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Meta-ethics and the mortality: Mortality salience leads people to adopt a less subjectivist morality



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ABSTRACT

Although lay notions in normative ethics have previously been investigated within the framework of the dual-process interpretation of the terror management theory (TMT), meta-ethical beliefs (subjective vs. objective morality) have not been previously investigated within the same framework. In the present research, we primed mortality salience, shown to impair reasoning performance in previous studies, to see whether it inhibits subjectivist moral judgments in three separate experiments. In Experiment 3, we also investigated whether impaired reasoning performance indeed mediates the effect of mortality salience on subjectivism. The results of the three experiments consistently showed that people in the mortality salience group reported significantly less subjectivist responses than the control group, and impaired reasoning performance partially mediates it. Overall, the results are consistent with the dual-process interpretation of TMT and suggest that not only normative but also meta-ethical judgments can be explained by this model.

1. Introduction

The dual-process model of the mind claims that our mind is governed by two separate but interacting systems called Type 1 and Type 2. Type 1 corresponds to the processes that are deployed quickly, automatically and are intuitive and evolutionarily older. Type 2 processes, on the other hand, are those that are analytic, controlled and evolutionarily more recent (Evans & Stanovich, 2013; Frederick, 2005; Morewedge & Kahneman, 2010; Stanovich & West, 2000). As a computational system, the mind is designed by default to make decisions using the least energy consuming processes (Toplak, West, & Stanovich, 2014). This is usually achieved using the automatic and intuitive Type 1 resources. For example, we use Type 1 processes when we orient toward the source of an unexpected sound (Kahneman, 2011). The computationally expensive Type 2 processes, on the other hand, consume energy to override the automatic activation of Type 1 processes when needed. For example, we use Type 2 processes when we need to focus on a specific person's voice in a crowded and noisy room (Kahneman, 2011). The dual-process view of the human mind, concomitant with its underlying “cognitive miser” assumption (Tversky & Kahneman, 1974), has been the dominant view in the last couple of decades in the field of social cognition (see Chaiken & Trope, 1999; Deutsch, & Strack, 2006). One such example is its use to explain the effect of mortality salience.

1.1. Mortality salience and thinking styles

In the Terror Management Theory (TMT; Greenberg, Solomon, & Pyszczynski, 1997), the deepest fear in humans is the fear of death and all human striving is motivated by this fear (Becker, 1973). Furthermore, political and religious leaders assume social power by offering remedies for this fundamental fear. Reminding people of their own death, therefore, may lead to stronger adherence to their political beliefs (Greenberg et al., 1997). This effect is supposed to be due to an implicit and unconscious knowledge of mortality rather than a conscious awareness of it (Greenberg et al., 2003).

Although mortality salience has since been interpreted from various perspectives, the dual-process model is currently the best empirically supported explanation (Pyszczynski, Greenberg, & Solomon, 1999; Trémolière, De Neys, & Bonnefon, 2012, 2014). In the dual-process account of mortality salience, people try to avoid thoughts of death when they are reminded of their own mortality and they use effortful cognitive processes to do that. Consistent with this account, Arndt, Greenberg, Solomon, Pyszczynski, and Simon (1997) found that people reminded of mortality have more difficulty avoiding thoughts related to death when their cognitive resources (i.e., Type 2 processes) are depleted through manipulation of cognitive load (see also Gailliot, Schmeichel, & Baumeister, 2006). Similarly, people perform more poorly during a syllogistic reasoning task given after their mortality has been made salient, presumably because they are implicitly trying to

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avoid thoughts of death at the same time and thus consuming limited Type 2 resources that are also required to perform well in the reasoning task (see also Trémolière, et al., 2012, 2014). Taken together, these results suggest that mortality salience produces some sort of cognitive load and influences judgments and performance by suppressing analytic (Type 2) processes. Mortality salience manipulation has been frequently used in moral and political psychology and was shown to create a shift in moral foundations (Vyver et al., 2016), in political outlook, making participants more conservative (Landau et al., 2004), and in normative moral judgments, making participants less utilitarian (Trémolière et al., 2012). Furthermore, making moral judgments under mortality salience is a more ecologically valid way of studying moral psychology (compared to counting backwards or keeping meaningless items in mind) since moral judgments in everyday life are sometimes made when lives are at stake and when mortality is salient in the judge's mind. Therefore, the present study specifically examines the effect of mortality salience on moral judgments within the framework of the dual-process model.

1.2. Morality and the thinking styles

An important distinction in moral psychology is between normative and meta-ethical judgments. The two prominent and rival views in normative ethics are deontology, which emphasizes rights and duties, and utilitarianism, which emphasizes how much the consequences of an action promote general well-being. In Greene's, Sommerville, Nystrom, Darley, and Cohen (2001) two-system account, utilitarian moral judgments rely on analytic processes whereas deontological judgments rely on emotional or intuitive processes. In this view, activating analytic processes should promote utilitarian judgments (but see Kahane, 2012; see also Aktas, Yilmaz & Bahçekapili, 2017). Kvaran, et al. (2013) exposed participants to mathematical problems to activate analytical thinking and indeed observed an increase in the rate of utilitarian responses to moral dilemmas. Trémolière et al. (2012), on the other hand, observed a decrease in utilitarian judgments under mortality salience and demonstrated that this is due to the high cognitive load, which presumably suppresses analytic thinking, created by mortality salience. These results are consistent with the predictions of Greene et al.'s (2001) dual-system view and the dual process interpretation of the TMT.

1.3. Psychology of meta-ethics

Another aspect of morality, the focus of this study, is meta-ethics. Meta-ethics is concerned with the metaphysical, epistemological, and semantic aspects of ethical claims. One prominent question in meta-ethics is whether the truth of moral claims is objective or subjective. Objectivity, as used here, refers to truths that are universal and independent of the opinions of individuals whereas subjectivity refers to truths that are dependent on the opinions of people or on the contingent norms of particular societies.

Empirical work on the psychology of meta-ethics has been relatively scarce. In one of the first studies, Nichols and Folds-Bennett (2003) showed that 4–6-year-old children can distinguish moral claims from personal preferences, finding the former more objective. Another study revealed that college students adopt objectivist or subjectivist morality depending on the nature of the moral transgression (Nichols, 2004). Similarly, Goodwin and Darley (2008) found that, although people see moral claims as more objective than conventions and personal tastes, ratings of objectivity vary depending on the person and the moral scenario. In this study, objectivity was operationally defined as the belief that, in the case of a disagreement over a moral issue, at least one of the disagreeing sides has to be wrong since there is a single objectively right answer to the issue. Three predictors of adopting an objectivist morality were (1) seeing morality as based on God; (2) seeing the moral principle in question as indispensable for being a “good

person”, and (3) seeing the moral principle in question as indispensable for the well-being of the society.

According to Goodwin and Darley (2012), judgments regarding the moral status of physical harm are seen as more objective than judgments about positive moral acts. Another factor determining objectivity judgments was whether the majority of people think the same way (see also Sarkissian, Park, Tien, Wright, & Knobe, 2011). One consequence of objectivist morality is closed-mindedness and prejudice since someone who disagrees with you on a moral issue is necessarily wrong and immoral. Thus, Goodwin and Darley (2012) found that objectivists are more likely to refuse to share an apartment with someone who has divergent moral views. Another meta-ethical view, the belief that morality is founded on a divine authority (known as Divine Command Theory), is also highly related to lay belief in objectivism. Piazza and Landy (2013) showed that the belief that morality is founded on a divine authority explains the association between religiosity and several normative moral judgments (e.g., non-utilitarian moral judgments) to a significant extent. Thus, in addition to normative ethical views, the meta-ethical views must be taken into account in order to better understand the lay notions of moral judgments.

1.4. Meta-ethics and the thinking styles

Although empirical research in the domain of meta-ethics is rather scarce, there are several preliminary findings to suggest that meta-ethical judgments can also be influenced by the thinking styles. For instance, Goodwin and Darley (2012) reported that one consequence of objectivist morality is closed-mindedness. Unlike objectivist morality, adopting a subjectivist morality is correlated with improved performance on a disjunctive reasoning task (reported in Goodwin and Darley, 2010). This finding is consistent with the idea that closed-mindedness occurs under conditions where analytic thinking is suppressed for various reasons (e.g., time pressure or being under cognitive load; see Kruglanski, 2004). On the other hand, priming moral subjectivism increases cheating (Rai & Holyoak, 2013) whereas priming moral objectivism increases prosociality (Young & Durwin, 2013). The latter finding can also be seen as related to thinking styles because a recent finding suggests that people who are more capable of cognitive control (i.e., those who are more adept in initiating Type 2 processes) show less prosociality in economic games (Yamagishi et al., 2016; see also Rand et al., 2014). Lastly, priming subjectivism has been found to decrease religious belief (Yilmaz & Bahçekapili, 2015). Although the exact mechanism of this effect is still untested, one possible mechanism is subjective morality activating analytic thinking, thereby decreasing religious belief. In other words, since most participants are moral objectivists in most of the moral scenarios (Goodwin and Darley, 2008), priming subjectivism might lead them to have a greater change of moral outlook compared to priming objectivism, thereby activating their analytic thinking. Given the prevalence of findings regarding a negative relationship between analytic thinking and religious belief (Bahçekapili & Yilmaz, 2017; Pennycook, Ross, Koehler & Fugelsang, 2016), the relation between subjective morality and religious belief can also be interpreted within the framework of different thinking styles. However, to the best of our knowledge, the cognitive mechanisms that lead to different meta-ethical judgments have not been experimentally investigated so far.

1.5. The current study

In the present paper, we primed mortality salience, shown to impair reasoning performance in previous studies (see Trémolière et al., 2012, 2014), to see whether it inhibits subjectivist moral judgments in three separate experiments. Based on the assumption that mortality salience leads to impaired reasoning performance, we specifically hypothesized in Experiment 1 and 2 that people under mortality salience would be less likely to adopt a subjectivist meta-ethical view. We did not predict

a parallel increase in objectivist meta-ethics as a result of the mortality salience manipulation because objectivist judgments are hypothesized to be generated by Type 1 processes (as a default or baseline belief) which are not influenced by the suppression of analytic thinking. In Experiment 1, after the mortality salience manipulation, we measured objectivist and subjectivist morality using a scale. In Experiment 2, after the same manipulation, we measured objectivist and subjectivist morality using responses to two dilemmas. In the first two experiments, the dimensionality of objectivist and subjectivist responses was treated as orthogonal, but it is also possible that they are the two ends of a single continuum and not orthogonal variables. Thus, in Experiment 3, we measured objectivism and subjectivism as the two ends of a single continuum. We also directly investigated whether impaired reasoning performance mediates the effect of mortality salience on subjectivist moral judgments in Experiment 3.

2. Experiment 1

2.1. Method

Participants. We report all the measures, manipulations and exclusions in this and the remaining experiments. Since there were no previous studies on the relationship between mortality salience and meta-ethics, we estimated the effect size as 0.3 (f) and calculated that we need to collect data from at least 90 people to achieve 80% power (Faul, Erdfelder, Lang, & Buchner, 2007). We collected data from 100 Dogus University (Istanbul) undergraduates (Mean age = 21.64, SD = 3.60, 73 women), taking into account potential data loss. Participants were randomly assigned to mortality salience (MS, n = 49) and control groups (n = 51). The majority of the participants were Muslim (n = 77). Of the remaining, 10 were atheists and 11 believed in God without being affiliated with an organized religion. Two participants did not answer the question.

Materials and procedure. To remind people of their mortality, two instructions were given to the participants in the MS group. The first one was “Please briefly describe the emotions that the thought of your own death arouses in you.” The second one was “Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead.” In the control group, two parallel questions about television watching were asked; specifically, “Please briefly describe the emotions that the thought of watching television arouse in you”, “Jot down, as specifically as you can, what you think will happen to you as you watch television”. All participants were included in the analysis as each participant answered all questions. Pyszczynski et al. (1999) report that the effect of MS manipulation on the dependent variable becomes more accessible and effective when a delay occurs between the manipulation and the measurement. We, therefore, gave the participants a 12×12 letter matrix distractor task after the manipulation (Doğulu, 2012). In this task, the participants searched for twelve common words (e.g., book, grass), which took about 2–3 min to answer.

Afterwards, the meta-ethics scale developed by Yilmaz and Bahçekapili (2015) was administered to reveal the subjectivist and objectivist moral opinions of the participants. In this scale, four items are related to objective meta-ethics (α = .79) and four are related to subjective meta-ethics (α = .86, see Appendix for the scale items). The scale uses a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Later, the participants filled in a demographic form, including a religiosity question scored from 1 (I'm not religious at all) to 7 (I'm highly religious). Participants participated in the experiment in groups of 3–4. The experiment took about 15 min.

2.2. Results and discussion

As predicted, the MS group (M = 4.23, SE = 0.27; 95% CI [3.68, 4.78]) reported a lower subjective morality score than the control group

(M = 4.97, SE = 0.18; 95% CI [4.61, 5.32]). A one-way ANOVA revealed that this difference was significant, $F(1, 98) = 5.18, p = .025, \eta p^2 = .050$. When the level of religiosity was controlled, this effect remained significant, $F(1, 97) = 6.15, p = .015, \eta p^2 = .060$. Although the MS group (M = 3.47, SE = 0.24; 95% CI [2.98, 3.95]) reported a slightly lower objective morality score than the control group (M = 3.76, SE = 0.20; 95% CI [3.36, 4.15]), a one-way ANOVA showed no significant difference, $F(1, 95) = 0.85, p = .36, \eta p^2 = .009$. In other words, our manipulation did not affect the participants' objective moral judgments. When we computed a final score by subtracting the objectivism score from the subjectivism score, the results failed to generate any significant differences between the mortality salience and the control group, $F(1, 95) = 0.75, p = .39, \eta p^2 = .008$, which casts doubt on the reliability of the significant finding.

One possibility is that a respondent might be uncertain as to which action is morally right in a particular situation but still believe that objective moral rules apply in all situations. This respondent might thus agree with the subjectivism items not because she is a subjectivist but because of her uncertainty. Therefore, there is a need to replicate the present findings using another meta-ethical measure.

3. Experiment 2

3.1. Method

Participants. In this experiment, we aimed to collect data from at least 90 participants using the criteria in Experiment 1. A total of 95 (mean age = 21.83, SD = 2.76, 74 women) undergraduates from Dogus University were recruited taking into account potential data loss. Participants were randomly assigned to MS (n = 47) and control groups (n = 48). The majority of the participants were Muslim (n = 70). Nine of the remaining were atheists, 11 defined themselves as believing in God without being affiliated with an organized religion and five did not answer the question.

Materials and procedure. The manipulation phase was the same as in Experiment 1, except for the absence of the distractor task (cf. Pyszczynski et al., 1999). Instead, immediately after the manipulation, the participants were asked to respond to two separate moral dilemmas to reveal their meta-ethical views as in Trémolière et al.'s (2012, 2014) experimental protocols.

The dilemmas used were taken from Yilmaz and Bahçekapili (2015, Study 2). In both dilemmas, two people are discussing a moral issue. One of the dilemmas concerns the fairness dimension of the moral foundations theory (Haidt, 2007), while the other relates to the harm dimension. We restricted the dilemmas to the fairness and harm dimensions because individuals across the political spectrum attach more or less the same level of importance to these two (see Haidt, 2007). The first scenario related to the fairness dimension is as follows:

Ali and Hasan are in a heated debate. A lottery ticket Ali bought has won the big prize but, unaware of this, Ali left the ticket unattended on a desk. Hasan picked up the ticket and when he realized that it won the big prize, he took the entire prize for himself and gave nothing to Ali. Ali argues that he has a right to claim at least part of the prize whereas Hasan thinks he is under no obligation to give him anything.

Who do you think is right in this debate?

The second scenario related to the harm dimension is as follows:

Alper and Ahmet are in car and Alper is driving fast since they are in a hurry. While taking a sharp turn, Alper overruns a cat. Although he realizes this, Alper thinks they need to go ahead since they are already late. Ahmet, on the other hand, argues that they should get out and check the cat and take it to a veterinary clinic if it is alive. Who do you think is right in this debate?

After each moral dilemma, the participants answered three

questions about who is right in the debate (see Nichols, 2004). The first question asked the extent to which they agree with the statement “Person 1 is right”, and the second one asked the extent to which they agree with the statement “Person 2 is right”. A third question asked if they agree with the statement “One cannot say one of them is right and the other wrong because there are no absolute rights or wrongs in these matters”. Each question was scored from 1 (strongly disagree) to 7 (strongly agree). The absolute value of the difference between the first and second questions was taken as the objective morality score. The mean of the responses given to the third question of the two moral dilemmas was taken as the subjective morality score (see Yilmaz & Bahçekapili, 2015). Higher scores indicate higher objective and subjective morality scores. Next, the participants filled a demographic form including a religiosity question scored from 1 (I’m not religious at all) to 7 (I’m highly religious). Participants participated in the experiment individually and took approximately 15 min to complete.

3.2. Results and discussion

The MS group ($M = 1.30$, $SE = 0.18$; 95% CI [0.93, 1.67]) reported a lower subjective morality score than the control group ($M = 2.17$, $SE = 0.28$, 95% CI [1.60, 2.73]). The results of a one-way ANOVA revealed that this difference was significant, $F(1, 93) = 6.60$, $p = .012$, $\eta^2 = .066$. When the religiosity levels of the participants was controlled, the results remained constant, $F(1, 94) = 6.95$, $p = .010$, $\eta^2 = .070$. However, although the MS group ($M = 4.32$, $SE = 0.23$; 95% CI [3.86, 4.77]) reported a slightly lower objective morality score than the control group ($M = 4.46$, $SE = 0.23$, 95% CI [3.99, 4.92]), there was no significant difference between the two groups, $F(1, 93) = 0.19$, $p = .668$, $\eta^2 = .002$. The results remained constant when religiosity was controlled, $F(1, 92) = 0.14$, $p = .714$, $\eta^2 = .001$. When we computed a final score by subtracting the objectivism score from the subjectivism score, the results failed to generate any significant differences between the mortality salience and the control group, $F(1, 93) = 1.84$, $p = .178$, $\eta^2 = .019$ as in Experiment 1. These results conceptually replicate the findings of Experiment 1. Lack of an effect in the combined measure again renders the findings inconclusive. Hence, there is still a need for further replication in a high-powered study since a post-hoc power analysis suggested that at least 120 participants were required to detect an effect with an 80% power.

4. Experiment 3

This experiment incorporates several improvements over the previous two. First, with a sample size of 334 participants, it is a significantly higher powered study. Second, in this experiment, the control condition involved pain manipulation, instead of television watching, which is closer to mortality and thus a better comparison. Third, since both Experiment 1 and 2 revealed a significant negative correlation between objectivism and subjectivism, they point to the possibility that objective and subjective morality are not really independent but opposite ends of a single continuum. Since the vast majority of the philosophical and empirical literature also assumes this to be true, Experiment 3 treated them as a continuum. Last, in the first two experiments, we only suggested that impaired reasoning performance might mediate the effect of mortality salience on subjectivist morality, instead of directly testing it. In this experiment, we directly investigated the mechanism underlying this effect.

4.1. Method

Participants. Trémolière et al. (2014) previously used the mortality salience manipulation (vs. pain condition) in the replication study of their Experiment 1 and showed a marginally significant interaction between manipulation and question type (conflict vs. no-conflict problems) with 126 participants (see below for details). This interaction

shows that mortality salience manipulation impairs reasoning performance only on conflict problems. Thus, in accordance with Simonsohn’s (2015) suggestion that sample sizes of replication studies should be at least two and a half times more than the original sample sizes, we aimed to collect data from at least 315 participants to detect an effect. For the effect of MS on subjectivism, we used the effect size found in Experiment 1 as a criterion, which indicated that at least 208 participants are required to detect an effect with a 95% power. Considering potential attrition, a total of 334 participants (mean age = 27.68, $SD = 8.94$, min. = 18, max. = 69; 198 women) were recruited through online platforms such as Facebook or Twitter in exchange of a gift draw. Participants were randomly assigned to MS ($n = 170$) and pain groups ($n = 164$). The majority of the participants were Muslim ($n = 196$). Twenty-eight of the remaining were atheists, 54 defined themselves as believing in God without being affiliated with an organized religion, 30 believed a religion other than Islam, and 26 did not answer the question.

Materials and procedure. The manipulation phase was the same as in Experiment 2, except for the control group. Participants responded to similar questions about extreme pain in the control group (Greenberg et al., 1997; Trémolière et al., 2014): “Please briefly describe the emotions that the thought of intense pain arouses in you.”; “Jot down, as specifically as you can, what you think will happen to you when you are in intense pain.” After the manipulation phase, the participants were asked to respond to six moral dilemmas which were taken from Yilmaz and Bahçekapili (2015, Study 2).

Two of the six dilemmas were exactly the same as in Experiment 2 (see Yilmaz & Bahçekapili, 2015 for the full versions of all the dilemmas). After each moral dilemma, the participants selected one option from three questions about who is right in the debate. The first question asked whether they agree with the statement “Person 1 is right”, and the second one asked whether they agree with the statement “Person 2 is right”. A third question asked if they agree with the statement “One cannot say one of them is right and the other wrong because there are no absolute rights or wrongs in these matters.” In contrast to Experiment 2, the participants categorically selected only one of the three options instead of responding to a continuous measure since, as described above, lay notions of objectivism and subjectivism are probably better conceptualized as the two ends of a single continuum. Choosing either the first or the second option was categorized as objectivism, whereas choosing the last option was categorized as subjectivism (0 = objectivism, 1 = subjectivism). We computed scores on six moral dilemmas to create one total subjectivism score. Thus, everyone had a score ranging from 0 to 6, higher scores indicating higher subjective morality.

Next, the participants were exposed to four reasoning problems, two of which were base-rate conflict problems, and the other two were base-rate congruent (no-conflict) problems (see De Neys & Glumicic, 2008). These base-rate problems have been previously used in numerous studies (see Barbey & Sloman, 2007 for a review). In base-rate conflict problems, there is stereotypical information which leads the participants to give the intuitive answer disregarding base-rate probability. A sample conflict problem is as follows:

“In a study, 1000 people were tested. Among the participants, there were 5 engineers and 995 lawyers. Jack is a randomly chosen participant of this study. Jack is 36 years old. He is not married and is somewhat introverted. He likes to spend his free time reading science fiction and writing computer programs. Which is most likely? (a) Jack is a lawyer (b) Jack is an engineer”.

People generally ignore the base-rate information given in the problem (on the basis of the base rate information, Jack is a lawyer with a 99.5% probability), and choose the intuitive answer in terms of the stereotypical information (Jack resembles the stereotype of a typical engineer), whereas more analytic thinkers are more likely to take into account the base-rate information and choose the less intuitive answer

(Jack is a lawyer). Thus, choosing the base-rate respecting answer conflicts with the intuitive stereotype-based answer and requires using cognitive energy (De Neys, 2006).

In no-conflict problems, the base-rate respecting answer is consistent with the stereotype information given, thus choosing the base-rate respecting answer does not require much executive functioning. A sample item is as follows:

“In a study, 1000 people were tested. Among the participants, there were 996 kindergarten teachers and 4 executive managers. Lilly is a randomly chosen participant of this study. Lilly is 37 years old. She is married and has 3 kids. Her husband is a veterinarian. She is committed to her family and always watches the daily cartoon shows with her kids. Which is most likely?
 (a) Lilly is a kindergarten teacher (b) Lilly is an executive manager.

We computed separate scores for base-rate conflict and no-conflict problems. Finally, the participants filled a demographic form including a religiosity question scored from 1 (I'm not religious at all) to 7 (I'm highly religious).

Results and discussion. Fig. 1 demonstrates the performance of the participants as a function of problem type (conflict vs. no conflict) and manipulation type (mortality vs. pain). A 2 (manipulation: mortality salience or pain) × 2 (problem type: conflict or no-conflict) mixed ANOVA (where the latter factor was within-subjects) revealed a main effect of problem type, showing the greater difficulty of conflict problems, $F(1, 308) = 248.36, p < .001, \eta^2 = .446$. The results also showed a marginally significant interaction effect between our manipulation and problem type, $F(1, 308) = 2.79, p = .096, \eta^2 = .01$, as in Trémolière et al.'s (2014) study (their interaction effect was $p = .08$). Although this trending effect did not strongly support our hypothesis, planned contrast tests supported the hypothesis that mortality salience manipulation impairs analytic thinking performance on only conflict problems, $t(308) = 2.16, p = .031$, Cohen's $d = 0.25$, but not on non-conflict ones, $t(309) = -.080, p = .936$, Cohen's $d = 0.01$, together with the main effect of problem type. Thus, these findings conceptually replicate Trémolière et al.'s (2014) findings.

The MS group ($M = 1.21, SE = 0.082; 95\% CI [1.05, 1.37]$) reported a lower subjective morality score than the control group ($M = 1.51, SE = 0.10, 95\% CI [1.31, 1.71]$), replicating the previous two experiments. The results of a one-way ANOVA revealed that this difference is significant, $F(1, 318) = 5.46, p = .020, \eta^2 = .017$. When the religiosity levels of the participants were controlled, the results remained constant, $F(1, 306) = 5.70, p = .018, \eta^2 = .018$.

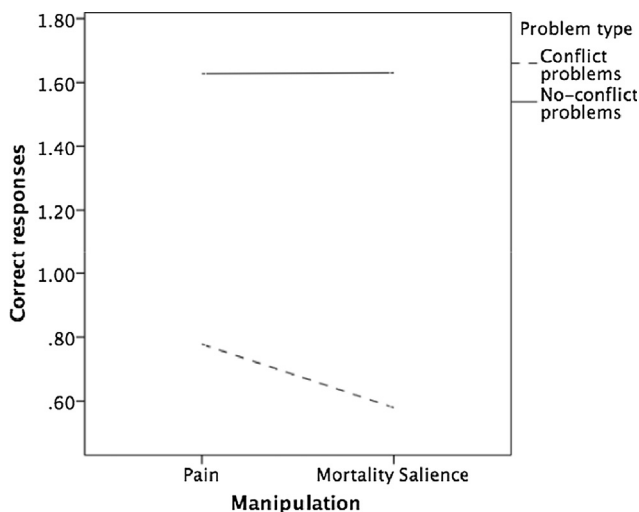


Fig. 1. Mean number of correct responses (out of a possible 2) as a function of problem type (conflict vs. no conflict) and the mortality salience (vs. pain) manipulation

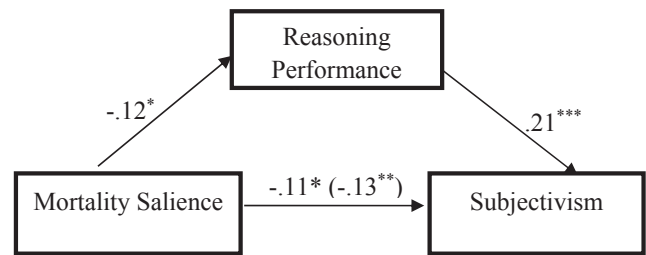


Fig. 2. The mediating role of reasoning performance on the effect of mortality salience on subjectivism. Total effect in parentheses. * $p < .050$, ** $p < .021$, *** $p < .001$.

To test whether impaired reasoning performance mediates the effect of mortality salience on subjectivism, we used a bootstrapping analysis (Preacher & Hayes, 2004) to estimate 95% confidence intervals for the indirect effect of MS via reasoning performance on subjectivism, using 5,000 bootstrap resamples. We conducted the analysis with the mortality salience manipulation (0 = pain, 1 = mortality salience) as the predictor, reasoning performance on conflict problems as the mediator, and subjectivism as the outcome variable (Fig. 2). The indirect effect of MS on subjectivism through reasoning performance was significant (95% CI $[-.149, -.008]$). However, the direct effect of MS on subjectivism was still significant when controlling for reasoning performance ($p = .043; 95\% CI [-.519, -.008]$). Thus, the results suggest that impaired reasoning performance partially mediates the effect of mortality salience on subjectivism.

5. General discussion

In three separate experiments, we investigated whether manipulating mortality salience, which was previously shown to impair reasoning performance (Trémolière, De Neys, & Bonnefon, 2014), leads to a reduction in subjectivist moral judgments. The results supported our hypothesis. In Experiment 1, we used a scale that measured subjective and objective morality and observed that MS manipulation reduced subjectivist morality but did not change objectivist morality. In Experiment 2, we did a conceptual replication and observed a decrease in subjective morality after MS manipulation using two dilemmas instead of a scale. In Experiment 3, we measured objectivism and subjectivism as the two ends of a single continuum. In addition, we not only replicated Trémolière et al.'s (2014) finding that mortality salience impairs reasoning performance, but also demonstrated that impaired reasoning performance partially mediates the effect of mortality salience on subjectivism. The results are consistent with the dual-process model of the mind (Greene, 2007; Pyszczynski, et al., 1999; Trémolière et al., 2012, 2014) and show for the first time that not only normative moral judgments but also meta-ethical judgments can be explained within this framework.

5.1. Implications

One possible way to conceptualize the current finding is to locate them in TMT. One of the central tenets of TMT is that mortality salience might activate some motivational concerns related to worldview defenses including greater punitiveness toward moral violators, which in turn can explain why people decreased their endorsement of subjectivist morality after mortality has been salient on their minds. In other words, the underlying mechanism of the current finding might be simply the worldview defense since moral objectivism can be a solid basis to defend one's worldview. The last experiment, where objectivism and subjectivism are conceptualized as the two ends of a single continuum, and thus a decrease in subjectivism is treated an increase in objectivism, supports this argument.

An alternative explanation of the current finding is that mortality

saliency can activate religious belief in general, and belief in a personal God in particular, which in turn might decrease endorsement of subjectivist morality. There are some findings to suggest that mortality saliency has differential effects on the religious and non-religious people (Jonas, & Fischer, 2006; Norenzayan, Dar-Nimrod, Hansen, & Proulx, 2009; see also for a meta-analysis Jackson et al., 2018), and other findings to suggest that priming religious belief decreases subjective morality (Yilmaz & Bahçekapili, 2015). Although this interpretation of the current finding is compatible with the above-mentioned literature, the findings in all experiments speak against this explanation since statistically controlling for religiosity did not change the main results.

5.2. Limitations and future directions

Since these studies are not very common in Turkey, MS materials in Experiment 1 and 2, have been used in a way that has been shown to have an effect on Turkish participants (i.e., watching television in the control group), see Koca-Atabey & Öner-Özkan, 2011, Kökdemir and Yeniçeri, 2010). However, the use of the “pain condition” in the control condition of Experiment 3 strengthened the current findings and ruled out the possibility that the effect is driven by the negative mood caused by mortality saliency.

Another test of the dual-process model that awaits future research is to activate, rather than suppress, analytic thinking and see whether it has the effect of promoting subjectivist morality. In addition, this research was conducted in a Muslim majority community, as opposed to most previous research done in Western and Christian communities. Therefore, replication studies need to be conducted to determine whether the demonstrated effect is replicable with people from other cultural backgrounds. In addition, utilitarian and subjectivist moral judgments may rely on similar mechanisms. Future research should empirically examine whether priming utilitarianism or subjectivism influence one another (see Yilmaz & Bahçekapili, 2015, Study 3, for one way to prime subjectivist morality).

Appendix

The Meta-Ethics Questionnaire Used in Experiment 1

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- (1) Since what is moral varies on the basis of context and society, there is no one true morality.
 - (2) Moral standards are personal, therefore something morally acceptable to one person might be immoral for another person.
 - (3) Since moral rules are not true or false in an absolute sense, moral debates are bound to remain inconclusive.
 - (4) Different cultures may adopt different values and thus it is impossible to compare cultures on the basis of an objective standard.
 - (5) We can agree on ‘what is moral for everyone’ because what is moral and immoral is self-evident.
 - (6) What makes it possible for people to live together in harmony is the fact that fundamental moral rules do not differ from person to person.
 - (7) Since moral laws are universally true, they can be applied to everyone in the world regardless of culture, race or religion.
 - (8) Fundamental moral principles are universally valid; therefore they can be transferred from one society to another without difficulty.
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Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.cognition.2018.06.014>.

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Aktas, B., Yilmaz, O., & Bahçekapili, H. G. (2017). Moral pluralism on the trolley tracks: Different normative principles are used for different reasons in justifying moral

5.3. Conclusion

According to Greene’s (2007) dual-process model, activating analytical thinking increases utilitarian moral judgments (Kvaran et al., 2013), while putting people under load causes them to take longer to make utilitarian judgments (Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008). Taking this approach, Trémolière et al. (2012) have shown a reduction in utilitarian judgments when individuals are reminded of their own mortality. This study has also shown that mortality saliency exerts this effect by creating a high cognitive load (see also Trémolière et al., 2014). Therefore, the dual-process approach of the TMT has the potential to make sense of a variety of normative ethical judgments. What was lacking so far was a test of the dual-process model with mortality saliency manipulation in the domain of meta-ethical judgments. Although meta-ethical views have been shown to influence other moral judgments (Piazza & Landy, 2013; Rai & Holyoak, 2013; Young & Durwin, 2013) and religious belief (Yilmaz & Bahçekapili, 2015) before, the present study, to the best of our knowledge, is the first to demonstrate the fruitfulness of the dual-process approach to understand meta-ethical judgments. Based on the assumption that mortality saliency leads to impaired reasoning performance, the original contribution of the current research is, therefore, the demonstration that making subjectivist moral judgments require some sort of effortful cognitive resources.

Overall, we used both the TMT and the dual-process model approach to empirically test whether they have the power to explain meta-ethical judgments. Therefore, although the approach of the dual-process model in the field of normative ethics is increasingly seen as problematic (Gürçay & Baron, 2017; Helion & Pizarro, 2015; Kahane, 2012), it has been shown in the present set of studies to have the potential to illuminate meta-ethical judgments.

6. Author note

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