understanding and attitude extremity, compared to asking for reasons in favor of or against the issue. We also expected that in mechanistic conditions, reported understanding and attitude extremity would decrease more for non-moral issues than moral issues. Our results did not support any of these. Yet, consistent with our expectations, for moral issues, a decrease in reported understanding and attitude extremity was not different between two conditions.

ÖZET

Ahlaki Olan ve Olmayan Konularda Açıklayıcı Derinlik Illüzyonu

Fernbach, Rogers, Fox ve Sloman (2013) insanların politik tutumlarının aşırılığının, politik meseleleri anlamadaki eksiklikleri ile yüzleşerek azaltılabileceğini bulmuşlardır. Bu bulguların önemli çıkarımlarını göz önünde bulundurarak, Fernbach ve arkadaşlarının 2. deneyinin iki tekrarını gerçekleştirdik (çalışma 1: N = 241; çalışma 2: N = 250). Ayrıca bir pilot çalışmada konuları ahlaki ve ahlaki olmayan politikalar olarak ayırdık. Bu çalışmalarda, katılımcılar ya mekanik açıklama ya da sebep oluşturma (kontrol) koşullarına rastgele atanmıştır. Her iki durumda da katılımcılar iki ahlaki ve iki ahlaki olmayan politikadaki anlayışlarını ve tutumlarını belirtmişlerdir. Daha sonra mekanik açıklama koşulunda, katılımcılar dört politikanın etkilerini (iki ahlaki ve iki ahlaki olmayan) nedensel ilişkilere yer vererek adım adım açıkladı. Buna karşılık, nedenler koşulunda, görüşleri için sebeplerini sıraladılar. Açıklamalar yapıldıktan sonra, katılımcılardan politikalara dair hem anlayışlarını hem de tutumlarını derecelendirmeleri istendi. Ahlaki olmayan meseleler için, mekanik bir açıklama istemenin, politikadaki görüşlerinin sebeplerini sormaya kıyasla, bildirilen anlayış ve tutum aşırılığında daha büyük bir azalmaya yol açacağını umduk. Ayrıca mekanik koşullarda, bildirilen anlayış ve tutum aşırılığının ahlaki sorunlardan çok ahlaki olmayan konularda azalmasını bekliyorduk. Sonuçlarımız bunların hiçbirini desteklemedi. Ancak beklentilerimizle uyumlu olarak, ahlaki konularda, bildirilen anlayış ve tutum aşırılığında bir azalma, iki koşul arasında farklı değildi.

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CHAPTER 1

INTRODUCTION

Everyone has their theories about how the world works. However, they rarely explain these theories because they can reasonably live in the world without having to do so. Thus, people generally assume they understand, and therefore, can explain the phenomena and entities they observe in their surroundings. Such a stance would be wrong in two aspects: generally speaking, people's knowledge of most phenomena is not very deep, and their understanding of the properties of the knowledge itself is flawed and misleading. Rozenblit and Keil (2002) argued that this limited knowledge and misleading intuitive epistemology work together and create an illusion of explanatory depth (IOED).

More specifically, this illusion happens because people feel that they understand the world more than they actually do. In reality, however, people's understanding and knowledge of the world is limited. Thus, their confidence in their understanding of complex causal relations (which are responsible for many phenomena they observe) is unfounded. One may imagine that asking people to mechanistically explain how these relations work in a step by step manner would make them face their ignorance and thereby decrease their perceived level of understanding and their overconfidence. Rozenblit and Keil (2002) suggested that overconfidence and IOED are related yet different from each other. Specifically, while people can be overconfident about their knowledge and skills in general, explanatory knowledge— knowledge involving complex causal patterns—is particularly susceptible to this illusion of understanding. Accordingly, they offered several explanatory knowledge features converging to strengthen the illusion. They specified that, even though the following features may

exist in other knowledge types, such as facts, their impact is more prominent with explanations, resulting in a more powerful illusion of knowing.

First, people confuse what is in their heads with what is outside. They assume that the world is represented in detail in their minds, whereas they retrieve a fraction of those representations when they need them from their environment. A second factor involves confusion between higher and lower levels of analysis. For example, in explaining how a car works, one can focus on subcomponents such as brakes and its subcomponents such as pistons and brake pads. This understanding from brakes to its subcomponents may give the illusion that one understands the remaining lower-level mechanisms. Third, it is also difficult to know what an explanation will look like until one provides it. Thus, a comparison standard that allows for the judgment of sufficiency is typically lacking for explanations of causal mechanisms. In contrast, when the knowledge is factual, such as the capital of Brazil; there are no layers or ambiguity regarding correctness or sufficiency of the answer. A fourth feature stems from the rarity of full explanations in daily life. While we often retrieve facts and can thus evaluate our knowledge; we rarely have to give in-depth explanations of mechanisms. Specifically, we explain until a certain point and then stop since often there are no follow up questions. Therefore, it is more difficult to check into past performances and assess the level of our knowledge regarding explanations (versus facts).

1.1 Early findings

Initial supportive evidence for these ideas were provided in 12 studies by Rozenblit and Keil (2002). First, participants learned to use a seven-point scale to rate their knowledge. They were then asked to rate how well they know how various devices

work (e.g., how does a cylinder lock open with a key). After rating their understanding level for several items, the participants were then asked to write a detailed, step-by-step causal explanation of how these devices work. Next, they were asked to re-rate their knowledge. The participants were then asked to answer diagnostic questions that experts consider critical for understanding the mechanisms (e.g., how does one pick a cylinder lock), after which they rated their knowledge for a third time. Finally, they were presented with an expert explanation and were asked to rate their initial knowledge once more in light of that expert explanation.

In the initial studies, Rozenblit and Keil (2002) investigated the illusion with different devices and samples. The findings converged: after each explanation, the participants reduced their reported understanding[1]. Then, they checked if IOED was observable across different knowledge domains. They claimed that IOED would be more robust in domains that involve complicated causal relationships compared to domains that involve more concrete facts and procedures. Consistent with their assumptions, the IOED differed between knowledge types: people overestimated their knowledge of human-made devices (e.g., toilet) and natural processes (e.g., earthquake). In contrast, they were better at assessing their understanding of semantic concepts such as facts (e.g., the capital of Brazil), narratives (e.g., the plot of a movie), and procedures (e.g., how to bake chocolate chip cookies). Mills and Keil (2004) observed this specificity of the illusion (i.e., moderation by domain) for explanations in children as well. They asked children to re-rate their understanding after asking children to explain devices and procedures. The children showed the IOED for devices and recognized their lack of knowledge, while the illusion did not occur for procedures.

[1] Rozenblit and Keil used knowledge and understanding interchangeably throughout their paper.

Rozenblit and Keil (2002) also tried to explore the causes behind the illusion by ruling out certain factors such as social desirability of different types of knowledge. They asked participants to rate how embarrassed they thought they would be if they had to admit not having a good understanding of an item. As a result, participants' rated knowledge for devices was the most overestimated and the least desirable. On the other hand, movies produced the least overconfidence and the highest desirability ratings. The authors concluded that social desirability was not a contributing factor because of this opposite pattern.

Rozenblit and Keil (2002) also examined two possible explanations for a stronger illusion on devices: familiarity with an item and complexity of an item (e.g., the total number of parts). Additionally, they suggested that confusing higher and lower levels of understanding and confusion of environmental support with representation may lead to a prominent illusion for devices with easily visualized and labeled parts. A device with visible parts and operates on mechanical rather than electrical principles (e.g., a bicycle) is easier to examine than a device packed with electrical circuit boards, leading people to confuse environmental support with one's mental representation. To assess this, they asked participants to rate the devices on the following dimensions, visibility of its parts, the number of mechanical versus electrical components. They also asked the number of known part names of the devices (then computed ratio of known to total parts) to test if subjects confused knowing labels with understanding the mechanism. Consequently, all rated dimensions were related to the initial confidence, and visibility of a device's parts was the most important factor explaining the overconfidence. Thus, they suggested that mistaking environmental support with representation may be the most crucial determinant of the IOED.

1.2 Other explanations for the IOED

Subsequent studies used a simpler procedure by having people rate their understanding only once after a mechanical explanation. On the other hand, Lawson (2006) used another method to test the IOED: bicycle drawings with missing parts, such as brakes and chains, presented to the participants. The bicycle was chosen for two reasons discussed by Rozenblit and Keil (2002) in the original study. First, visible parts of the bike would produce a more significant overestimation of understanding than electrical objects with hidden features. People may confuse seeing the mechanisms of an item with understanding how the object works. Second, bicycles are familiar objects, leading to increased the IOED. The participants were asked to fill in the missing pieces of the bicycle drawings. Almost half of the participants were unable to give the correct answers. Then, they were also asked to choose from four bicycle drawings with one correct answer. In both cases, the participants made a similar number of mistakes. Expert cyclists did not do any better than non-expert participants. Lawson concluded that people mistake their familiarity with bicycles for a high-level understanding of them.

Alter, Oppenheimer, and Zemla (2010) suggested a different explanation for why the IOED happens. They claimed that the IOED occurs because people adopt an abstract construal style to assess their understanding of concrete concepts. For instance, people can understand a zipper at an abstract level: its function, its parts. Nevertheless, this understanding is not enough to explain how a zipper works more concretely. In contrast, people either do or do not know what Nigeria's capital is; construal level is irrelevant for such questions. In six experiments, they asked participants to rate their knowledge of a phenomenon and then provide a mechanistic explanation. People who adopted a concrete construal style either naturally or

through manipulation overestimated their knowledge less than people who adopted an abstract style.

Fernbach and colleagues (2013) suggested intuitive thinking may be a contributing factor for the IOED. Intuitive thinkers who do not reflect on their first responses may fail to recognize their lack of understanding of issues in contrast to reflective thinkers who reflect on their initial reactions. In three studies, they supported their assertion: intuitive thinkers preferred less detailed explanations when evaluating products. They rated their understanding of products higher before providing explanations for them, which they lowered after the explanation. In contrast, reflective thinkers preferred products with detailed explanations, and their understanding score did not differ before and after their explanation. Thus, they already had a good sense of their understanding[2]. Intuitive participants were also less willing to pay for the product after their illusion shattered. In contrast, reflective thinkers either did not change or increase their willingness to pay after providing an explanation, which did not shatter an illusion.

One possible explanation may be that reflective thinkers crave details; thus, their threshold for (feeling of) understanding is higher. Therefore, their initial knowledge may be at a similar level to their post-explanation understanding. Similarly, as Fernbach and Sloman (2019) suggested, reflective thinkers may have already reflected on their knowledge; thus, their understanding is not an illusion to be shattered.

[2] A non-significant difference between prior and after ratings of understanding means the absence of the illusion. However, a consistent rating of reported knowledge does not mean participants did not experience the IOED. Thus, it is hard to argue that some people had a good sense of their understanding. It is also likely that they were reluctant to change their reported understanding after the manipulation.

1.3 The effect of expertise on the IOED

In their study, Fisher and Keil (2015) investigated the effect of expertise on the IOED. They claimed that expertise on a subject could be a curse or blessing for overconfidence, depending on the nature of such expertise. For instance, passive expertise means knowledge coming from exposure because of one's position in culture, such as when a woman gains expertise on womanhood or gender issues by just being a woman. Formal expertise, on the other hand, arises from a comprehensive study of a particular topic, such as expertise gained in the domain of history by obtaining a bachelor's degree in that field. Fisher and Keil claimed that people with lower levels of education would show the IOED for topics in which they had only passive expertise. In contrast, highly educated people would overestimate their knowledge in formal expertise areas more than unfamiliar or passive expertise areas. All these assumptions were supported in 3 studies. However, these results may not reflect the influence of expertise per se. Specifically, university education may provide tools to assess oneself accurately in domains where one does not have expertise. Alternatively, people with a university degree may have some common characteristics that influence their self-assessment of explanatory abilities, such as cognitive ability or analytic thinking. In fact, in Fisher and Keil's studies, higher education was associated with more accurate self-assessment overall.

There is a second way in which Fisher and Keil's (2015) results may be driven by something other than expertise[3]. The participants may have felt pressure to prove their knowledge in their area of study because they should know more about it than the average person does. Therefore, what Fisher and Keil observed may not be

[3] Fisher and Keil defined expertise based on participants' college major, yet that does not mean the participants were experts in these study areas. In fact, some participants may have been bad at their courses, thus, may not have obtained the expertise the study required. Additionally, a person with a Ph.D. degree can be considered more of an expert than a person with a BA.

the effect of expertise on the IOED/overconfidence but the effect of self-imposed pressure to appear knowledgeable. Gaviria, Corredor, and Zuluaga-Rendon (2017) further investigated this by suggesting an effect of social desirability on the IOED. They claimed that people might overestimate their ability to explain topics related to their area of expertise because of their belief about how much they should know specific issues. To check their assumption, they did not include expertise; instead, they used the same procedure as Rozenblit and Keil (2002). They asked students to rate how embarrassed they would feel if they did not have a good understanding of three domains: historical, economic, and devices. Consistent with their idea, people overestimated and then decreased their understanding of socially desirable topics compared to topics low in social desirability.

1.4 The effect of a community of knowledge

Sloman and Rabb (2016) proposed a community of knowledge hypothesis: people confuse their knowledge with other people's knowledge. In four experiments, they tested this hypothesis. People rated their understanding of new natural phenomena as higher when they were told that scientists understood them than they were told that scientists did not understand them. However, this effect disappeared when they were told that participants could not access the scientists' explanations even though the scientists understood the phenomena.

Similarly, Zeveney and Marsh (2016) suggested that believing there are outside sources who know a domain may lead people to think they share some of this knowledge with them. In other words, people may confuse their understanding with what others understand. To support their suggestion, they asked people to rate their understanding of devices and mental disorders. Consequently, people demonstrated

IOED for mental disorders and devices, yet the effect was larger for the latter. Specifically, people rated their understanding of devices higher than for mental disorders, but their rated knowledge for both was similar after the explanation. Zeveney and Marsh suggested that believing that society has a limited understanding of mental disorders contributed to a relatively more realistic assessment of the knowledge, but it did not eliminate the IOED. Zeveney and Marsh also investigated if an attempt to explain is necessary to shatter the illusion or if thinking about one's knowledge is sufficient to reveal the illusion for disorders. To study that, they asked one group of participants to explain the disorders while asking others to list the disorders' characteristics. Both groups reported high understanding before the experimental condition but explaining led to more shattering of the illusion than the listing.

1.5 Extreme political attitudes

It has been suggested that attitude extremity can lead to group polarization, in which a group's opinions about a given domain becomes more extreme than each members' individual opinion (Binder et al., 2009). Similarly, Westfall et al. (2015) found that the extremity of people's partisan attitudes is associated with perceived polarization because people project the extremity of their attitudes onto others. This perceived polarization may further divide people, as it leads people to be politically active. For example, people with extreme attitudes may feel a need to support their own political opinions and groups, and take defensive action to combat the opposing group (Riek, Mania, & Gaertner, 2006). Consequently, extreme attitudes may turn into extremist political attitudes. Extremist political attitudes distort peoples' judgments and consequently cause them to make decisions that may be harmful to themselves or

others. For instance, previous studies suggested that political extremists have a more simplistic perspective of the world than moderates (Lammers, Koch, Conway, & Brandt, 2017). Both left-ring and right-wing extremists are more confident in their beliefs and knowledge even though they do not know more than the moderates (Brandt, Evans, & Crawford, 2015; Toner, Leary, Asher, & Jongman- Sereno, 2013; van Prooijen, Krouwel, & Emmer, 2018). These judgment errors may seem innocent and harmless at the individual level, but they may damage society when aggregated. For example, compared to moderates, political extremists are more intolerant of out-groups (van Prooijen & Krouwel, 2017), more likely to feel superior about their beliefs (Toner, Leary, Asher, & Jongman-Sereno, 2013), and avoid different opinions (Frimer, Skitka, & Motyl, 2017). Thus, it is important for social psychologists to find methods to reduce the extremity of people's attitudes.

1.6 Does the IOED support political extremism?

Fernbach and colleagues (2013) were interested in the impact of the IOED on extreme attitudes. More specifically, they claimed that IOED might support extreme attitudes on political issues. People may have extreme attitudes on political issues (partly) because they think they understand these issues more than they do. Thus, forcing them to face a gap in their knowledge may reduce their extreme attitudes and lead to moderation in both self-perceived level of understanding and attitudes. In three studies, they asked participants to rate their understanding and attitudes on six policies (e.g., establishing a cap-and-trade system for carbon emissions). Then, they asked them to either provide mechanistic explanations about the policy or their reasons for supporting/objecting to the policy. Consistent with their assumption, asking participants to explain the mechanisms underlying the issues led to a

reduction in their estimated understanding and their extreme attitudes about the issues.

If Fernbach et al.'s (2013) results are solid, their implications are highly important since they point to a feasible tool to decrease political extremism. However, a replication study by Crawford and Fruscio (2021) did not support the findings of the original study. Crawford and Fruscio found that even though mechanistic explanation led to a decrease in reported understanding of the policies, it did not lead to a moderation in extreme positions in these policies[4].

1.7 Opinions based on sacred values

In their book, The Knowledge Illusion, Sloman and Fernbach (2018) claimed that people will likely hold on to their extreme positions on political issues when their views are based on sacred values, even if they are faced with their lack of understanding on these issues. For instance, attitudes about assisted suicide are based mostly on sacred values in the USA: Some see it as a basic right to die without pain, and some see it as murder. In a study mentioned in their book[5], the authors report that they did not find any effect of mechanistic explanation on people's extreme attitudes regarding abortion and assisted suicide—two highly sacred issues in the

[4] In addition to these mixed results on the effect of the IOED on extreme political opinions, Fernbach and colleagues (2019) showed that extreme opponents of genetically modified foods know the least, but they think they know the most. This is consistent with prior research asserting that an illusion of understanding may support extreme attitudes. However, Fernbach et al. did not ask participants to explain genetically modified (GM) foods; thus, the participants were not given a chance to realize the gap in their knowledge.

[5] We were unable to find a reference for any manuscript containing details of this study. Thus, we contacted Steven Sloman, one of the authors of the original study by Fernbach et al. (2013). He kindly informed us about their results, which were mixed: in their first study, shattering the illusion led to decrease in reported understanding and extremity of attitudes for consequential issues, but not for value based issues. In their second study, reported understanding decreased for value based issues, but not for consequential issues. In their final study, people's attitudes actually got more extreme for consequential issues.

United States. When combined with their earlier studies in which relatively non-sacred issues were used (Fernbach et al., 2013), this suggests a conceptual interaction: The sacredness of the domain (sacred vs. non-sacred) moderates the effect of a mechanistic explanation on attitude extremity.

The lack of an effect for sacred issues can be explained by the social intuitionist model (Haidt, 2001). This model suggests that intuitive processes generate moral judgments and the role of reasoning is mostly to provide a post hoc justification for these judgments. Since people use their reasoning to rationalize their attitudes on moral issues and moral convictions are resistant to change (Aramovich, Lytle, & Skitka, 2012; Skitka, Bauman, & Lytle, 2009; Wisneski, Lytle, & Skitka, 2009; see also Colombo, Bucher, & Inbar, 2016), people may not change their attitudes for moral issues even when they face their ignorance about them. This would also be consistent with Sloman and Fernbach's (2018) claim regarding the moderating role of sacredness.

1.8 The present research

We conducted two studies. We had several aims in these studies: First, we wanted to assess whether Fernbach et al.'s (2013) findings would replicate in a Turkish context, at least for non-sacred political issues (we will prefer the term "moral" instead of "sacred" from here on). We expected Fernbach et al.'s results to replicate at least for the non-moral issues since they showed an effect on political issues of non-moral type, i.e., their study includes issues such as "imposing unilateral sanctions on Iran for its nuclear program" and "raising the retirement age for Social Security," but it does not include moral issues such as abortion, assisted suicide or LGBT rights. Second, we wanted to contribute to understanding boundary conditions of the effect

of mechanistic explanation: does it generalize to non-moral political issues? For this purpose, we manipulated the morality of the issues. Finally, we wanted to understand the effects of individual differences in this phenomenon. For instance, the reason why people think they know more than they do might be their tendency to think intuitively. They may not realize the gap in their knowledge until they are asked to explain these issues, which would activate analytic thinking. In contrast, analytic thinkers already reflect on these issues; thus, they are more likely to be aware of the gaps in their understanding. Consistent with this, Fernbach and Sloman (2013) found that analytic thinkers did not fall for the illusion of explanatory depth. Since there have not been many studies investigating analytic thinking with regard to IOED, our hypothesis regarding analytic thinking was exploratory. In these studies, we have the following hypotheses:

H1: For non-moral issues, asking for a mechanistic explanation would lead to a greater decrease in self-reported understanding and attitude extremity, compared to asking for reasons in favor of or against the issue.

H2: For moral issues, self-reported understanding and attitude extremity would not decrease in either condition.

H3: In the mechanistic condition, self-reported understanding and attitude extremity would decrease more for non-moral issues than moral issues.

H4: Analytic thinking would moderate the effect of mechanistic condition on decrease in self-reported understanding for both moral and non-moral issues.

1.9 Pilot study

We conducted a pilot study to choose policies that were appropriate in the Turkish context and to distinguish between moral and non-moral issues. After brainstorming

among the researchers and two undergraduate assistants, 23 issues were chosen for the pilot. We recruited our participants from the subject pool at Bogazici University's Psychology Department and aimed to reach a target of 60 participants. In the end, we reached 69 participants. Undergraduate students took part in the experiment in exchange for extra course credit.

Participants judged the issues based on eight criteria: understanding (how well do you understand this policy), support (how much do you support this policy), impact (how much does this policy impact your life), importance (how much is this policy important for you), familiarity (how familiar are you with this policy), morality (how much are your opinions about the policy based on your moral beliefs or convictions), possible outcomes (how much of your opinions about this policy are connected to your concerns about the possible outcomes of the policy), and complexity (how complicated do you think the impact of the policy is). Participants provided their answers on a 7-point response scale.

Appendix B shows the means and standard deviations from the pilot study (see Table B1 for unchosen and Table B2 for chosen policies). Participants judged the issues based on eight criteria because we did not want to ignore any dimension that may influence the results in the main experiments. Thus, we tried to choose the issues with similar ratings but took understanding and morality as the two central criteria to decide which issues to include: four issues with the lowest and four issues with the highest average morality ratings were selected to be used in the main experiments as the non-moral and moral issues, respectively (one of the most moral issues, the smoking ban, was not chosen because the standard deviation of understanding was low and mean was high, which was different from the chosen issues). The understanding level of these issues was not statistically different from

each other. Specifically, based on 69 participants' average ratings, we chose abortion ban (M = 4.96, SD = 1.54), hunting ban (M = 5.1, SD = 1.48), paternity leave (M = 4.95, SD = 1.68), and social support for Syrian refugees (M = 4.94, SD = 1.09) as moral issues. Based on their lower average ratings, we chose the decision not to change to daylight saving time (M = 2.32, SD = 2.05), decreasing primary school education age from seven to six (M = 2.82, SD = 1.95), increased interest proposed by the central bank because of the high inflation rate (M = 2.84, SD = 2.1), and government's 25% contribution to the individual pension (M = 3, SD = 2.05) as non-moral issues.

CHAPTER 2

STUDY 1

2.1 Method

2.1.1 Participants and sample size estimation

Undergraduate students studying at Bogazici University enrolled in introductory psychology courses were eligible to participate in the study. They were invited to the study via an online subject recruitment platform which provided an online link to those who were interested. The study took place entirely online[6]. In the original study by Fernbach et al. (2013; Study 2), 112 mTurk workers were randomly assigned to two conditions. The effect sizes are not reported in the study but we have calculated them to be d = .93 and .56 for the decrease in reported understanding and extremist attitudes, respectively. For a more conservative sample size estimate, we set our expected effect size lower than these estimates (to d = .4) obtained from Fernbach et al.'s study. We had three hypotheses and considering a Bonferroni correction we set alpha at .017 (.05/3) (one-tailed), and power at .80. Using the pwr package of R, we computed the required total sample of participants to be at least 220 to detect a minimum difference of d = .4 between two conditions in an independent-samples t-test. Even though one of our hypotheses requires a paired-samples t-test, we have calculated this number by considering an independent-samples t-test since it requires a higher number (the paired-samples t-test requires a total of 110 participants for power = .80 with the same parameters).

[6] Data collection took place during the pandemic, from 15 April 2020 to 29 December 2020.

As a stopping rule, we decided to collect data until the end of the summer term[7]. In the end, we reached 227 participants. Undergraduate students took part in the experiment in exchange for extra course credit. Demographics for the participants who passed the attention check are provided in the Descriptives section.

2.1.2 Materials and procedure

We aimed to replicate Study 2 in Fernbach et al. (2013) while introducing morality of the issue as a new IV. Thus, the experiment had a 2 (explanation: mechanistic vs. reasons) X 2 (issue: moral vs. non-moral) mixed design where issue was a within-subjects factor. Participation was on-line and the study was presented using PsyToolkit (Stoet, 2010, 2017). Recruited participants were randomly assigned to either mechanistic or reasons conditions. In both conditions, participants provided their position on two moral and two non-moral issues on a 7-point (1 = strongly against, 7 = strongly in favor) response scale (see Appendix C for policies). We transformed raw ratings of positions on policies into a measure of position extremity by subtracting the midpoint of the scale (4) and taking the absolute value. The resulting value corresponded to their attitude extremity on these issues. Next, a training session was conducted to teach them how to use the rating scale to evaluate their level of understanding of the policies with a 7 point (1 = vague understanding, 7 = thorough understanding) response scale (see Appendix D for Rating-Scale Instruction). In the reasons condition, participants were asked to list the reasons for their position on four policies (two moral, two non-moral). In the mechanistic condition, they were asked to give a mechanistic explanation for the policies (see

[7] At the end of the summer term, we could not reach the estimated sample size because many of the participants did not provide mechanistic explanations and we excluded them in our analyses. Thus, when we had an opportunity to collect new data we took it, and data collection continued even after the summer term.

Appendix E for instructions). Afterward, they were asked to re-rate their understanding and position on the policies. The order of policies was counterbalanced.

Participants were then presented with the Faith in Intuition Scale (FII), which was developed by Pacini and Epstein (1999) and adapted into Turkish by Türk and Artar (2014; see Appendix F), and the Cognitive Reflection Test (CRT), developed by Frederick (2005) and adapted into Turkish by Yilmaz and Saribay (2016; see Appendix G). FII includes 11 items and measures one's reliance on intuition. Three of the items were reverse-coded, and the mean score was used in the analysis. The scale had a Cronbach's alpha of .88. CRT consists of three problems that cue intuitive but wrong answers. Suppressing the intuitive answers and giving the correct answer is considered to be an indicator of analytic thinking. CRT score is calculated as the total number of correct answers where higher scores indicate stronger analytic thinking style. Cronbach's alpha for the three items was .68. Finally, basic demographic information was collected (see Appendix H).

2.2 Results

All data analyses were performed using R (R Core Team, 2019), a programming language for statistical analysis. The R code for the entire set of analyses is available as a script file (https://osf.io/67wqf/).

2.2.1 Data preparation and cleaning

To reach the desired sample size, we collected data from 337[8] participants. Participants who did not complete the whole experiment were excluded from analyses. Afterwards, 127 and 156 participants remained in the mechanistic and reasons conditions, respectively. Then, we excluded the participants who failed to provide explanations to all of the four issues: 24 participants did not write anything and 18 left at least one explanation blank (i.e., a total of 42 participants were excluded for this reason). In the end, there were 102 and 139 participants in the mechanistic and reasons conditions, respectively.

For the mechanistic condition, researchers individually rated explanations regarding their mechanistic features and then compared these ratings with each other. We decided that a participant has understood the instructions if they provided a mechanistic explanation for at least one of the four issues. 40 participants in the mechanistic condition failed to meet this criterion and were thus excluded. As a result, 201 participants were included in this analyses, including 62 and 139[9] participants in the mechanistic and reasons conditions, respectively.

We repeated all the analyses excluding the participants who failed to give a mechanistic explanation and we only reported the results from this sample when there was a difference[10][11].

[8]After the initial wave of data collection, we had an opportunity to collect new data; thus, the participant number increased.

[9] With these numbers, our power was .61. Thus, to reach the power we targeted, we collected data from psychology students at Kadir Has University. Power became .68. We report the results with new data included since there was no difference between the results.

[10] We also checked if there was a difference between these two groups regarding their analytic thinking tendencies and faith in intuition. People who provided a mechanistic explanation had significantly higher CRT scores (M = 2.5, SD = 0.93) than people who did not provide any mechanistic explanations (M = 1.92, SD = 1.04), $t(76) = -2.82$, $p = .006$. But there was no difference in the faith in intuition scores between people who did not provide a mechanistic explanation (M = 3.22, SD = 0.45) and those who did (M = 3.08, SD = 0.46), $t(85) = 1.47$, $p = .14$.

[11] Power was .82 when we did not exclude the participants who did not give any mechanistic explanations.

2.2.2 Descriptives

Of the 241 participants, 143 (59%) were female and 98 (41%) were male. Mean age was 21.45 (*SD* = 2.5). Only a small portion of the participants was either right or left extremist (*n* = 3, 1.2%) as they chose extreme points when we asked them about their political ideology, and most of the participants were leftists (*n* = 141, 58.5%). Table 1[12] and 2 show the means, standard deviations, and Pearson's correlation coefficients for the main measures, separately in each condition of the experiment.

[12] The only difference between previous data and new data (with Kadir Has University students) was the correlation between FII and reported decrease in understanding for non-moral issues in the mechanistic condition. Bogazici University students may have less faith in intuition than Kadir Has University students. This difference may lead to the mentioned change in the result.

Table 1. Correlation Table for Mechanistic Condition in Study 1
Means, standard deviations, and correlations with confidence intervals

Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*
1. reduction in reported understanding for moral issues	0.58	0.98					
2. reduction in reported understanding for non-moral issues	0.49	1.03	.23*				
			[.04, .41]				
3. reduction in attitude extremity for moral issues	0.00	0.55	.15	.26*			
			[-.05, .33]	[.07, .43]			
4. reduction in attitude extremity for non-moral issues	0.10	0.72	.05	.33**	.26**		
			[-.14, .24]	[.14, .49]	[.07, .43]		
5. CRT	2.27	1.02	.05	-.06	.10	.11	
			[-.24, .14]	[-.25, .14]	[-.10, .29]	[-.30, .09]	
6. FII	3.07	0.71	.19	.16	-.11	.17	-.14
			[-.00, .37]	[-.03, .35]	[-.30, .08]	[-.03, .35]	[-.33, .05]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$. ** indicates $p < .01$.

Table 2: Correlation Table for Reasons Condition in Study 1
Means, standard deviations, and correlations with confidence intervals

Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*
1. reduction in reported understanding for moral issues	0.06	0.96					
2. reduction in reported understanding for non-moral issues	0.26	0.99	.26**				
			[.09, .40]				
3. reduction in attitude extremity for moral issues	-0.08	0.44	.12	.08			
			[-.05, .28]	[-.08, .25]			
4. reduction in attitude extremity for non-moral issues	-0.01	0.60	.14	.14	.08		
			[-.03, .30]	[-.03, .30]	[-.09, .24]		
5. CRT	1.37	1.09	-.10	.10	.00	.05	
			[-.26, .07]	[-.07, .26]	[-.16, .17]	[-.12, .21]	
6. FII	3.24	0.81	.02	-.05	.00	.06	-.08
			[-.15, .18]	[-.22, .11]	[-.17, .17]	[-.11, .22]	[-.25, .08]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$. ** indicates $p < .01$.

2.2.3 Confirmatory analyses

Assumption checks revealed that normality was violated[13]. Thus, to examine any significant differences between the two conditions on the main dependent variables, we conducted a non-parametric test, the Wilcoxon Rank Sum independent samples t-tests on reported understanding and attitude extremity measures. Since these confirmatory tests are directional, t-tests are one-tailed. We performed Wilcoxon Rank Sum tests for our hypotheses and applied Bonferroni correction. Thus, the critical p value for each of our tests was .017 instead of 0.05 (See Table 3).

Table 3. Means and Standard Deviations for Each Condition in Study 1

	Mechanistic		Reasons		*W*	*p*	*Cohen's d*
	Mean	SD	Mean	SD			
Reduction in reported understanding for non-moral issues	0.49	1.03	0.26	0.99	7984.5	.045	0.22
Reduction in reported understanding for moral issues	0.58	0.97	0.06	0.96	9189	.0006	0.54
Reduction in attitude extremity for non-moral issues	0.09	0.72	-0.01	0.60	7633	.14	0.17
Reduction in attitude extremity for moral issues	0	0.54	-0.08	0.45	7967.5	.06	0.17

[13] Based on Shapiro's test results, normality was violated for each condition for both moral and non-moral issues and decreased reported understanding and attitude extremity.

2.2.3.1 Hypothesis 1: Reduction in reported understanding and attitude extremity for non-moral issues in mechanistic versus reasons condition

Hypothesis 1 stated that for non moral issues, reported understanding and attitude extremity would decrease more in mechanistic condition than reasons condition. Although reported understanding decreased after mechanistic explanation (see Table 4), a Wilcoxon Rank Sum independent samples t -test (one-tailed) showed no significant difference between the mean decrease for non-moral issues in understanding in mechanistic condition ($M = 0.49$, $SD = 1.03$) and reasons condition ($M = 0.26$, $SD = 0.99$), $W = 7984.5$, $p = .045$. There was no difference between mechanistic ($M = 0.09$, $SD = 0.72$) and reasons conditions ($M = -0.01$, $SD = 0.59$) in reduction in attitude extremity either, $W = 7633$, $p = .14$ (see Table 5 for detailed results). Thus, this hypothesis was not supported. Neither decrease in reported understanding nor attitude extremity differed between conditions.

Table 4. Results for Understanding in Study 1

Condition		Pre-Explanation		Post-Explanation		*V*	*p*
		M	*SD*	*M*	*SD*		
Mechanistic	Moral	5.41	1.3	4.83	1.42	2314.5	.0001
	Non-Moral	4.03	1.53	3.55	1.44	2457	.001
Reasons	Moral	5.18	1.27	5.11	1.23	2605.5	.001
	Non-Moral	3.94	1.56	3.67	1.50	3834.5	.002

Table 5. Result for Attitude Extremity in Study 1

Condition		Pre-Explanation		Post-Explanation		*V*	*p*
		M	*SD*	*M*	*SD*		
Mechanistic	Moral	1.98	0.84	1.98	0.78	722.5	.48
	Non-Moral	1.23	0.86	1.13	0.84	1213.5	.07
Reasons	Moral	2.03	0.69	2.11	0.69	518.5	.044
	Non-Moral	1.32	0.82	1.33	0.86	1422.5	.50

2.2.3.2 Hypothesis 2: Reduction in reported understanding and attitude extremity for moral issues in mechanistic versus reasons condition

Hypothesis 2 stated that for moral issues, reported understanding and attitude extremity would not be different between conditions. Surprisingly, reported understanding decreased after mechanistic explanation (see Table 4), and reported understanding was different between conditions ($W = 9189.5$, $p = .00006$)[14]. Participants in the mechanistic condition decreased their understanding ($M = 0.58$, $SD = 0.98$) more than the participants in the reasons condition ($M = 0.06$, $SD = 0.96$). Consistent with our assumption, attitude extremity was not different between conditions ($W = 5244.5$, $p = .006$). Thus, we also performed an equivalence test for a two-sample Welch's t-test, with equivalence bounds of +/- the smallest effect size of interest (SESOI) of $d = 0.4$. The TOST was not significant for reduction in attitude extremity, $t(190) = 1.26$, $p = .21$. Since results were neither statistically different

[14] The effect on attitude extremity was significant when the participants who did not give any mechanistic explanation were excluded, $W = 5244.5$, $p = .006$.

from zero nor statistically equivalent, based on Lakens et al.'s (2018) suggestion, we concluded that there is insufficient data to draw conclusions.

2.2.3.3 Hypothesis 3: Reduction in reported understanding and attitude extremity for moral versus non-moral issues in mechanistic condition

Hypothesis 3 stated that in mechanistic condition, reported understanding and attitude extremity would decrease more for non-moral issues than moral issues. Mechanistic explanation did not lead to a greater decrease in reported understanding ($V = 1331.5$, $p = .75$) nor attitude extremity ($V = 1494$, $p = .15$) for non-moral issues than it did for moral issues. Morality of the issue was irrelevant to the effect of mechanistic explanation (See Figure 1 and 2 for all comparisons).

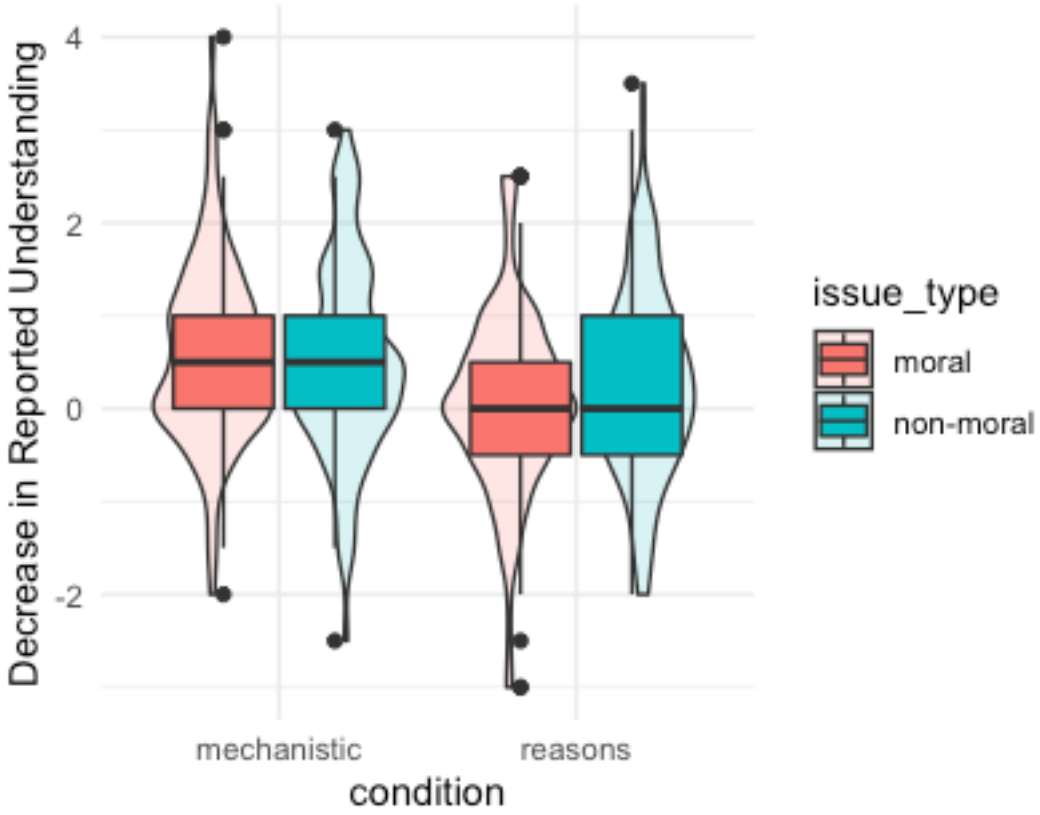

Figure 1. Decrease in reported understanding between conditions and moral vs. non-moral issues in Study 1

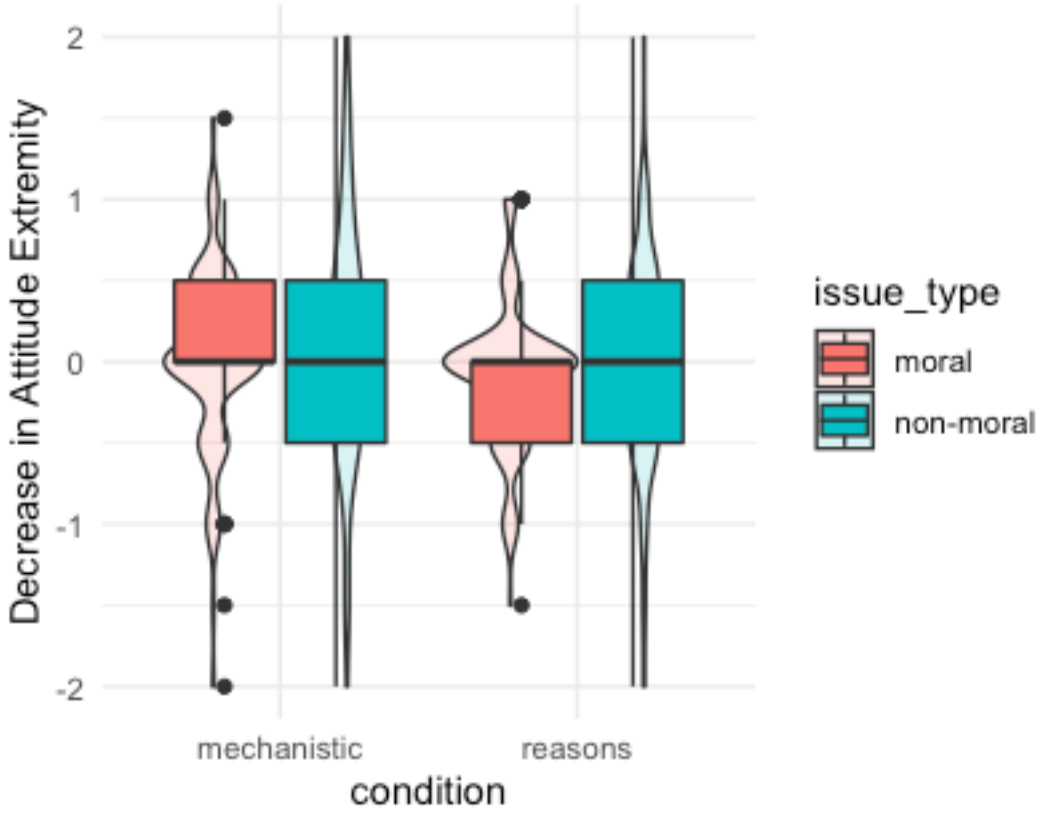

Figure 2 Decrease in attitude extremity between conditions and moral vs. non-moral issues in Study 1

2.2.4 Reported pre-understanding levels

When we looked at the differences between moral and non-moral issues in reported understanding before the manipulations, there was a significant difference between them, $F(1, 240) = 151.47$, $p < .001$. Reported pre-understanding level was higher for moral issues ($M = 5.30$, $SD = 1.61$) than for non-moral issues ($M = 3.98$, $SD = 1.91$). The difference between the issues in attitude extremity before the manipulations were also significant, $F(1, 240) = 113.83$, $p < .001$. Pre-explanation attitude extremity was also higher for moral issues ($M = 2.02$, $SD = 1.03$) than for non-moral issues ($M = 1.28$, $SD = 1.10$). When we looked at reported understanding level for each topic, participants' ratings of their understanding and attitude extremity of two non-moral issues were lower than moral issues. In fact, reported pre-understanding level for these two non-moral issues (increased interest proposed by the central bank

because of the high inflation rate and government's 25% contribution to the individual pension) were one standard deviation lower from almost all moral issues (M = 3.4, SD = 2.11 and M = 3.29, SD = 1.82, respectively). When we looked at pre-explanation attitude extremity about each topic, participants had the least extreme attitudes toward these same two issues, M = 0.99, SD = 1.13 and M = 1.26, SD = 1.08, respectively (see Appendix I for detailed results).

2.2.5 Moderation by CRT scores

We also explored if individual differences in analytic thinking tendecy would moderate the effect of mechanistic condition on decrease in self-reported understanding for moral and non-moral issues. First, we checked if participant's CRT scores are related to their pre-understanding levels for non-moral issues, $F(1, 239)$ = 0.94, p = .33, $Adj.\ R^2$ = -0.0002 and moral issues, $F(1, 239)$ = 0.00002, p = .99, $Adj.\ R^2$ = -0.004. CRT score predicted people's pre-understanding level for neither non-moral (b = 0.09, SE = 0.10, $t(239)$ = 0.97, p = .33) nor moral issues (b = 0.004 , SE = 0.08, $t(239)$ = -1.05, p = .99). Then, we conducted a regression analysis including condition (with reasons condition as the reference category), CRT score, and their interaction as predictors to look if CRT performance moderated the effect of our manipulation on the reported decrease in understanding for non-moral issues, $F(3, 237)$ = 1.43, p = .23, $Adj.\ R^2$ = 0.005 and moral issues, $F(3, 237)$ = 6.16, p = .004, $Adj.\ R^2$ = 0.06. There was no interaction between the CRT and condition for moral issues (b = -0.04, SE = 0.13, $t(237)$ = -0.37, p = .70) or non-moral issues (b = 0.14, SE = 0.13, $t(237)$ = 1.12, p = .26).

2.3 Discussion

In Study 1, none of our hypotheses were supported. The following factors might have influenced this:

Firstly, as an exploratory analysis, we checked if there was a difference between reported understanding level before experimental manipulation. Participants' initial understanding level for moral issues was higher than non-moral issues. When we examined participants' responses separately for each topic, we observed that their self-reported understanding and attitude extremity regarding two non-moral issues (increased interest proposed by the central bank because of the high inflation rate and government's 25% contribution to the individual pension) were lower than moral issues. In other words, the difference between moral and non-moral issues was not only their morality but also people's reported pre-understanding levels for them.

Secondly, there were no significant differences between the two experimental conditions in terms of self-reported understanding and attitude extremity. This lack of difference may be due to the demanding instructions in both conditions. Specifically, the mechanistic explanation task may have been demanding because it required the participants to write down causal effects of the policies in a step-by-step manner. It is possible that the reason generation task was also demanding because it was similar to the mechanistic explanation task in terms of the cognitive effort required. Additionally, it asked the participants to write down all the reasons for their position on each issue, and to tell as complete a story as they can about their reasons. Some of the participants may have had difficulty telling a story with as many reasons as possible, which may have led them to reduce their reported understanding and attitude extremity.

CHAPTER 3

STUDY 2

The goal of Study 2 was to fix some problems that were present in study 1. First of all, in Study 1, two of the four non-moral issues had lower pre-understanding levels than moral issues. We replaced these two issues with two other non-moral issues from the pilot to decrease the difference in pre-understanding levels between the two issue types[15].

Secondly, people's difficulty with listing reasons might partly be why we did not find a difference between conditions. According to fluency misattribution, when a content comes to mind or is processed fluently, this subjective experience of fluency can be misattributed to various dimensions of the information or object at hand; such as its truth or aesthetic value (Schwarz, 2018). Thus, if people's reasons for their position on political issues come to their mind easily, they can use such fluency as a heuristic and overestimate their level of understanding of those issues. But if they cannot think of their reasons easily, they can interpret their difficulty (low fluency) in listing their reasons as an indication of their limited understanding. In Study 1, the instructions required the participants to give as many reasons as possible. In response, some participants may have struggled to produce new reasons, which may have reduced cognitive fluency and resulted in reduced reported understanding (see Winkielman, Schwarz, & Belli, 1998, for a similar demonstration in the domain of memory). Thus, in the reasons condition, we revised the instructions to reduce the possible impact of cognitive disfluency (see Appendix E)[16].

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[15] These new issues were "increasing retirement age to 65" and "transition to presidential system" based on participants' low morality and high understanding ratings.

[16] In the original instructions, participants were asked to write down all the reasons they have for their position on policies, going from the most important to the least. In this study, we asked them simply to

In Study 1, we also explored if analytic thinking would moderate the effect of mechanistic condition on decrease in self-reported understanding for both moral and non-moral issues. Although the moderation was not significant, this may have stemmed from CRT's relatively low reliability (.68). CRT was also not correlated with FII, r (199) = -.02, p = .73. Therefore, we added CRT 2 (Thomson & Oppenheimer, 2016; Yilmaz & Saribay, 2018; see Appendix G) to Study 2 to increase our chances of measuring analytic thinking tendency with better reliability.

3.1 Method

3.1.1 Participants and sample size estimation

Undergraduate students studying at Bogazici University enrolled in an introductory psychology course were eligible to participate in the study. They were invited to the study via an online subject recruitment platform which provided an online link to those who were interested. The study took place entirely online[17].

As in Study 1, we had three hypotheses, and considering a Bonferroni correction, we set alpha at .017 (.05/3) (one-tailed) and power at .80. Using the pwr package of R, we computed the required total sample of participants to be at least 220 to detect a minimum difference of d = .4 between two conditions in an independent-samples t-test. To compensate for potential subject dropout and exclusions, we decided 310 participants as the stopping rule[18].

write down the reasons they have for their position. We also did not want to specify the number of reasons participants could give because failure to provide this specified number of reasons for their position may push participants to think harder, thereby creating cognitive disfluency which can confound our main manipulation.

[17] Data collection took place during the pandemic, from 3 March 2021 to 13 May 2021.

[18] In Study 1, 29% of the participants were excluded from the study because they did not complete the study. We expected a similar drop out rate when deciding on the sample size in Study 1.

3.1.2 Materials and procedure

The same materials and procedure were applied, except that a less demanding instruction for the reasons condition and CRT 2 was used (see Section 3 and footnote 16).

Materials used in Study 2, as well as in Study 1, were approved by the Ethics Committee for Master and PhD Theses in Social Sciences and Humanities (see Appendix J).

3.2 Results

All data analysis was performed using R (R Core Team, 2019), a programming language for statistical analysis. The entire set of analysis is available in a script file (https://osf.io/67wqf/).

3.2.1 Data preparation and cleaning

To reach the desired sample size, we collected data from 306 participants. Participants who did not complete the whole experiment, and those who failed to pass the attention check were excluded from analyses. Afterwards, 138 and 126 participants remained in the mechanistic and reasons conditions, respectively. Then, we excluded the participants who failed to provide explanations to all of the four issues: 2 participants did not write anything and 12 left at least one explanation blank (i.e., a total of 14 participants were excluded for this reason). In the end, there were 130 and 120 participants in the mechanistic and reasons conditions, respectively.

We repeated all the analyses excluding the participants who failed to give a mechanistic explanation and we only reported the results from this sample when there was a difference (see Section 3.3.)[19][20].

3.2.2 Descriptives

Of the 250 participants whose data were analyzed, 157 (63%) were female, 89 (36%) were male, and 4 participants (1%) identified their sex as other. Mean age was 20.56 (*SD* = 2.04). A very small number of participants could be classified as either right or left extremist (*n* = 6, 2.4%) as they chose extreme points when we asked them about their political ideology. Most of the remaining participants were leftists (*n* = 159, 64%) while 14% of them (*n* = 36) were rightists. Tables 6 and 7 show the means, standard deviations, and Pearson's correlation coefficients for the main measures, separately in each condition of the experiment.

[19] When we excluded those participants, sample size in mechanistic condition dropped to 80 participants.

[20] We also checked if there was a difference between these two groups regarding their analytic thinking tendencies and faith in intuition. There was no difference in the CRT scores between people who did not provide a mechanistic explanation (*M* = 5.26, *SD* = 1.65) and those who did (*M* = 5.55, *SD* = 1.30), *t*(86) = -1.05, *p* = .29. An independent t test showed that there was no difference in the faith in intuition scores between people who did not provide a mechanistic explanation (*M* = 3.096 , *SD* = 0.44) and those did (*M* = 3.21, *SD* = 0.43), *t*(101) = -1.54, *p* = .12.

Table 6. Correlation Table for Mechanistic Condition in Study 2[21]
Means, standard deviations, and correlations with confidence intervals

Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*
1. reduction in reported understanding for moral issues	0.37	1.06					
2. reduction in reported understanding for non-moral issues	0.32	1.02	.22*				
			[-.05, .37]				
3. reduction in attitude extremity for moral issues	-.02	0.45	.23**	-.05			
			[.06, .38]	[-.22, .12]			
4. reduction in attitude extremity for non-moral issues	0.02	0.54	-.09	-.04	-.08*		
			[-.26, .08]	[-.21, .13]	[-.25, .09]		
5. CRT	5.44	1.45	-.17	.01	-.03	-.15	
			[-.33, .01]	[-.16, .18]	[-.21, .14]	[-.31, .03]	
6. FII	3.19	0.71	.14	.21*	-.03	.10	-.05
			[-.04, .30]	[.03, .37]	[-.20, .14]	[-.07, .27]	[-.22, .13]

[21] When we excluded the participants who did not give a mechanistic explanation, three correlations were significant: the correlation between reduction in understanding for moral and non-moral issues (.22*); the correlation between CRT and reduction in understanding for moral issues (-.36**); the correlation between CRT and FII (-.25*).

Table 7: Correlation Table for Reasons Condition in Study 2
Means, standard deviations, and correlations with confidence intervals

Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*
1. reduction in reported understanding for moral issues	0.10	0.88					
2. reduction in reported understanding for non-moral issues	0.20	0.89	.15				
			[-.03, .32]				
3. reduction in attitude extremity for moral issues	0.07	0.52	.28**	.01			
			[.10, .44]	[-.17, .19]			
4. reduction in attitude extremity for non-moral issues	0.06	0.58	-.00	.14	-.08		
			[-.18, .18]	[-.04, .32]	[-.25, .10]		
5. CRT	5.66	1.23	-.01	-.13	-.03	-.06	
			[-.19, .17]	[-.30, .05]	[-.21, .15]	[-.24, .12]	
6. FII	3.20	0.71	.10	.09	.01	-.05	-.16
			[-.08, .27]	[-.09, .27]	[-.17, .19]	[-.23, .13]	[-.33, .02]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$. ** indicates $p < .01$.

3.2.3 Confirmatory analyses

Assumption checks revealed that normality was violated[22]. Thus, to examine any significant differences between the two conditions on the main dependent variables, we conducted a non-parametric test, the Wilcoxon Rank Sum independent samples t-tests on self-reported understanding and attitude extremity, separately. Since these confirmatory tests are directional, t-tests are one-tailed. We performed Wilcoxon Rank Sum tests for our hypotheses and applied Bonferroni correction. Thus, the critical p value for each of our tests was .017 instead of .05 (See Table 8 for results).

Table 8. Means and Standard Deviations for Each Condition in Study 2

	Mechanistic		Reasons		*W*	*p*	*Cohen's d*
	Mean	SD	Mean	SD			
Reduction reported understanding for non-moral issues	0.32	1.02	0.20	0.88	8293	.19	0.12
Reduction in reported understanding for moral issues	0.37	1.06	0.1	0.88	9077.5	.023	0.27
Reduction in attitude extremity for non-moral issues	0.02	0.54	0.06	0.58	7633.5	.62	0.06
Reduction in attitude extremity for moral issues	-0.02	0.45	0.07	0.52	7301.5	.35	-0.19

[22] Based on Shapiro's test results, normality was violated for each condition for both moral and non-moral issues and decreased reported understanding and extremist attitudes.

3.2.3.1 Hypothesis 1: Reduction in reported understanding and attitude extremity for non-moral issues in mechanistic versus reasons condition

Hypothesis 1 stated that for non-moral issues, reported understanding and attitude extremity would decrease more in mechanistic condition than reasons condition. Although reported understanding decreased after mechanistic explanation (see Table 9), a Wilcoxon Rank Sum independent samples t -test (one-tailed) showed no significant difference between the mean decrease for non-moral issues in understanding in mechanistic condition ($M = 0.32$, $SD = 1.02$) and in reasons condition ($M = 0.20$, $SD = 0.88$), $W = 8293$, $p = .19$, $d = 0.12$. There was no difference between mechanistic ($M = 0.04$, $SD = 0.58$), and reasons conditions ($M = 0.06$, $SD = 0.58$) in reduction in attitude extremity either, $W = 7633.5$, $p = .62$, $d = -0.06$ (see Table 10 for detailed results). Thus, this hypothesis was not supported. Neither decrease in reported understanding nor attitude extremity was different between conditions.

Table 9. Results for Understanding in Study 2

Condition		Pre-Explanation		Post-Explanation		*V*	*p*
		M	*SD*	*M*	*SD*		
Mechanistic	Moral	4.99	1.36	4.62	1.38	3479.5	.0001
	Non-Moral	4.15	1.41	3.83	1.38	2803.5	.0001
Reasons	Moral	4.83	1.32	4.73	1.36	2321.5	.26
	Non-Moral	4.23	1.34	4.02	1.34	2743.5	.17

Table 10. Results for Attitude Extremity in Study 2

Condition		Pre-Explanation		Post-Explanation		*V*	*p*
		M	*SD*	*M*	*SD*		
Mechanistic	Moral	2.11	0.71	2.13	0.73	992	.64
	Non-Moral	1.63	0.78	1.60	0.77	1597	.23
Reasons	Moral	2.01	0.78	1.94	0.75	992	.64
	Non-Moral	1.72	0.80	1.67	0.79	1229.5	.14

3.2.3.2 Hypothesis 2: Reduction in reported understanding and attitude extremity for moral issues in mechanistic versus reasons condition

Hypothesis 2 stated that for moral issues, reported understanding and extremism would not be different between conditions. Our findings supported this hypothesis: although reported understanding decreased after mechanistic explanation (see Table 9), neither reported understanding ($W = 9077.5$, $p = .023$, $d = 0.27$) nor attitude extremity ($W = 7301.5$, $p = .35$, $d = -0.19$) were significantly different between conditions. Thus, we also performed an equivalence test for a two-sample Welch's t-test, with equivalence bounds of +/- the smallest effect size of interest (SESOI) of $d = 0.4$. The TOST was not significant for reduction in reported understanding, $t(245) = 2.16$, $p = .032$. The TOST was not significant for reduction in attitude exremity, $t(238) = -1.52$, $p = .13$. Since results were neither statistically different from zero nor statistically equivalent, based on Lakens et al.'s (2018) suggestion, we concluded that there is insufficient data to draw conclusions.

3.2.3.3 Hypothesis 3: Reduction in reported understanding and attitude extremity for moral versus non-moral issues in mechanistic condition

Hypothesis 3 stated that in mechanistic condition, reported understanding and attitude extremity would decrease more for non-moral issues than moral issues. Mechanistic explanation did not lead to a greater decrease in reported understanding ($V = 2908$, $p = .54$, $d = -0.035$) nor attitude extremity ($V = 1976.5$, $p = .32$, $d = 0.057$) for non-moral issues than it did for moral issues. Morality of the issue was irrelevant to the effect of mechanistic explanation (See Figures 3 and 4 for all comparisons).

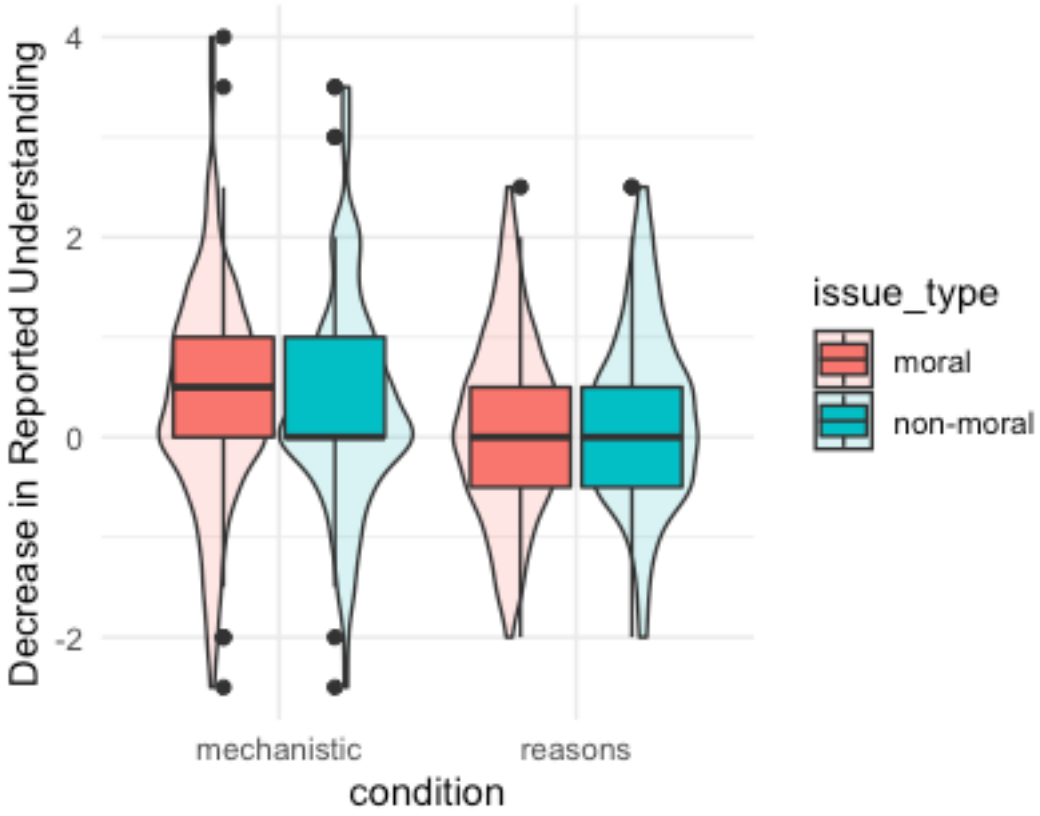

Figure 3. Decrease in reported understanding between conditions and moral vs. non-moral issues in Study 2

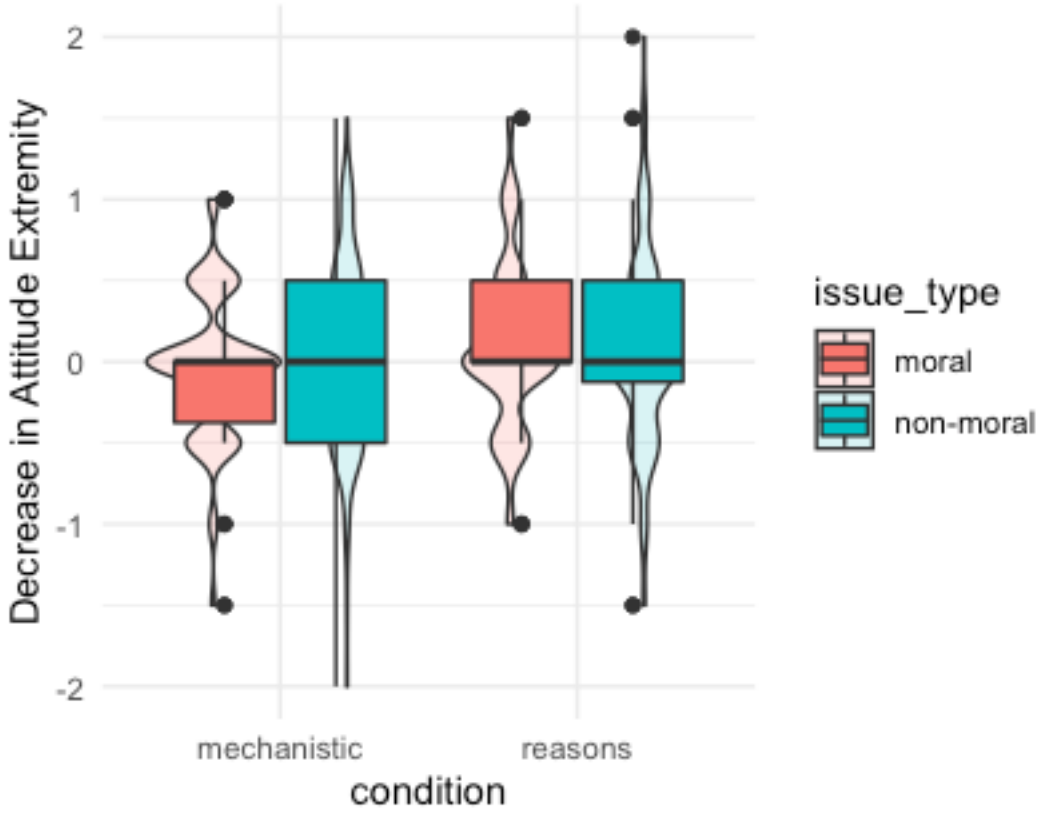

Figure 4. Decrease in attitude extremity between conditions and moral vs. non-moral issues in Study 2

3.2.4 Reported pre-understanding levels

In study 1, participants' pre-understanding ratings for the two non-moral issues were lower than the other issues. In this study, we changed two non-moral issues that participants reported to understand the least before the manipulation. Thus, we checked if there were any differences in the understanding ratings between moral and non moral issues before the writing task manipulations. Indeed, the effect of the morality of the issues was significant, $F(1, 249) = 55.823$, $p < .001$. Reported pre-understanding was still higher for moral issues ($M = 4.92$, $SD = 1.69$) than for non-moral issues ($M = 4.19$, $SD = 1.77$). The effect of the morality of the issues on the extremity of people's pre-explanation attitudes was also significant, $F(1, 249) = 118.93$, $p < .001$. Extremity of people's pre-explanation attitudes were also higher for moral issues ($M = 2.06$, $SD = 1.00$) than for non-moral issues ($M = 1.69$, $SD = 1.11$).

When we looked at reported understanding for each topic, participants' ratings of their understanding and extreme attitudes of three non-moral issues were lower than moral issues. In fact, reported pre-understanding for these three non-moral issues (the decision not to change to daylight saving time, decreasing primary school education age from seven to six, and increasing retirement age to 65[23]) were one standard deviation lower from almost all moral issues (M = 3.85, SD = 1.87, M = 3.94, SD = 1.64, and M = 3.99, SD = 1.56, respectively). Nonetheless, participants' initial reported understanding for non-moral issues was equivalent to those in Fernbach et al.'s (2013) and Crawford and Fruscio's (2021) studies. The mean levels of pre-understanding level in studies by Fernbach et al. was M = 3.82. Crawford and Fruscio observed similar mean levels in two replication studies (Ms = 3.91 and 3.88). When we looked at the extremity of people's pre-explanation attitudes toward each topic, participants had the least attitude extremity toward these same issues except the decision not to change to daylight saving time[24]. It is possible that our participants' attitude extremity before the explanations might account for failure to replicate. The mean levels of pre-explanation extreme attitudes in studies by Fernbach et al. was M = 1.48. Crawford and Fruscio observed similar mean levels in two replication studies (Ms = 1.49 and 1.51). Higher extremity of our participants' attitudes about political issues, especially moral issues, and rising political polarization might be one of the reasons why participants did not change their reported understanding or attitudes (See Appendix I for detailed results).

[23] These two issues were also used in study 1, and participants' reported understanding for them was not low, which is why we used them in study 2. But, people's initial understanding level of non-moral issues varied in time between study 1 and study 2, which may indicate that the moral basis of the issues may not be the only difference between moral and non-moral issues. With the changing political climate, these issues may have become less popular and less understood by people.

[24] Variation in participants' initial attitudes on moral vs. non-moral issues is not inconsistent with our expectations. As people see moral issues more as facts rather than opinions, their attitudes toward them can be more extreme than their attitudes toward non-moral issues.

3.2.5 Moderation by CRT scores

We also explored if analytic thinking would moderate the effect of mechanistic condition on decrease in self-reported understanding for moral and non-moral issues. First, we checked if participant's CRT scores were related to their pre-understanding levels for non-moral issues, $F(1, 248) = 0.27$, $p = .60$, $Adj.\ R^2 = -0.003$; and moral issues, $F(1, 248) = 0.78$, $p = .37$, $Adj.\ R^2 = -0.001$. CRT score predicted people's pre-understanding level for neither non-moral ($b = -0.03$, $SE = 0.06$, $t(246) = -0.52$, $p = .6$) nor moral issues ($b = -0.06$, $SE = 0.06$, $t(246) = -0.89$, $p = .38$). Then, we conducted a regression analysis including condition (with reasons condition as the reference category), CRT score, and their interaction as predictors to test if CRT performance moderated the effect of our manipulation on the reported decrease in understanding for non-moral issues, $F(3, 246) = 0.89$, $p= .44$, $Adj.\ R^2 = -0.001$ and moral issues, $F(3, 246) = 2.95$, $p = .03$, $Adj.\ R^2 = 0.02$. There was no interaction between the CRT and condition for non-moral issues ($b = -0.10$, $SE = 0.09$, $t(246) = -1.10$, $p = .27$) or moral issues ($b = 0.11$, $SE = 0.09$, $t(246) = 1.19$, $p = .24$). When we conducted the same analysis excluding participants who did not comply with the mechanistic explanation, the interaction was significant for moral issues, $b = 0.30$, $SE = 0.11$, $t(196) = 2.74$, $p = .007$. After providing a mechanistic explanation, people with lower CRT scores reported a greater decrease in their understanding than people with higher CRT scores.

3.3 Discussion

In Study 2, none of our hypotheses were supported although we made the following improvements to Study 1. Firstly, we revised two non-moral issues with the lowest reported understanding to minimize the differences between moral and non-moral

issues. However, as in Study 1, participants' initial understanding level for moral issues was higher than non-moral issues in Study 2. When we examined participants' responses separately for each topic, we observed that their self-reported understanding and attitude extremity regarding three non-moral issues (the decision not to change to daylight saving time, decreasing primary school entry age from seven to six, and increasing retirement age to 65) were lower than moral issues. But, these policies were also used in Study 1 and the participants reported higher understanding levels for them. Thus, people's judgments for their level of understanding regarding political issues are subject to change across time and/or samples; an issue that future IOED research should consider.

Secondly, we reasoned that the lack of difference between conditions in terms of self-reported understanding and attitude extremity in Study 1 may stem from the demanding instructions in both conditions. Thus, we revised the instructions in reasons condition to be less demanding. But, as in Study 1, there was no difference between conditions in Study 2. It is possible that the reason condition instructions may have been demanding despite the adjustments. In fact, when we checked some participants' explanations in reason condition, we observed that some of them provided causal explanations. Thus, the reasons condition may have been as cognitively effortful as the mechanistic condition for some people.

CHAPTER 4

GENERAL DISCUSSION

In these studies, we investigated whether asking people to explain political issues in a casual manner would lead them to reduce the extremity of their self-reported attitudes. Based on previous findings by Fernbach et al. (2013) and assertions by Sloman and Fernbach (2017), we expected that for non-moral issues, asking for a mechanistic explanation would lead to a greater decrease in self-reported understanding and attitude extremity, compared to asking for reasons in favor of or against the issue. We also expected that in mechanistic conditions, self-reported understanding and attitude extremity would decrease more for non-moral issues than moral issues. Our results did not support any of these hypotheses. Yet, consistent with our expectations, for moral issues, a decrease in self-reported understanding and attitude extremity was not different between the two conditions (i.e., mechanistic vs. reason).

Consistent with our expectations, participants reported less policy understanding after providing mechanistic explanations. However, this reduction was not significantly different from the reduction in reported understanding after generating reasons. It is possible that a mechanistic explanation may not be a strong enough manipulation to work better than listing reasons to reduce the IOED. Kirk (2020) used the same study design to reduce people's overconfidence. Although asking people to explain the mechanisms behind the policies led to a decrease in the participants' levels of understanding, this decrease was not significant or different from the reasons condition. Both our studies and theirs support the idea that giving

mechanistic explanations might not be a strong enough task to force people to face their ignorance relative to listing reasons for their position.

Contrary to what we expected, asking for a mechanistic explanation did not lead to a greater decrease in attitude extremity, compared to asking for reasons in favor of or against the issue. When we checked participants' initial attitudes on political issues, we found that their attitudes toward issues were more extreme than the attitudes reported in Fernbach et al. (2013) and Crawford and Fruscio's (2021) studies. This difference was stronger for moral issues than non-moral issues. It has been found that belief superiority -the belief that one's view is better than other viewpoints- is higher for both conservatives and liberals with extreme attitudes (Toner et al., 2013; Brandt, Evans, & Crawford, 2015). Furthermore, whether extreme attitudes are associated with higher belief superiority is topic-dependent (Toner et al., 2013; Harris & Van Bavel, 2021). Thus, when it comes to political issues people may show belief superiority and be reluctant to change their attitudes even when they face their ignorance. In other words, they may still continue to believe that their opinions are more valid than other viewpoints regardless of their lack of knowledge. Thus, they may maintain their attitudes even when they face their ignorance. In fact, people with belief superiority show the greatest gaps between their perceived and actual knowledge (Hall & Raimi, 2018). Similarly, the participants in our studies may think that even though they do not understand the impact of the policies, their opinion is still better than the opposing side. Thus, those participants may have had high belief superiority about these political issues, which may contribute to replication failure. However, this is only a speculation since we did not measure people's belief superiority on these issues. Additionally, differences in attitude extremity between our studies and Fernbach et al.'s studies can not solely

explain our replication failure because participants' average attitude extremity ratings in Fernbach et al.'s (2013) and Crawford and Ruscio's (2021) studies were equal.

Another reason for our failure to replicate may have to do with motivated reasoning. Specifically, motivated reasoning happens when people are motivated to engage in reasoning processes aimed at maintaining or bolstering their attitudes in the face of attitude-challenging information (Kunda, 1990; Lodge and Taber, 2013). Taber and Lodge (2006) offer two motivations in forming attitudes and opinions: accuracy and directional. Accuracy goals refer to people's motivation to evaluate information in a manner that will lead to accurate beliefs or opinions. In this case, people evaluate political issues to reach accurate conclusions. Directional goals, on the other hand, refer to a person's motivation to arrive at a particular conclusion, one that is consistent with their political identities. Thus, when people value directional goals over accuracy goals, they may dismiss information inconsistent with their existing beliefs or opinions (Bolsen, Druckman, & Cook, 2014; Druckman, Peterson, & Slothuus, 2013; Ehret, van Boven, & Sherman, 2018). In our studies, the participants were forced to face their ignorance about political issues, which challenged their opinions and the validity of their attitudes. In response, they may have engaged in motivated reasoning to avoid interpreting the overestimation in their understanding as an indication of their ignorance or opinions' invalidity.

Consistent with our expectations, mechanistic explanations did not work for moral issues. After all, people see their morally based convictions as important, hold them with certainty, and experience them not as opinions but facts that should apply to everyone under all circumstances (Skitka et al., 2005). Research also indicated that morally based opinions are resistant to change. The more people moralize an attitude, the less they tend to change their attitude (Luttrell, Petty, Brinol, & Wagner, 2016;

Ringel & Ditto, 2019). Thus, our finding that mechanistic explanation did not lead to a reduction in the extremity of attitudes for moral issues is consistent with previous findings. But, we found the same null result for non-moral issues, and there was no difference between the two issue types. It is possible that opinions on non-moral issues may have been construed as morally based and value-laden. Skitka et al. (2021) argued that morality is a matter of a degree rather than a matter of kind. Consequently, people can vary in how much they perceive their attitudes on these policies as morally based (Skitka, 2010; 2014). We conducted a pilot study to establish the moral versus non-moral nature of various policies. However, we do not know how much the participants in the studies perceived a moral basis to their attitudes even on issues that we established as non-moral in the pilot study (or whether the opposite occurred; that the issues we established as moral were treated as not so). Thus, even the attitudes toward non-moral policies may have been based on moral concerns, and this may partly explain why we did not observe the expected differences between attitudes toward moral and non-moral issues. In sum, future research should try to establish the moral nature of issues more carefully and/or assess the degree to which various issues are seen as moral at the level of individual participants.

As an explanatory hypothesis, we checked if analytic thinking moderates the effect of mechanistic condition on decrease in self-reported understanding for both moral and non-moral issues. We reasoned that analytic thinking would make people less prone to the IOED because they would be aware of their understanding level. Yet, there was no evidence to support this. The only exception was that analytic thinking tendency was significantly related to a decrease in self-reported understanding for moral issues in Study 2 only when we excluded the participants

who did not provide any mechanistic explanation for any of the issues in mechanistic condition. As this result was obtained only once, further studies are needed to establish whether analytic thinking tendency predicts susceptibility to IOED.

When we conducted the analyses with and without people who did not provide any mechanistic explanation in the mechanistic condition, none of the results for our confirmatory hypotheses changed. These findings should be interpreted with caution because excluding participants both reduces power and disrupts the randomness of assignment into experimental conditions. Nevertheless, even when we excluded the participants who did not provide mechanistic explanations, there was almost no one among the remaining participants who gave a mechanistic explanation for all four issues. In fact, most participants provided mechanistic explanations for only one or two of the issues. Even then, their mechanistic explanations usually contained one cause-effect relationship. Thus, it could be a fruitful path to investigate the characteristics that lead some people to fail to give any mechanistic explanation even when they were asked to do so, and others to try to give one even when they can not provide a good one. We expected that people may be reluctant to give a mechanistic explanation for moral issues because their position on these issues would be based on their values rather than consequential thinking. Same reluctance for explaining non-moral issues in a mechanistic way may mean that these issues are also value-based, or that some other participant characteristics underlie this reluctance, or possibly both. It is also possible that participants may be inattentive or lazy when it comes to following cognitively demanding tasks. In Study 1 there was a difference between people who followed the mechanistic condition task and those who did not regarding their analytic thinking tendencies. As this result was obtained only once, further studies are needed to establish whether analytic thinking tendency

influences people's reluctance (versus motivation) to give a mechanistic explanation. Future research should also consider providing incentives for the proper completion of the mechanistic explanation task.

It may also be possible that shattering the IOED does not lead to a reduction in attitude extremity on political issues. In fact, in replication studies by Crawford and Ruscio (2021), asking people to provide mechanistic explanations for political issues did not lead them to moderate the extremity of their attitudes. According to an identity-based model of belief by Van Bavel and Pereira (2018), interventions toward partisan bias should target the relevant cognitive processes where partisan bias is happening. In line with their assumption, shattering the illusion of explanatory depth may not lead to moderation of extreme attitudes because cognitive processes other than IOED are responsible for them. Specifically, political opinions may not be a result of outcome-based reasoning. Instead, the participants' opinions on non-moral political issues may be based on values rather than outcomes just as moral issues. After all, political beliefs are intertwined with values, beliefs, and identities (van Bavel & Pereira, 2018). Thus, seeing the gaps in one's causal analysis of policy can be irrelevant to one's opinions. Accordingly, extreme positions may not be a result of a misjudgment of one's knowledge; therefore, they cannot be changed by correcting it. Thus, interventions targeting values rather than outcomes could be more successful for reducing attitude extremity.

Van Bavel et al. (2016) found that contextual sensitivity of research topics may explain the failure to replicate some results. That is, it may be more difficult to replicate an effect whose occurrence or magnitude is sensitive to a variety of contextual factors such as culture. Our study aimed to reduce the extremity of people's attitudes about political issues, which can be considered a contextually

sensitive research topic. After all, political attitudes are prone to change across time, culture, or location and more importantly, the rigidity/flexibility with which people hold on to political opinions would also be expected to change across these factors. Considering these, it is possible that the manipulation does not work in a Turkish setting. All of the mentioned IOED studies were conducted in the US with American samples. Having people explain issues in a mechanistic way may be a strong enough manipulation to decrease US American, but not Turkish, participants' level of understanding and attitude extremity. Moreover, since data collection happened during the pandemic (starting from April 2020, when the pandemic was already serious) our results may reflect the impact of the current pandemic. It has been suggested that reminders of death motivate people to affirm their worldviews, and political ideologies (Kosloff et al., 2016). Since coronavirus is an ongoing reminder of one's mortality, our participants may have stuck to their political attitudes even when our experimental procedures encouraged them to face their ignorance. Thus, we can not rule out the possibility that conducting this study in a different time and culture from Fernbach et al.'s (2013) study may explain replication failure.

4.1 Future directions and limitations

Given the importance of reducing political extremism in an increasingly polarized world, our results should not be interpreted as evidence for lack of effect. On the contrary, we suggest future studies continue investigating the relationship between the IOED and the extremity of political attitudes. Based on our results, we suggest the following points to be considered for future work. First, while our studies were sufficiently powered (at .80), our resources allowed us to set our smallest effect size of interest at $d = 0.4$. This figure is smaller than effect size estimates provided by

Fernbach et al. (2013) but it is possible that the effects we were seeking are even smaller or that we would have been able to detect them with more power. This possibility should be tested in future studies with greater resources. Second, in both studies, before the manipulation, participants' reported understanding for non-moral issues was lower than for moral issues. Even when we revised non-moral issues with the lowest pre-understanding levels to make sure that the only difference between moral and non-moral issues was their morality, people's initial understanding was lower for non-moral than moral issues. It is possible that people understand and/or think they understand morally based issues more than non-moral issues. Alternatively, we may have failed to come up with non-moral issues that are as understood by people as moral issues. Future studies can examine these two possibilities. Furthermore, the issues included in such experiments may need to be changed from study to study because people's estimated understanding for political issues may change across time, culture, and other factors. In our studies, two non-moral issues with the lowest pre-understanding level in study 2 were used in study 1 as well, and the participants' reported understanding for these same issues was as high as moral issues in study 1. Additionally, since people can vary in how much they perceive their attitudes on policies as morally based, asking participants to report how much of their position on each policy is based on their core moral beliefs may have been a better alternative to assess differences between attitudes toward moral and non-moral issues. Furthermore, it is possible that reasons condition task was not different from the mechanistic condition task in terms of the cognitive effort it required. In fact, some of the participants provided causal explanations even when they were asked to list their reasons for their positions. Future studies with a passive control group without a manipulation, instead of or in addition to reasons condition,

may provide a better understanding of the impact of a mechanistic explanation on reported understanding and attitude extremity. Lastly, in our sample there were more politically leftists than rightists, so future research should test the generalizability of our findings across the political spectrum.

4.2. Conclusion

Given the detrimental impact of political polarization on societies across the world (see Erdogan, 2016), the value of any method that can reduce the extremity of political attitudes is tremendous. In two studies, we assessed whether promising findings reported by Fernbach et al. (2013) would replicate in a Turkish setting. Unfortunately, our findings did not support the same conclusions as Fernbach et al.'s. The failure of these replications does not suggest that mechanistic explanations for policy positions do not reduce the extremity of people's attitudes. It is possible that the effect is not as robust as previously reported and future studies should continue exploring the relationship between the IOED and the extremity of political attitudes.

APPENDIX A

PILOT MATERIALS

Policies used in the Pilot

1. Recognition of djemevis as places of worship (*Cemevlerini ibadethane olarak tanınması*)
2. Time limit for alcohol sales (*Alkol satışlarının belli saatlerde yapılması*)
3. Turning dorms in co-ed dorms (*Üniversite yurtlarının karmalaştırılması*)
4. Paying additional taxes for being single (*Bekarlardan ek bir vergi alınması*)
5. Granting citizenship to Syrian refugees (*Suriyelilere vatandaşlık verilmesi*)
6. Providing social support to Syrian refugees (*Suriyelilere sosyal destek sağlanması*)
7. Reciting azan in Turkish (*Camilerde Türkçe ezan okunması*)
8. Mother tongue education for citizens of Turkey (*Türkiye vatandaşlarının anadillerinde eğitim görmesi*)
9. Removal of national oath from schools (*Andımızın okullardan kaldırılması*)
10. Transition to the presidential system (*Başkanlık sistemine geçilmesi*)
11. Decreasing primary school entry age from seven to six (*Okula başlama yaşının 6'ya indirilmesi*)
12. Removal of daylight saving time (*Yaz saati uygulamasının kaldırılması*)
13. Selling plastic bags with money (*Plastik poşetlerin paralı satılması*)
14. Removing the obligation to vaccinate children in schools (*Okullarda çocuklara aşı zorunluluğunun kaldırılması*)
15. Hunting bans in various seasons (*Çeşitli mevsimlerde av yasağı uygulanması*)

16. Government's 25% contribution to the individual pension (*Devletin bireysel emekliliğe %25 katkı payı vermesi*)

17. Reserving some of the municipal resources for recycling (*Belediye kaynaklarının bir kısmının geri dönüşüme ayrılması*)

18. Increasing retirement age to 65 (*Emeklilik yaşının 65'e çıkartılması*)

19. Paternity leave (*Babalara doğum izni verilmesi*)

20. Adjusting university professor salaries based on student evaluations (*Üniversite hoca maaşlarının öğrenci değerlendirmelerine göre ayarlanması*)

21. Indoor smoking ban (*Kapalı alanlarda sigara içilmemesi*)

22. Increased interest proposed by the central bank because of the high inflation rate (*Merkez bankasının yüksek enflasyona karşı faizleri arttırması*)

23. Abortion ban (*Kürtaja yasak getirilmesi*)

Questions asked for distinguishing policies

1. How much do you understand this policy? (*Bu politikayı ne kadar anlıyorsunuz*?)

1: Vague understanding (*Üstünkörü anlıyorum*), 7: Thorough understanding (*Derinlemesine anlıyorum*)

2. How much do you support this policy? (*Bu politikayı ne kadar destekliyorsunuz*?)

1: I am totally against (*Tamamen karşıyım*), 7: I am totally in favor (*Tamamen destekliyorum*)

3. How much does this policy affect your life (*Bu politika hayatınızı ne kadar etkiler*?)

1: It does not affect at all (*Hiç etkilemez*), 7: It affects a lot (*Çok etkiler*)

4. How important is this policy to you? (*Bu politika sizin için ne kadar önemlidir*?)

1: Not at all (*Hiç değil*), 7: Very important (*Çok önemli*)

5. How familiar are you with this policy (*Bu politikaya ne kadar aşinasınız*?)

1: Not at all (*Hiç değilim*), 7: Very familiar (*Çok aşinayım*)

6. How much do your attitudes on this policy based on your moral values? (*Bu politikayla ilgili görüşlerinizi ne kadar ahlaki bir temele dayandırıyorsunuz*?)

1: I do not base it on any moral values (*Hiçbir ahlaki temele dayandırmıyorum*), 7: O base it completely on moral values (*Tamamen ahlaki bir temele dayandırıyorum*)

7. To what extent have you formed your views on this policy by considering the possible consequences of this policy? (*Bu politikayla ilgili görüşlerinizi, ne kadar bu politikanın olası sonuçlarını düşünerek oluşturdunuz*?)

1: I have formed by views without thinking about the consequences (*Sonuçlarını hiç düşünmeden oluşturdum*), 7: I have formed my views entirely thinking about the consequences (*Tamamen sonuçlarını düşünerek oluşturdum*)

8. How complex do you think the implications of this policy are? (*Bu politikanın etkilerinin ne kadar karmaşık olduğunu düşünüyorsunuz*?)

1: Very simple (*Çok basit*), 7: Very complex (*Çok karmaşık*

APPENDIX B

PILOT RESULTS

Table B1. Means and Standard Deviations for Unchosen Policies

	Understanding	Support	Impact	Importance	Familiarity	Morality	Possible outcomes	Complexity
Vaccination requirement	5.1 (1.61)	2.61 (1.62)	3.97 (2.04)	4.68 (1.52)	4.09 (1.88)	3.46 (2.21)	5.37 (1.66)	4.09 (1.78)
Additional taxes for being single	4.46 (1.87)	1.32 (0.74)	5.8 (1.46)	5.32 (1.6)	3.9 (1.97)	3.67 (2.2)	5.87 (1.19)	3.91 (1.93)
Alcohol restrictions	5.41 (1.37)	3.58 (2.15)	4.23 (2)	4.53 (1.75)	5.89 (1.17)	3.72 (1.96)	5.47 (1.39)	3.22 (1.63)
Mother tongue education	5.95 (1.06)	4.49 (2.05)	4.32 (2.02)	5.06 (1.67)	5.13 (1.64)	3.82 (2.06)	5.66 (1.37)	5.13 (1.88)
Citizenship to Syrian refugees	5.56 (1.46)	2.89 (1.62)	5.24 (1.55)	5.19 (1.51)	5.34 (1.43)	3.92 (1.88)	5.71 (1.38)	5.62 (1.35)
Removal of national oath	5.7 (1.28)	3.58 (2.2)	3.43 (1.92)	4.52 (1.75)	5.73 (1.22)	4.04 (2.14)	5.46 (1.24)	3.95 (1.83)
Turkish azan	5.41 (1.67)	3.82 (2.22)	4.22 (2.25)	4.25 (2.18)	4.99 (1.82)	4.11 (2.25)	5.39 (1.63)	4.89 (1.84)
Co-ed dorm	5.87 (1.2)	4.33 (2.37)	4.81 (2.03)	4.81 (1.73)	5.33 (1.53)	4.2 (2.09)	5.81 (1.23)	3.9 (1.76)
Djemevi	4.8 (1.56)	5.51 (1.58)	2.03 (1.24)	3.58 (1.74)	3.9 (1.73)	4.42 (1.8)	4.75 (1.54)	3.82 (1.28)
University professors' salary	5.13 (1.51)	3.28 (1.72)	4.66 (1.89)	4.53 (1.87)	3.49 (1.78)	4.49 (2.06)	5.27 (1.6)	4.92 (1.7)
Selling plastic bags	6.14 (0.98)	6.18 (1.31)	5.18 (1.75)	5.43 (1.39)	6.15 (1.09)	4.7 (2.27)	6.1 (1.12)	2.82 (1.77)
Recycling	5.75 (1.18)	6.39 (1.03)	5.35 (1.52)	5.67 (1.32)	4.11 (1.78)	4.75 (2.1)	5.57 (1.45)	3.43 (1.58)
Smoking ban	6.62 (0.7)	6.59 (1.08)	6.3 (1.2)	6.33 (1.05)	6.56 (0.98)	4.77 (2.26)	6.42 (0.97)	2.37 (1.54)

Table B2. Mean and Standard Deviation Results for Chosen Policies

	Understanding	Support	Impact	Importance	Familiarity	Morality	Possible outcomes	Complexity
Daylight saving time	4.52 (2.05)	3.2 (1.57)	5.09 (1.64)	4.47 (1.72)	5.1 (1.64)	2.32 (1.8)	5.04 (1.78)	3.58 (1.78)
Primary school age	4.44 (1.95)	4.14 (1.72)	3 (1.95)	3.7 (1.99)	4.25 (1.85)	2.82 (1.85)	4.51 (1.87)	4.15 (1.64)
Central bank	3.9 (2.1)	4.08 (1.44)	4.95 (1.54)	4.63 (1.5)	3.91 (1.7)	2.84 (1.81)	4.73 (1.66)	5.42 (1.27)
Individual pension	3.77 (2.05)	4.84 (1.18)	3.61 (1.74)	3.86 (1.57)	3.15 (1.92)	3 (1.68)	4.03 (1.72)	3.91 (1.31)
Retirement age	4.78 (1.78)	3.41 (1.77)	4.61 (2.14)	4.57 (1.77)	4.56 (1.95)	3.51 (1.88)	5.25 (1.43)	4.57 (1.61)
Presidential system	5.48 (1.53)	2.3 (1.51)	5.97 (1.21)	5.68 (1.32)	5.71 (1.31)	3.53 (2.25)	6.15 (1.01)	5.35 (1.81)
Social support for Syrian refugees	5.89 (1.09)	5.24 (1.65)	4.3 (1.6)	4.8 (1.45)	5.2(1.38)	4.94 (1.93)	5.49 (1.16)	4.09 (1.67)
Paternity leave	5.58 (1.68)	6.03 (1.33)	4.42 (2.27)	4.9 (1.94)	4.27(2.11)	4.95 (2.05)	5.56 (1.55)	3.46 (1.8)
Abortion ban	5.95 (1.3)	2.11 (1.64)	4.44 (2.03)	5.37 (1.7)	5.38 (1.54)	4.96 (2.11)	5.9 (1.41)	4.62 (1.93)
Hunting ban	6.05 (1.48)	6.57 (0.92)	4.09 (1.98)	5.39 (1.48)	4.81 (1.66)	5.1 (2.1)	5.99 (1.18)	3.28 (1.87)

APPENDIX C

POLICIES

Policies in Study 1 *(Birinci Çalışmadaki Politikalar)*

Non-Moral Issues (*Ahlaki Olmayan Konular*)

1. Increased interest proposed by the central bank because of the high inflation rate (*Merkez bankasının yüksek enflasyona karşı faizleri arttırması*)
2. Removal of daylight saving time (*Yaz saati uygulamasının kaldırılması*)
3. Government's 25% contribution to the individual pension (*Devletin bireysel emekliliğe %25 katkı payı vermesi*)
4. Decreasing primary school entry age from seven to six (*Okula başlama yaşının 6'ya indirilmesi*)

Moral Issues (*Ahlaki Konular*)

1. Paternity leave (*Babalara doğum izni verilmesi*)
2. Providing social support to Syrian refugees (*Suriyelilere sosyal destek sağlanması*)
3. Hunting bans in various seasons (*Çeşitli mevsimlerde av yasağı uygulanması*)
4. Abortion ban (*Kürtaja yasak getirilmesi*)

Policies in Study 2 (*İkinci Çalışmadaki Politikalar*)

Non-Moral Issues (*Ahlaki Olmayan Konular*)

1. Transition to the presidential system (*Başkanlık sistemine geçilmesi*)
2. Decreasing primary school entry age from seven to six (*Okula başlama yaşının 6'ya indirilmesi*)
3. Removal of daylight saving time (*Yaz saati uygulamasının kaldırılması*)

4. Increasing retirement age to 65 (*Emeklilik yaşının 65'e çıkartılması*)

Moral Issues (*Ahlaki Konular*)

1. Hunting bans in various seasons (*Çeşitli mevsimlerde av yasağı uygulanması*)
2. Paternity leave (*Babalara doğum izni verilmesi*)
3. Abortion ban (*Kürtaja yasak getirilmesi*)
4. Providing social support to Syrian refugees (*Suriyelilere sosyal destek sağlanması*)

APPENDIX D

RATING SCALE INSTRUCTIONS

For this task, we will ask you to rate how well you feel you understand different political issues. You will make your ratings on a 7-point scale where 1 indicates "vague understanding" and 7 indicates "thorough understanding." Before you get started, this introduction will try to explain what the different scores on the scale are supposed to reflect. Below you will see three different levels of understanding of the how immigration policy impacts the economy. The understanding is shown by depicting the person's knowledge with a verbal description. Please read each explanation level in order to understand how to use the rating scale. As you will see, a 7 implies detailed and deep knowledge of the impacts of immigration policy on the economy. A 1 implies very little knowledge and a 4 is in the middle.

(Bu kısımda, çeşitli politik meseleleri ne kadar iyi anladığınızı değerlendirmenizi isteyeceğiz. Değerlendirmelerinizi 7 puanlık bir ölçekte yapacaksınız. Bu ölçekte 1 "üstünkörü anlıyorum"a ve 7 de "derinlemesine anlıyorum"a denk gelmektedir. Başlamadan önce, bu ölçekteki skorların ne anlama geldiklerini açıklayacağız. Aşağıda göç politikalarının ekonomiye etkilerinin üç farklı seviyedeki anlayış karşılığını göreceksiniz. Lütfen ölçeği nasıl kullanacağınızı anlamak için her seviyedeki açıklamayı okuyunuz. Göreceğiniz üzere, 7 göç politikasının ekonomiye etkisinin ayrıntılı ve derin bir anlayışını ifade ederken; 1 çok az bir anlayışı ve 4 ise ikisinin ortasında bir anlayış seviyesini göstermektedir)

Level 7 Knowledge: A person with level 7 knowledge has very deep and detailed knowledge of immigration policy and its impacts on the economy. For instance he or she will know that one consideration of immigrant impact on local economies is the

relationship between taxes paid versus social services received. But immigration also has less direct impacts on the local economy by influencing pay for higher-skilled workers, prices for goods and services produced by immigrant labor, and efficiency and wages for some owners of capital. He or she will also know that immigrant workers compete with domestic workers for low-skilled jobs, but some immigrants specialize in activities that otherwise would not exist in an area, and thus can increase the overall labor force.

(7. Seviye Bilgi: 7. Seviye bir bilgiye sahip olan bir kişi, göç politikasının ekonomiye etkilerini ayrıntılı ve derin bir şekilde bilmektedir. Mesela, bu kişi göz önünde bulundurması gereken konulardan birinin ödenen vergilerle sağlanan sosyal hizmetler arasındaki ilişki olduğunu bilecektir. Ama göçün yerel ekonomiye--vasıflı işçilerin maaşları, göçmenler tarafından üretilen ürün ve hizmetlerin fiyatları ve çeşitli iş kollarındaki verimlilik ve maaşlar üzerinden--daha dolaylı etkileri de vardır. Ayrıca, bu kişi göçmenlerin yerel halktaki vasıfsız işçilerle rekabet edeceğini ama bir yandan da bazı göçmenlerin kendilerine has çalışma alanları yaratarak iş gücünü arttıracaklarını da bilmektedir.)

Level 4 Knowledge: A person with level 4 knowledge has some knowledge of how immigration policy affects the economy though he or she does not understand the issue in great depth or detail. For instance, he or she might know that immigration can have both positive and negative effects on the economy. He or she might know that immigrants can be a drain in social services and create competition for jobs but also provide an inexpensive source of labor and often fill jobs that domestic residents do not want to do.

(4. Seviye Bilgi: 4. seviye bilgiye sahip bir kişi göç politikalarının ekonomiye etkilerine dair bazı bilgileri vardır ama konuyu ayrıntılı ve derinlemesine bir şekilde

anlamaz. Örneğin, göçün ekonomiye hem olumlu hem de olumsuz etkileri olabileceğini bilir. Ayrıca, bu kişi göçün sosyal hizmetlere yük olacağını ve yerel işlerde rekabet yaratacağını, ama aynı zamanda göçmenlerin ucuz işçilik sağlayacağını ve göçmenlerin genelde yerel insanların yapmak istemediği işleri yapacağını da bilir.)

Level 1 Knowledge: A person with level 1 knowledge knows very little about the immigration policy issue and how it impacts the economy. He or she might know in a cursory way that immigration has economic impacts like affecting competition for jobs.

(1. Seviye Bilgi: 1. seviye bilgiye sahip bir kişi göç politikası ve göçün ekonomiye etkileri hakkında çok az bilgiye sahiptir. Bu kişi, göçün işlerde rekabet yaratmak gibi etkileri olduğunu üstünkörü bir şekilde bilebilir.)

APPENDIX E

INSTRUCTIONS FOR MECHANISTIC-EXPLANATION AND REASON-GENERATION TASKS

Mechanistic-Explanation-Task Instructions (*Mekanik Açıklama Yönergeleri*)

"Now, we'd like to probe your knowledge in a little more detail on two of the political issues. This is the first one. Please describe all the details you know about [...]*, going from the first step to the last, and providing the causal connection between the steps. That is, your explanation should state precisely how each step causes the next step in one continuous chain from start to finish. In other words, try to tell as complete a story as you can, with no gaps. Please take your time, as we expect your best explanation."

("İki politik konu hakkındaki bilginizi biraz daha ayrıntılı bir şekilde araştırmak istiyoruz. Bu birinci konu. Lütfen [...] konusu hakkındaki] tüm bildiklerinizi ayrıntılı bir şekilde, bu politikanın etkilerini ilk adımdan son adıma giderek ve bu adımlar arasındaki neden-sonuç bağlantılarını kurarak açıklayınız. Yani, açıklamanız her adımın bir sonraki adımdaki etkilerini açıkça belirterek ve ilk adımdan son adıma sürekli bir zincir kurarak ilerlemelidir. Başka bir deyişle, boşluk olmadan, olabildiğince eksiksiz bir hikaye anlatmaya çalışın. Sizden en iyi açıklamanızı bekliyoruz, lütfen acele etmeyin.").*

Study 1 Reason-Generation-Task Instructions

(*1. Çalışma Sebep Oluşturma Yönergeleri*)

"Now we'd like to understand a little more deeply why you hold the positions you do for two of the political issues. This is the first one. Please write down all the reasons

you have for your position on [...]*, going from the most important to the least. That is, you should state precisely why you hold the position. Try to tell as complete a story as you can about the reasons for your position. Please take your time, as we expect you to carefully state your reasons."

("İki politik konu hakkındaki görüşünüzü biraz daha derinlemesine anlamak istiyoruz. Bu birinci konu. Lütfen [....] konusundaki görüşünüzde etkili olan nedenleri yazınız. Yani, neden bu görüşü benimsediğinizi belirtmelisiniz. Görüşünüzün nedenleri hakkında olabildiğince eksiksiz bir hikaye anlatmaya çalışın. Sizden görüşünüzün nedenlerini özenle ifade etmenizi bekliyoruz, lütfen acele etmeyin.")*

Study 2 Reason-Generation-Task Instructions

(*2. Çalışma Sebep Oluşturma Yönergeleri*)

"Now we'd like to understand a little more deeply why you hold the positions you do for two of the political issues. This is the first one. Please write down all the reasons you have for your position on [...]*. That is, you should state precisely why you hold the position. Please take your time, as we expect you to carefully state your reasons."

("İki politik konu hakkındaki görüşünüzü biraz daha derinlemesine anlamak istiyoruz. Bu birinci konu. Lütfen [....] konusundaki görüşünüzde etkili olan nedenleri yazınız. Yani, neden bu görüşü benimsediğinizi belirtmelisiniz. Sizden en iyi açıklamanızı bekliyoruz, lütfen acele etmeyin")*

APPENDIX F

FAITH IN INTUITION SCALE

Please indicate how much you agree or disagree with the following statements.

(*Aşağıdaki ifadelere ne kadar katılıp katılmadığınızı lütfen belirtiniz*)

1- Strongly disagree, 2- Somewhat disagree, 3- Neither disagree nor agree, 4 somewhat agree, 5- Strongly agree

(1- Kesinlikle katılmıyorum, 2- Pek katılmıyorum, 3- Ne katılıyorum ne katılmıyorum, 4- Biraz katılıyorum, 5 Kesinlikle katılıyorum)

- Using my gut feelings usually works well for me in figuring out problems in my life.

(*Yaşamımdaki sorunları çözmede sezgilerimi kullanmak genellikle işime yarar*)

- Intuition can be a very useful way to solve problems.

(*Sezgi, sorunları çözmede çok yararlı bir yol olabilir*)

- I hardly ever go wrong when I listen to my deepest gut feelings to find an answer.

(*Bir yanıt bulmak için en derin sezgilerimi dinlediğimde çok nadir yanılırım*)

- I believe in trusting my hunches.

(*Önsezilerime güvenmem gerektiğine inanırım*)

- I often go by my instincts when deciding on a course of action.

(*Bir eylemin yönüne karar verirken sıklıkla içgüdülerim doğrultusunda karar veririm*)

- I like to rely on my intuitive impressions.

(*Sezgisel izlenimlerime güvenmeyi severim*)

- I do not like situations in which I have to rely on intuition.

(*Sezgilerime güvenmek zorunda kaldığım durumlardan hoşlanmam*)

- I do not have a very good sense of intuition.

(*Çok iyi bir sezgi duygusuna sahip değilimdir*)

- I do not think it is a good idea to rely on one's intuition for important decisions.

(*Önemli kararlar için kişinin sezgilerine güvenmesinin iyi bir fikir olduğunu sanmıyorum*)

- I trust my initial feelings about people.

(*İnsanlar hakkındaki ilk duygularıma güvenirim*)

- I tend to use my heart as a guide for my actions.

(*Kalbimi, eylemlerime yön gösterici olarak kullanma eğilimindeyim*)

APPENDIX G

COGNITIVE REFLECTION TEST

CRT-I

1) A ball and a bat costs 1.10 TL. The bat is 1.00 TL more expensive than the ball. How much does the ball cost?

   (*Bir beyzbol sopası ve bir beyzbol topu 1.10 TL tutuyor. Beyzbol sopası, beyzbol topundan 1.00 TL daha pahalı. Buna göre beyzbol topunun fiyatı nedir? (kuruş cinsinden*))

   Intuitive Answer: 10 kuruş – Analytic Answer: 5 kuruş

2) 5 machines make 5 widgets in 5 minutes. How many minutes does it take for 100 machines to make 100 widgets?

   (*5 makine 5 parçayı 5 dakikada üretiyor. Buna göre 100 makine 100 parçayı kaç dakikada üretir?*)

   Intuitive Answer: 100 dakika - Analytic Answer: 5 dakika

3) A certain area of a lake is covered with lotus leaves. The size of this area doubles every day. If this area covers the entire lake in 48 days, how many days does it take to cover half the lake?

   (Bir gölün belli bir alanı nilüfer yapraklarıyla kaplı. Bu alanın büyüklüğü her gün iki katına çıkmaktadır. 48 günde bu alan gölün tamamını kapladığına göre, kaç günde gölün yarısını kaplar?)

   Intuitive Answer: 24 gün – Analytic Answer: 47 gün

CRT-II

1) You are in a race and you just beat the person who was in the second place. What is your placing now?

   (*Siz bir koşu yarışındasınız ve ikinci olan kişiyi geçtiniz kaçıncı sıraya yükselirsiniz?*)

   Intuitive Answer: 1. – Analytic Answer: 2.

2) There are 15 sheep on a farm. All but eight are dead, how many are left?

   (*Bir çiftlikte 15 tane koyun var. 8 tanesi hariç hepsi öldü, geriye kaç tane kaldı?*)

   Intuitive Answer: 7 – Analytic Answer: 8

3) Ayşe's father has 3 children. If the names of the first two children are Eylül and Ekim, what is the name of the third child?

   (*Ayşe'nin babasının 3 tane çocuğu var. İlk iki çocuğunun adı Eylül ve Ekim ise üçüncü çocuğunun adı nedir?*)

   Intuitive Answer: Kasım – Analytic Answer: Ayşe

4) How many cubic meters of soil are there in a 3-meter-deep, 3 meter long, 3 meter wide (empty) pit?

   (*3 metre derinliğinde, 3 metre uzunluğunda, 3 metre genişliğinde (boş) bir çukurun içinde kaç metreküp toprak vardır?*)

   Intuitive Answer: 27 – Analytic Answer: 0

APPENDIX H

DEMOGRAPHIC FORM

1) Your Biological Sex (*Biyolojik Cinsiyetiniz):* ○ Woman ○ Man ○ Intersex ○ Other

(Kadın) (Erkek) (Interseks) (Diğer)

2) Your age *(Yaşınız):*_____

3) Which one does best describe your religion/belief system?

(*Aşağıdakilerden hangisi sizin dini/inanç sisteminizi en iyi ifade etmektedir?*)

○ I do not believe in God (I am an atheist) ○ I believe in God but I do not prefer a religion ○ I am Muslim ○ Other (Please specify)

(– Tanrı'ya inanmam (Ateistim) – Tanrı'ya inanıyor ama bir dini tercih etmiyorum – Müslümanım – Diğer (Lütfen Belirtiniz))

4) Do you consider yourself a religious person?

(*Kendinizi dindar/inanan biri olarak nitelendirir misiniz?*)

1----------2----------3----------4----------5----------6----------7

Not at all religious (*Hiç dindar değilim*) Very religious (*Çok dindarım*)

5) The place you longest resided

(*En uzun süreyle yaşadığınız yer neresidir*)

○ Metropolis ○ City ○ Borough ○ Small town ○ Village

(*Büyükşehir – Şehir – Kasaba – Belde – Köy*)

6) We often hear about left and right in political matters. Below is a left-right ruler. Here, 1 indicates the far left and 7 indicates the far right. Where do your opinions fit on this scale?

(*Siyasi konularda "sol"dan ve "sağ"dan bahsedildiğini sık sık duyuyoruz. Aşağıda bir sol-sağ cetveli var. Burada "1" en solu, "7" ise en sağı gösteriyor. Sizin kendi görüşleriniz bu cetvelin neresinde yer alır?*)

Left Moderate Right

1----------2----------3----------4----------5----------6----------7

(Sol) (Orta) (Sağ)

7) Can you identify your childhood income level?

(Çocukluğunuzdaki gelir seviyesini nietelendirir misiniz?)

○ Very good ○ Not bad ○ Bad ○ Very bad

(*– Çok iyi – Fena değil – Kötü – Çok kötü*)

APPENDIX I

REPORTED PRE-UNDERSTANDING LEVELS AND PRE-EXPLANATION ATTITUDE EXTREMITY FOR EACH ISSUE

Table G1. Reported Pre-understanding levels and pre-explanations attitude extremity for each issue in study 1

Topic	Reported pre-understanding levels	Pre-explanation attitude extremity
Hunting ban	*M* = 5.33, *SE* = 1.60	*M* = 2.18, *SE* = 1.00
Paternity leave	*M* = 5.49, *SE* = 1.61	*M* = 2.09, *SE* = 1.01
Individual pension	*M* = 3.29, *SE* = 1.82	*M* = 1.26, *SE* = 1.08
Abortion ban	*M* = 5.59, *SE* = 1.57	*M* = 2.37, *SE* = 0.96
Central bank	*M* = 3.40, *SE* = 2.11	*M* = 0.99, *SE* = 1.13
Primary school age	*M* = 4.75, *SE* = 1.55	*M* = 1.33, *SE* = 0.98
Social support for Syrian refugees	*M* = 4.79, *SE* = 1.55	*M* = 1.46, *SE* = 0.93
Daylight saving time	*M* = 4.31, *SE* = 1.77	*M* = 1.49, *SE* = 1.16

Table G2. Reported Pre-understanding levels and pre-explanations attitude extremity for each issue in study 2

Topic	Reported pre-understanding levels	Pre-explanation attitude extremity
Hunting ban	*M* = 4.80, *SE* = 1.75	*M* = 2.09, *SE* = 0.99
Paternity leave	*M* = 4.84, *SE* = 1.74	*M* = 2.19, *SE* = 0.97
Presidential system	*M* = 4.93, *SE* = 1.78	*M* = 2.29, *SE* = 1.01
Retirement age	*M* = 3.99, *SE* = 1.56	*M* = 1.49, *SE* = 1.03
Abortion ban	*M* = 5.43, *SE* = 1.66	*M* = 2.38, *SE* = 0.96
Primary school age	*M* = 3.94, *SE* = 1.64	*M* = 1.22, *SE* = 0.99
Social support for Syrian refugees	*M* = 4.63, *SE* = 1.52	*M* = 1.57, *SE* = 0.92
Daylight saving time	*M* = 3.85, *SE* = 1.87	*M* = 1.72, *SE* = 1.13

APPENDIX J

ETHICS APPROVAL

T.C.
BOĞAZİÇİ ÜNİVERSİTESİ
SOSYAL VE BEŞERİ BİLİMLER YÜKSEK LİSANS VE DOKTORA TEZLERİ ETİK İNCELEME KOMİSYONU
TOPLANTI TUTANAĞI

Toplantı Sayısı	:	13
Toplantı Tarihi	:	11.02.2021
Toplantı Saati	:	12:30
Toplantı Yeri	:	Zoom Sanal Toplantı
Bulunanlar	:	Prof. Ebru Kaya, Prof. Dr. Fatma Nevra Seggie, Doç. Dr. Mehmet Yiğit Gürdal, Dr. Öğr. Üyesi Yasemin Sohtorik İlkmen
Bulunmayanlar	:	

Sinem Yılmaz
Psikoloji

Sayın Araştırmacı,

"The Illusion of Explanatory Depth in Moral versus Non-Moral Issues: An Extension of Fernbach, Rogers, Fox, and Sloman (2013)" başlıklı projeniz ile ilgili olarak yaptığınız SBB-EAK 2021/1 sayılı başvuru komisyonumuz tarafından 11 Şubat 2021 tarihli toplantıda incelenmiş ve uygun bulunmuştur.

Bu karar tüm üyelerin toplantıya çevrimiçi olarak katılımı ve oybirliği ile alınmıştır. COVID-19 önlemleri kapsamında kurul üyelerinden ıslak imza alınamadığı için bu onam mektubu üye ve raportör olarak Yasemin Sohtorik İlkmen tarafından bütün üyeler adına e-imzalanmıştır.

Saygılarımızla, bilgilerinizi rica ederiz.

Dr. Öğr. Üyesi Yasemin
SOHTORİK İLKMEN
ÜYE

e-imzalıdır
Dr. Öğr. ÜyesiYasemin Sohtorik
İlkmen
Öğretim Üyesi
Raportör

SOBETİK 13 11.02.2021

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