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Polarization of Attitudes as a Function of Mortality Salience: A Meta-Cognitive Analysis

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Abstract

Background: The present study analyzes how attitudes can polarize after reminders of death in the context of persuasion, and proposes that a metacognitive process (i.e., self-validation) can serve as a compensatory coping mechanism to deal with mortality salience. Method: Participants were first asked to read either a strong or a weak resume of a job applicant. Next, they listed their initial thoughts about that applicant. Then, they were asked to think about of their own death (i.e., mortality salience condition) versus being asked to think about of being cold (i.e., control condition). Finally, participants reported the confidence in their thoughts, as well as their attitudes towards the applicant. Results: Participants who were assigned to the mortality salience (vs. control) condition showed greater impact of their previously generated thoughts on their subsequent attitudes. Additionally, as hypothesized, this effect of attitude polarization was mediated by changes in thought confidence. Conclusions: Attitudes unrelated to mortality can be polarized by reminders of death and this effect can operate through a meta-cognitive process of thought validation. Implications for persuasion, self-validation, and beyond are discussed.

Keywords: Mortality salience, attitude polarization, persuasion, compensation, validation.

Resumen

Polarización de las Actitudes Como Resultado de Hacer Saliente la Mortalidad: un Análisis Meta-Cognitivo. Antecedentes: la presente investigación analiza cómo las actitudes se polarizan como resultado de hacer saliente la mortalidad en el contexto de la persuasión y propone que un proceso meta-cognitivo (i.e., la auto-validación) puede servir como un mecanismo compensatorio de afrontamiento ante la idea de la muerte. Método: los participantes fueron asignados aleatoriamente a leer un currículum que incluía información muy convincente o información poco convincente sobre un candidato a un puesto de trabajo. A continuación, escribieron los pensamientos que tuvieron sobre el candidato. Después, realizaron una tarea que implicó pensar en la idea de su propia muerte (i.e., condición de mortalidad) o pensar en la idea de tener frío (i.e., condición de control). Finalmente, los participantes informaron de la confianza que tuvieron en sus pensamientos, así como de las actitudes que se formaron hacia el candidato. Resultados: los participantes de la condición de mortalidad (vs. control) mostraron un mayor impacto de sus pensamientos iniciales sobre sus actitudes. Además, este efecto de polarización fue mediado por la confianza en los pensamientos. Conclusiones: las actitudes no relacionadas con la mortalidad pueden polarizarse al hacer saliente la mortalidad y este efecto puede ocurrir a través de un proceso metacognitivo de validación del pensamiento.

Palabras clave: mortalidad, actitudes, polarización, persuasión, compensación, validación.

According to terror management theory (TMT, see Greenberg et al., 1986; Solomon et al., 1991), the knowledge of one's inevitable demise leads people to psychologically defend themselves from the fear of death. Many social psychological theories, models, and paradigms of research can help in understanding how people face thinking about their own death and what the consequences are (see, e.g., Hart, 2014; Jonas et al., 2014; for reviews). These different perspectives generally argue that people are motivated to protect themselves against death awareness, and other anxiety-provoking experiences (e.g., Gawronski, 2012; Greenberg et al., 1986; Heine

Received: July 26, 2021 • Accepted: November 21, 2021 Corresponding author: Javier Horcajo Facultad de Psicología Universidad Autónoma de Madrid 28049 Madrid (Spain) e-mail: javier.horcajo@uam.es et al., 2006; Jonas et al., 2014; Kay et al., 2009; McGregor, 2006; Proulx & Inzlicht, 2012; van den Bos, 2009; van den Bos & Lind, 2002). The present research focuses on how individuals can respond to the threat of thinking of one's death through a meta-cognitive process of thought validation (Petty et al., 2002). In short, this study examines the extent to which thinking of one's own death can produce compensatory confidence (i.e., confidence that stems from a threatening situation, rather than an affirmational situation, as a defensive mechanism to restore certainty). Furthermore, we propose that this compensatory confidence can enhance thought use (i.e., the extent to which the direction of the thoughts people have in mind before the threat is induced impacts subsequent evaluations and behavior; see Briñol & Petty, in press, for a review) resulting in attitude polarization.

Prior studies have explored death awareness by using manipulations designed to increase the salience of mortality. In these previous studies, participants are usually asked to ponder

and reflect on the feelings they might have as they die (Rosenblatt, 1989; Lambert et al., 2014). When contemplating one's own death awareness, people defensively look for ways to alleviate their death anxiety, sometimes in unrelated domains. In line with other paradigms of psychological threat (e.g., Landau et al., 2015; Proulx et al., 2012; van den Bos, 2009), we argue that one way people respond to mortality salience is by either seeking out or by developing compensatory confidence when such opportunities are available. For example, people often cope with mortality-related inductions by validating (i.e., affirming confidence in) their cultural worldviews (for a review, see Burke et al., 2010; 2013; Greenberg et al., 2008; see also, Schindler et al., 2021, for a discussion). For instance, prior studies have shown that reminders of death often lead to more extreme worldview-consistent attitudes (a potential consequence of confidence), and more extreme positive evaluations of people who endorse versus oppose cultural values (e.g., Dunn et al., 2020; Greenberg et al., 1990; Piñuela & Yela, 2016). In another illustration, people facing reminders of their own death engaged in self-affirmation in unrelated domains (a potential form of confidence seeking) to protect themselves from that perceived threat (Cohen et al., 2009).

Given that the polarizing effects of mortality salience are similar to those of compensatory confidence, it is plausible that the salience of one's mortality can lead people to become more confident in, and thus rely more on the thoughts they have already generated toward an attitudinal object that is completely independent from the threat. Thus, in the present experiment we examine whether compensatory confidence in reaction to death reminders can be misattributed to current thoughts related to an object that is unrelated to the specific threat. Next, we discuss how this mechanism of self-validation can be relevant in coping with the perceived threat from mortality salience.

Self-validation refers to a meta-cognitive process that emphasizes people's secondary appraisals of their primary thoughts, which determine the extent to which these primary thoughts are relied upon in forming or changing attitudes (Petty et al., 2002). The key tenet of the self-validation process is that generating thoughts is not sufficient for these thoughts to have an impact on deliberative judgments. Rather, one must also have confidence in or like one's thoughts. Judging the perceived validity of a thought occurs at a second ary level of cognition and involves reflections on the firstlevel thoughts, or thinking about thinking (i.e., meta-cognition; see Briñol & DeMarree, 2012; Jost et al., 1998; Petty et al., 2007; see also, Horcajo et al., 2022; Moreno et al., 2021a, 2021b; Paredes et al., 2020; for recent examples regarding the role of meta-cognitive certainty in validating mental content through a direct rather than a compensatory route). Research on self-validation has typically found that feelings of confidence from various sources (e.g., feeling happy, powerful, or self-affirmed) exert a direct magnifying effect on people's cognitions relative to feelings of doubt (Briñol et al., 2020; Briñol & Petty, in press).

In one of the most recent examples of self-validation, Carroll and colleagues (2020) showed that confidence that emerges from feeling prepared in one domain could be misattributed to any thoughts in mind at the time, including thoughts irrelevant to the original domain of preparation. In one of the studies of this series, participants wrote positive or negative thoughts about genetically modified food. Next, participants were primed with preparedness (e.g., by creating the expectation to prepare for negative feedback in a test) or were assigned to a control condition, and reported their evaluations of the proposal. Consistent with a selfvalidation process, results showed that the effect of the direction of initial thoughts (positive vs. negative) on subsequent attitudes toward genetically modified food was significantly greater when participants felt prepared than when they did not. As a consequence, feeling prepared in one domain increased persuasion for those who generated positive thoughts in a totally different domain, but decreased persuasion for those who generated negative thoughts, again, even though the initial thoughts were unrelated to the original domain of preparation.

Consistent with this link between preparedness and confidence, other research on self-validation has shown that aggressive facial expressions associated with a readiness to attack (raising vs. covering one's upper lip) enhanced reliance on both positive and negative thoughts in domains totally unrelated to the context of attacking (Briñol et al., 2017). According to the self-validation framework, any variable with the potential to influence the confidence in or the liking for one's thoughts is likely to impact reliance on those thoughts in determining judgment and behavior. Thus, extensive research has revealed that many situational and individual variables can influence the perceived validity of one's thoughts alone or in combination, including feelings of ease, power, and self-affirmation, to name just a few (Briñol & Petty, in press).

A common feature of all this previous research in self-validation is that thought reliance and judgment polarization are produced by variables that influence confidence directly. Unlike these direct sources of confidence typically studied in self-validation research, in the present experiment we propose that thought validation also can result from compensatory confidence that emerges from mortality salience. As noted, this proposal of a compensatory (rather than direct) route to confidence is in line with cotemporary approaches to understanding threat (e.g., Burke et al., 2013; Greenberg et al., 2008; Hart, 2014; Jonas et al., 2014; Proulx, 2012).

In sum, we examine the extent to which the compensatory confidence that emerges from defending oneself from the threat of mortality salience (MS) can also polarize the effect of thoughts via the meta-cognitive process of thought validation. This is most likely to occur when people have readily available thoughts to be confident in, even if those thoughts are unrelated to the perceived threat. Thus, in the context of persuasion, these conditions are met when a person has already generated thoughts in response to a proposal. We argue that facing threat can lead people to behave in ways that aim to restore a sense of confidence resulting in increased impact of current thoughts on attitudes. The goal of the present study is to provide initial evidence for this proposal (i.e., that people validate their readily available thoughts as a potential mechanism to defend from threats).

Participants first read either a strong or a weak resume of a job candidate. This induction was designed to produce either positive or negative thoughts about the same attitudinal object. Next, participants completed an induction to increase the salience of the idea of their own mortality (vs. a low threat induction). We argue that a reminder of one's own mortality will lead people to restore certainty by claiming confidence in available thoughts, even if those thoughts are unrelated to the threat. Therefore, we predicted that individuals in the MS (vs. control) condition would show a greater effect of resume quality on attitudes toward the job candidate, and that this polarization effect would be mediated by increases in thought confidence.

Method

Participants

One hundred and fourteen undergraduate psychology students (81.6% female, $M_{age} = 22.04$, SD = 1.94, ranging from 18 to 32) at the Universidad Autónoma de Madrid participated in partial fulfillment of a course requirement. Participants were randomly assigned to the conditions in a 2 (resume quality: strong vs. weak) × 2 (mortality salience: MS vs. control) between-participants factorial design. Because we could not look at prior research to obtain an estimated effect size for the predicted interaction between resume quality and MS, we decided to collect as many participants as possible during that particular academic semester resulting in a final sample of N = 114. After the study was conducted, a *sensitivity* analysis was run using G*Power (Faul et al., 2009). Results showed that our sample of N = 114 was able to detect effects larger than f = 0.26. The interaction effect found (f = 0.30) was indeed detectable by our sample.

Procedure

Participants were told that they were going to be involved in two separate research projects. Participants were introduced to a study that they were told was designed to explore their personnel selection skills. Participants were assigned to first read either a strong or a weak resume of the job candidate. After participants read the resume, they were asked to list their thoughts (i.e., their cognitive responses) about the job candidate. Ten boxes were provided. They were told to write one thought per box and not to worry about grammar or spelling (see Cacioppo & Petty, 1981, for additional details on the thought listing procedure). Next, as the second research project, participants were exposed to the MS (vs. control) induction. After this manipulation, participants filled out the negative and positive affect measures from the PANAS (Watson et al., 1988), and then all participants reported the confidence they had in their thoughts. Finally, they reported their attitudes towards the job candidate, and other ancillary measures. After all measures were completed, participants were debriefed and thanked.

Instruments

Independent Variables

Resume Quality. As part of a task ostensibly investigating how people make hiring decisions, participants read a resume consisting of either strong or weak arguments in favor of the candidate. The presumed job candidate was said to be applying for a marketing and communication position. Gender and other demographic information about the candidate were not made salient. The strong resume indicated that the applicant had relevant professional experience at well-known companies for participants (National Geographic, IBM, and Repsol), spoke three businessrelevant languages (French, English, and German), and possessed high knowledge about job-relevant software. The weak resume indicated that the applicant had professional experience that was unrelated to marketing and communication, spoke job-irrelevant languages such as Latin and Greek, and possessed high knowledge about job-irrelevant software. This manipulation has been used successfully in previous research (e.g., Briñol et al., 2018; Johnson et al., 2017; Petty et al., 2006), indicating that the strong version

of the resume produced mostly favorable thoughts towards the job applicant, whereas the weak one produced mostly negative thoughts towards the job applicant, when individuals were instructed to think carefully about the resumes.

Mortality Salience. This manipulation was taken from previous research on terror management theory (e.g., Rosenblatt et al., 1989). In the MS condition, participants were asked to "Please, briefly describe the emotions that the thought of your own death arouses in you" and "Write down, as specifically as you can, what you think will happen to you physically as you die and once you are physically dead." In the control condition, participants were asked to "Please, briefly describe the emotions that the thought of being cold arouses in you," and "Write down, as specifically as you can, what you think will happen when you are cold." We sought to identify a moderately negative control condition that involved the body (to match the "what happens to you physically as you die..." aspects of the standard MS induction; see Lambert et al., 2014).

Dependent Variables

Thought Favorability. Immediately after the reading of the message, participants were instructed to list the thoughts that went through their minds as they were reading the resume. Two independent judges, blind to experimental conditions, coded the valence of participants' thoughts as positive, negative, or neutral/ irrelevant (e.g., Briñol et al., 2007; Horcajo et al., 2020). Agreement between coders was at 91%, and disagreements were resolved by discussion. We computed an index of thought favorability by subtracting the number of unfavorable thoughts from the number of favorable thoughts, and dividing the result by the sum of favorable and unfavorable thoughts (see Cacioppo & Petty, 1981, for additional details on the thought listing and scoring procedure). Higher scores represented higher thought favorability.

Mood. After completing the MS (vs. control) manipulation, participants filled out the negative ($\alpha = .82$) and positive ($\alpha = .74$) affect measures from the PANAS (Watson et al., 1988).

Thought Confidence. Following the MS (vs. control) induction and the PANAS measures, participants were asked to rate how confident they were in each of the thoughts that they listed using a scale ranging from 1 ("*not at all confident*") to 9 ("*extremely confident*") (Petty et al., 2002). These ratings were averaged to form a single index of overall thought confidence for each participant. Higher scores represented more thought confidence.

Attitudes. Participants' attitudes toward the job candidate were measured using five 9-point semantic differential scales (adapted from prior research, e.g., Petty et al., 2006) assessing the evaluations of the candidate (i.e., good-bad, desirable-undesirable, competentincompetent, recommendable-not recommendable, I like - I don't like). These and other very similar scales have been used in many prior studies on attitude and persuasion (e.g., see Requero et al., 2020, for a recent example with similar attitude items). Ratings on these scales were highly intercorrelated ($\alpha = .91$), and were averaged to create a composite attitude index. Responses to the attitude scales were scored so that higher scores represented more favorable opinions of the job candidate.

Data Analysis

All dependent measures were submitted to a 2 (resume quality: strong vs. weak) \times 2 (mortality salience: MS vs. control) analysis

of variance (ANOVA). Additionally, in order to examine whether thought confidence mediated the effect of the key predicted interaction on attitudes, we conducted a mediated moderation test using bootstrapping methods (Muller et al., 2005). In this procedure, both resume quality (i.e., -1 = weak resume, 1 = strong*resume*) and mortality salience (-1 = control, 1 = MS) were contrast coded, and thought confidence was mean-centered. To test the hypothesized mediation by thought confidence, we first conducted a bias corrected bootstrapping procedure with 10,000 bootstrap resamples using Hayes' PROCESS macro (model 4; see Hayes & Preacher, 2013; Shrout & Bolger, 2002). In this analysis, resume quality × MS was the independent variable, attitudes were the dependent variable, and resume quality × thought confidence was the mediating variable (see Figure 2). In order for the mediation to provide accurate estimates, all main effects (resume quality, MS) were included as covariates. Lastly, we also tested the mediation by thought confidence using model 15 of the PROCESS add-on for SPSS (Hayes, 2013). This model is a moderated mediation model in which MS was treated as the independent variable, attitudes as the dependent variable, thought confidence as the mediator, and resume quality as a moderator of both the relationship between MS and attitudes, and the relationship between thought confidence and attitudes.

Results

Thought Favorability

As expected, the 2 × 2 ANOVA on thought favorability revealed a statistically significant main effect of resume quality, F(1, 107) =340.85; p < .001, $\eta_{\rho}^2 = .76$, such that participants had more positive thoughts in the strong (M = .73, SD = .44) than the weak resume condition. In the latter condition, thoughts were mostly negative (M = -.70, SD = .37). Because thinking about the message and the report of thoughts occurred before the MS induction, we did not expect, or find, any other statistically significant effects (Fs < 1, ps > .35).

Mood

As expected and consistent with most prior research on MS, the 2 \times 2 ANOVA on positive and negative affect revealed no statistically significant effects (*Fs* < 3.02, *ps* > .08).

Thought Confidence

As predicted, there was a statistically significant main effect of MS manipulation on thought confidence, F(1, 110) = 8.80, p = .004, $\eta_{\rho}^2 = .07$. Participants expressed greater confidence in their thoughts in the MS condition (M = 7.56, SD = 0.78) than in the control condition (M = 7.11, SD = 0.83). According to expectations, no other effects were statistically significant (Fs < 1, ps > .48).

Attitudes

As also expected, the 2 × 2 ANOVA on attitudes revealed a statistically significant main effect of resume quality, F(1, 110) = 149.69, p < .001, $\eta_{\rho}^2 = .58$, and no statistically significant main effect of MS (F < 1, p > .93). Most importantly, the main effect of

resume quality was qualified by the predicted Resume Quality × MS interaction that was statistically significant, F(1, 110) = 10.35, p = .002, $\eta_0^2 = .09$ (see Figure 1). As predicted, this interaction revealed that the effect of resume quality on attitudes was greater for MS (vs. control) participants. That is, among control participants, those who received the strong resume reported significantly more favorable attitudes toward the candidate (M = 6.58, SD = 1.21) than those who received the weak resume (M = 4.89, SD = 0.93), F(1, 1) $110) = 41.38, p < .001, \eta_0^2 = .27$. However, the difference among MS participants who read the strong (M = 7.20, SD = 0.90) versus the weak (M = 4.30, SD = 0.91) version of resume was larger on attitudes (i.e., it was more polarized), F(1, 110) = 117.32, p < .001, $\eta_0^2 = .52$. Viewed differently, among participants who received the strong resume, those in the MS condition showed more positive attitudes than those in the control condition, F(1, 110) = 5.44, p = $.02, \eta_0^2 = .047$; whereas among participants who received the weak resume, those in the MS condition showed less positive attitudes than those in the control condition, F(1, 110) = 4.92, p = .029, η_0^2 = .04. In sum, the judgments of MS (vs. control) individuals were more polarized.

Furthermore, the Resume Quality × MS interaction remained statistically significant when including gender, F(1, 109) = 10.01, p = .002, $\eta_{\rho}^2 = .08$, or age, F(1, 108) = 11.83, p = .001, $\eta_{\rho}^2 = .10$, as covariates. Finally, when mood was controlled as a covariate, the Resume Quality × MS interaction also remained statistically significant when controlling for both positive, F(1, 106) = 10.41, p = .002, $\eta_{\rho}^2 = .09$, and negative, F(1, 108) = 9.02, p = .003, $\eta_{\rho}^2 = .08$, measures of the PANAS.

Mediation

As predicted, Resume Quality × Thought Confidence significantly mediated the relationship between Resume Quality × MS and attitudes (see Figure 2). Therefore, this first mediation analysis (i.e., model 4) supported this mediation as plausible (Shrout & Bolger, 2002). Results of the second mediation analysis (i.e., model 15) also revealed that the indirect effect via thought confidence was significantly different from zero, b = 0.39, SE = 0.17, 95% CI [0.125, 0.796]. This result includes the indirect effect of the highest order interaction (i.e., MS × Resume Quality) in the



Figure 1. Attitudes as a Function of Resume Quality and Mortality Salience

model. This model also provides the conditional indirect effect of MS on attitudes at values of the moderator (resume quality). The model predicting thought confidence found a statistically significant effect of MS, b = 0.45, SE = 0.15, t(112) = 2.96, p = .003, 95% CI [0.148, 0.748]. The model predicting attitudes found a statistically significant effect of the Thought Confidence × Resume Ouality interaction, b = 0.87, SE = 0.22, t(108) = 3.91, p < .001, 95% CI [0.428, 1.310]. In addition, a statistically significant main effect of resume quality, b = 2.28, SE = 0.18, t(108) = 12.82, p < .001, 95% CI [1.926, 2.630], and a statistically significant Resume Quality × MS interaction, b = 0.82, SE = 0.37, t(108) = 2.22, p = .028, 95% CI [0.087, 1.549], were found. Lastly, the moderated mediation showed that the indirect effect was statistically significant both for the strong resume condition, b = 0.24, SE = 0.11, 95% CI [0.071, 0.524], and the weak resume condition, b = -0.15, SE = 0.09, 95% CI [-0.389, -0.023]. That is, in both the strong resume condition and the weak resume condition, mediation by thought confidence was found. Thus, as expected, this compensatory confidence increased the impact of both positive and negative thoughts, polarizing their influence on evaluation in opposite directions.

Discussion

Consistent with contemporary theories of psychological defense (e.g., Hart, 2014; Jonas et al., 2014), we proposed that people can cope with the threat emerging from thinking of their own death by exhibiting compensatory confidence. Importantly, such confidence can be misattributed to any accessible thoughts even if those thoughts are unrelated to mortality. Compared to participants in the control condition, participants in the MS condition showed greater impact of their previously generated thoughts (again, unrelated to mortality) on subsequent attitudes towards a job applicant. Furthermore, this study provided the first evidence for the proposed meta-cognitive mechanism by showing that obtained results were mediated by changes in thought confidence.

The self-validation process examined in the current research can be relevant for understanding how people respond to other threats beyond the one analyzed in the present study (see Siev et al., 2022). As noted, a key innovation of our paradigm is that it deals with meta-cognitive certainty in thoughts (rather than with a general sense of certainty affecting primary cognition as in most prior research). This novel approach might be informative for other non-existential inconsistencies beyond death reminders (e.g., dissonance, inconsistent trials on Stroop tasks, expectancy violations) since they share some fundamental similarities to MS (Jonas et al., 2014; Proulx, 2012). Furthermore, in addition



Figure 2. Thought Confidence Mediates Interactive Effects of Resume Quality × Mortality Salience on Attitudes

Note: *= p < .05. Indirect Effect: 0.39, 95% CI [0.125, 0.796], boots = 10,000 (model 4)

to contributing to the psychological defense literature, this study suggests that recent pervasive death reminders (e.g., emerging from the COVID-19 pandemic) might have contributed to polarization across different domains and levels of society.

Moreover, the present research provides an important contribution to prior work on the role of confidence in persuasion. Motivational variables such as compensatory confidence as a defense against reminders of death have never been explored as antecedents of validity perceptions in self-validation research. Therefore, the present research has the potential to expand not only our knowledge about compensatory persuasion, but also to enhance understanding of the determinants of meta-cognitive processes such as thought validation. That is, most previous studies on self-validation have examined how variables associated with high validity (e.g., credibility, social consensus, nodding, power, affirmation, happiness) polarize judgments by having a direct impact on thought confidence (Briñol & Petty, in press). Unlike this direct link to thought confidence, this is the first study on attitude change through self-validation that is produced through a compensatory (rather than direct) route to confidence. Thus, the present study reveals that thought validation can result from compensatory confidence that emerges from death reminders, rather than other, more direct sources of confidence as studied in previous work on self-validation.

Although on the surface these two routes to confidence (compensatory vs. direct) lead to apparently similar outcomes (increased thought use and attitude extremity), future research should examine whether there are any differences in long-term consequences. Additionally, future studies could also explore whether claimed versus real confidence impact behavioral responses differently. Finally, future research can benefit from examining to what extent compensation for death reminders (or even merely claiming confidence) can really lead people to develop some genuine basis for confidence (e.g., as a result of justifying or rationalizing their own behavior).

In closing, it is worth noting some limitations of the present study. First, it is not entirely clear whether the obtained effects were due mostly to the way in which MS increased thought reliance, whether the control group reduced thought reliance, or a combination of both. Nevertheless, future studies can benefit from including a no treatment control condition to further address this issue. Another feature worth mentioning refers to the size of the sample (enough to detect a medium effect size) and the nature of the sample (composed mostly of young healthy adults). Although this population is not likely to have the idea of mortality as chronically accessible as a relatively older and/or sample of unhealthy adults, they were still sensitive enough to show the predicted effects by merely being assigned to the mortality salience condition. However, future studies could benefit from using correlational designs (e. g., measuring some other socio-demographic variables), as well as examining the effects in different groups of people for whom mortality salience might naturally vary.

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