Self-control Buffers the Mortality Salience Effect on Fairness-related Decision-making

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Keywords: mortality salience; self-control; fairness-related decision-making; ego depletion; prosocial behavior

Article

Self-Control Buffers the Mortality Salience Effect on Fairness-Related Decision-Making

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Abstract: Fairness-related decision-making often involves a conflict between egoistic and prosocial motives. Previous research based on Terror Management Theory (TMT) indicates that mortality salience can promote both selfish and prosocial behaviors, leaving its effect on fairness-related decision-making uncertain. By integrating TMT with the strength model of self-control, we propose that managing death-related thoughts depletes self-control strength, thereby impairing individuals' ability to resist selfish impulses during fairness-related decision-making tasks. Additionally, this effect is moderated by dispositional self-control. We tested these hypotheses in two studies. Participants were primed with either mortality salience or negative affect and then asked to made a series of binary choices (equal allocation vs. unequal allocation favoring themselves) to distribute monetary resources. In both studies, mortality salience heightened selfish tendencies, leading allocate resources less equitably. Study 2 further revealed that this effect occurred among participants with low, but not high, self-control. These findings indicate that mortality salience promotes selfishness and inequitable resource allocation, but that self-control can buffer these effects.

Keywords: mortality salience; self-control; fairness-related decision-making; ego depletion; prosocial behavior

1. Introduction

In the context of fairness-related decision-making, individuals often experience a self-control conflict between selfish behavior (prioritizing personal gain over fairness) and prosocial behavior (sacrificing personal gain for fairness) [1]. Research on Terror Management Theory (TMT) presents mixed findings, suggesting that mortality salience can promote both selfish and prosocial behaviors [2–4]. Therefore, the impact of mortality salience on fairness-related decision-making remains unclear. To address this ambiguity, we propose integrating Terror Management Theory with the dual-process perspective on self-control. Research indicates that people need to exert self-control to inhibit selfish impulses, and when self-control resources are depleted, individuals are more likely to act selfishly [1,5]. Given that suppressing death-related thoughts depletes self-control strength [6–8], we hypothesize that mortality salience may lead individuals to favor selfish allocations, particularly those with low self-control.

1.1. Terror Management Theory, Money, and Prosocial Behavior

Terror Management Theory posits that the conflict between humans' survival instinct and the awareness of mortality generates death anxiety, which is mitigated through the pursuit of self-esteem and adherence to a cultural worldview [9,10]. By aligning with a cultural worldview, individuals view themselves as part of something larger, gaining symbolic immortality [10]. Self-esteem reflects the extent to which individuals conform to cultural norms and expectations [11]. Together, cultural worldviews and self-esteem form a dual-component buffer against death anxiety [11]. Previous research has supported these hypotheses across various domains such as religion [12], politics [13], and consumer behavior [14]. However, the effect of mortality salience on fairness-related decision-making remains ambiguous, with contradictory findings in the literature.

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On one hand, mortality salience can prompt prosocial behavior over selfish behavior. Prosocial behavior aligns with cultural worldviews, and adhering to these norms allows individuals to transcend death [15]. For instance, mortality salience has been shown to increase prosocial attitudes [3], prompt higher charitable donations [2], and lead to more generous allocation of financial resources [15]. Additionally, it enhances the value individuals place on fairness and justice [16,17]. On the other hand, mortality salience may also lead individuals to prioritize money over prosocial behavior. Accumulating wealth aligns with cultural norms [18], and money itself holds psychological symbolic power, which can enhance self-esteem [19,20]. Research has shown that contact with money—whether real or play money, or even viewing images of cash—can reduce death anxiety [19]. Mortality salience has been found to increase materialistic desires [14], foster greed [4], intensify the desire for money [20], and increase tolerance for inequity to secure monetary gains [21]. In summary, the impact of mortality salience on fairness-related decision-making appears to be complex and contradictory. We aim to clarify this issue by applying the strength model of self-control to Terror Management Theory.

1.2. Mortality Salience, Self-Control, and Fairness

Awareness of mortality evokes fear and anxiety. Aside from attaining a sense of symbolic immortality to reduce mortal concern (e.g., via self-esteem and cultural worldviews), individuals can also suppress death-related thoughts by exerting self-control [7,22]. According to the strength model of self-control, tasks requiring self-control, such as thought suppression and impulse inhibition, draw on a limited shared resource [23]. Engaging in such tasks depletes self-control resource, leading to a state of ego depletion where individuals are less capable of exerting self-control [24]. As a result, when individuals exert self-control to suppress death-related thoughts, their resources become depleted, leaving fewer resources available for subsequent tasks requiring controlled processing [7]. For instance, participants performed worse on Stroop tasks, analytical reasoning tasks, and anagram-solving tasks following mortality salience [7]. In summary, mortality salience depletes self-control strength.

More importantly, self-control plays a critical role in regulating selfish and prosocial behaviors [25–27]. Loewenstein (1996) posits that selfish behaviors, similar to cravings caused by hunger, may be driven by visceral impulses or motivational states [28]. Overriding selfishness requires the exertion of self-control [1,5]. For example, Achtziger et al. (2015) found that participants who experienced self-control depletion in a cognitive load task allocated less money to others in a dictator game [5]. Furthermore, as the number of rounds increased, even non-depleted participants became more selfish. Similarly, Martinsson et al. (2014) found that higher self-control levels were correlated with more cooperative behavior [29]. Neuroimaging and physiological research also suggest that individuals must exert self-control to suppress selfish tendencies [30–32]. For example, Sütterlin et al. (2011), using heart rate variability as a measure of inhibitory capacity, found that self-control is crucial in resisting economic temptations and adhering to fairness norms[31]. Additionally, Knoch et al. (2006), using low-frequency repetitive transcranial magnetic stimulation to disrupt the right dorsolateral prefrontal cortex (DLPFC), found that individuals experienced greater difficulty resisting monetary temptations [30]. In summary, egoistic motive may be the "default motive", and people need to exert self-control to suppress this tendency [29,33]. Therefore, individuals in a state of ego depletion are less able to suppress egoistic impulses and tend to focus more on monetary rewards [5]. Given that mortality salience depletes self-control [7], we hypothesize that it may impair the ability to suppress egoistic motives, leading to more selfish allocations (**Hypothesis 1**).

There are individual differences in self-control abilities. Previous research suggests that individuals with high dispositional self-control are better at regulating negative emotions and exhibit higher prosociality [29,34,35]. Moreover, self-control plays a crucial role in buffering against death anxiety [6,7]. Those with high dispositional self-control generate fewer death-related thoughts after mortality salience and exhibit fewer worldview defense responses [6,7]. This suggests that individuals with stronger self-control are more adept at managing death-related thoughts and are less likely to experience ego depletion after mortality salience. Therefore, we hypothesize that dispositional self-control moderates the effect of mortality salience on selfish behavior. After mortality salience, individuals with low dispositional self-control will have more difficulty suppressing egoistic motives and will favor selfish allocations, while those with high dispositional self-control will not (**Hypothesis 2**).

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To test these hypotheses, we conducted two experiments. Study 1 employed a modified dictator game (DG) paradigm to examine whether mortality salience (vs. negative affect) leads participants to behave more selfishly, allocating resources more unfairly in the dictator game. Study 2 measured participants' dispositional self-control to investigate whether self-control moderates this effect.

2. Study 1

2.1. Method

2.1.1. Participants

We recruited 74 Chinese undergraduate and graduate students as paid volunteers. Two participants were excluded for selecting incorrect responses in the catch trials, leaving a final sample of 72 participants (31 men, 41 women; M_{age} = 21.42, SD_{age} = 2.96). Participants were randomly assigned to either the experimental condition (mortality salience priming, n = 36) or the control condition (negative affect priming, n = 36). All participants provided written informed consent, and the research was approved by the local ethics committee.

2.1.2. Materials and Procedure

The experiment began with a priming task in which participants sat at a computer in a dimly lit laboratory. Participants were asked to indicate their agreement with 28 statements, each displayed on the screen for 7 seconds with a 0.5-second interval between stimuli. The priming materials were adapted from previous studies [36–39]. The 28 statements in the mortality salience condition focused on death-related topics (e.g., "I will eventually die, which makes me feel pessimistic"), while those in the negative affect condition focused on negative emotions unrelated to death (e.g., "I feel anxious about the future"). Immediately after the priming task, participants rated their feelings of closeness and fear to death using three items (e.g., "How close do you feel to death after reading the sentences?", "How unpleasant do you feel about death?", and "How fearful are you of death?"). Responses were made on an 11-point Likert scale ranging from 0 (not at all) to 10 (extremely).

Next, participants completed a delay task, in which they were required to determine whether 40 calculations resulted in odd or even numbers. Each equation was presented for 7 seconds with a 0.5-second interval between consecutive calculations. This delay task was designed to amplify the effects of mortality salience, as prior research has suggested [10].

The final task was the resource allocation task, which employed a binary-choice version of the dictator game paradigm [40,41]. Participants were told they had been randomly assigned the role of Proposer, responsible for allocating monetary points, while Receivers were purportedly waiting in another room. In reality, all participants played as Proposers, and there were no actual Receivers. Participants made binary choices between two options: an equal option (10 points to both the Proposer and the Receiver) and an advantageous unequal option (e.g., 14 points for the Proposer and 6 points for the Receiver). They completed 25 such decisions, including two catch trials (e.g., both receiving 10 points vs. both receiving 18 points) to identify inattentive participants. To ensure task engagement, participants were informed that one of their decisions would be randomly selected to determine partial payment for both themselves and their co-player. At the conclusion of the experiment, participants were fully debriefed, and the deception used in the study was explained in accordance with ethical guidelines.

2.2. Results

2.2.1. Subjective Reports during the Priming Task

As a manipulation check, independent-samples t-tests were conducted to examine the effects of priming type (mortality salience vs. negative affect) on participants' feeling close to death, unpleasant emotion, and fearful emotion (see Table 1). We only found a significant difference in feeling close to death, $t(70) = 4.187$, $p < 0.001$, $d = 0.987$, with participants in the mortality salience group reporting feeling closer to death than those in the negative affect group. No significant differences were observed between the two groups in in terms of fearful emotion, $t(70) = 0.477$, $p = 0.635$, $d = 0.112$, or unpleasant emotion, $t(70) = -0.691$, $p = 0.492$, $d = -0.163$. Therefore, the manipulation was deemed effective.

Table 1. Mean subjective reports during the priming task in the Study 1 ($M \pm SD$)

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Priming type	Feeling close to death	Fearful emotion	Unpleasant emotion
Mortality salience	4.58 ± 2.70	3.31 ± 2.26	3.01 ± 2.84
Negative affect	2.00 ± 2.54	3.01 ± 2.89	3.53 ± 2.96

2.2.2. Advantageous Inequity on the Resource Allocation Task

To investigate the effect of mortality salience on fairness-related decision-making, we first calculated advantageous inequity based on participants' choices in the resource allocation task. Advantageous inequity was operationalized as the average difference between the Proposer' s and the Receiver' s monetary points [42], where higher values indicated a stronger preference for inequitable distributions favoring the self. Independent-samples t-tests were then conducted to examine the effect of priming type (mortality salience vs. negative affect) on advantageous inequity. A significant difference emerged, $t(70) = 2.329$, $p = 0.023$, $d = 0.549$. Participants in the mortality salience condition exhibited significantly higher advantageous inequity ($M = 5.31$, $SD = 3.45$) than those in the negative affect condition ($M = 3.45$, $SD = 3.31$). These results suggest that mortality salience priming, compared to negative affect priming, led participants to allocate more money to themselves at the expense of fairness.

2.3. Discussion

The results of Study 1 support Hypothesis 1, demonstrating that mortality salience increased selfish behavior, with participants exhibiting more inequitable resource allocation in the dictator game. This effect may be attributed to mortality salience depleting participants' self-control resources, making it more difficult for them to suppress egoistic motives. To further investigate the role of self-control in this process, Study 2 incorporated a measure of participants' trait self-control. We hypothesized that mortality salience would increase advantageous inequity only among participants with low self-control, but not among those with high self-control.

3. Study 2

3.1. Method

3.1.1. Participants

We recruited 98 Chinese undergraduate and graduate students as paid volunteers. Four participants were excluded for failing the catch trials, leaving a final sample of 94 participants (41 men, 53 women; $M_{age} = 21.21$ years, $SD_{age} = 2.22$). Forty-eight participants were assigned to the mortality salience priming group, and 46 to the negative affect priming group. Based on their scores on the Self-Control Scale, participants were further categorized into high and low self-control groups. The final groupings were as follows: mortality salience and low self-control (n = 25), mortality salience and high self-control (n = 23), negative affect and low self-control (n = 22), and negative affect and high self-control (n = 24). A sensitivity analysis using G*Power 3.1 (Faul et al., 2009) revealed that, given an alpha level of 0.05, a power of 0.80, and a total sample size of 94 participants, the study is powered to detect an interaction effect (priming type × self-control) with an effect size of $f = 0.292$ or larger. Written informed consent was obtained from all participants, and the study was approved by the local ethics committee.

3.1.2. Materials and Procedure

Prior to the priming task, participants completed the Self-Control Scale [43]. We used the brief version, which consists of 19 items. Example items include, "I am good at resisting temptation" and "People can count on me to keep on schedule" (1 = not at all like me, 5 = very much like me; $M = 57.74$, $SD = 10.89$, $\alpha = 0.87$). Participants then completed the same priming, delay, and resource allocation tasks as in Study 1.

3.2. Results

3.2.1. Subjective Reports during the Priming Task

We conducted two-way ANOVAs to analyze participants' subjective reports of feeling close to death, unpleasant emotion, and fearful emotion, using priming type (mortality salience vs. negative affect) and self-control (low vs. high) as between-subjects factors (see Table 2). The results showed a significant main effect of priming for feelings of closeness to death, $F(1,90) = 45.445$, $p < .001$, $\eta_p^2 = 0.336$, indicating that participants in the mortality salience priming group reported feeling

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significantly closer to death than those in the negative affect group. No other significant main effects or interaction effects were found. Thus, the priming manipulation was effective.

Table 2. Mean subjective reports during the priming task in the Study 2 ($M \pm SD$)

Priming type	Self-control	Feeling close to death	Fearful emotion	Unpleasant emotion
Mortality salience	Low	4.14 ± 2.48	2.54 ± 2.03	2.34 ± 2.38
	High	5.22 ± 2.54	2.35 ± 2.32	3.26 ± 3.18
Negative affect	Low	1.41 ± 1.96	3.23 ± 2.71	3.27 ± 3.06
	High	1.46 ± 2.28	2.63 ± 2.56	3.67 ± 2.90

3.2.2. Advantageous Inequity on the Resource Allocation Task

To investigate whether self-control could buffer the effect of mortality salience on advantageous inequity, we first calculated advantageous inequity from participants' choices in the resource allocation task, as described in Study 1. We then conducted a two-way ANOVA with priming type (mortality salience vs. negative affect) and self-control (low vs. high) as between-subjects factors. The main effect of self-control was not significant, $F(1, 90) = 2.330$, $p = 0.130$, $\eta_P^2 = 0.025$. However, the main effect of priming type was significant, $F(1, 90) = 4.501$, $p = 0.037$, $\eta_P^2 = 0.048$, with higher advantageous inequity under mortality salience ($M = 5.52$, $SD = 3.42$) than negative affect ($M = 3.99$, $SD = 3.64$) conditions. This suggests that mortality salience led participants to allocate more money to themselves at the expense of fairness. The interaction between priming type and self-control was significant, $F(1, 90) = 8.555$, $p = 0.004$, $\eta_P^2 = 0.087$. Post-hoc analysis revealed no significant difference in advantageous inequity between high self-control participants in the mortality salience ($M = 3.90$, $SD = 3.31$) and negative affect ($M = 4.46$, $SD = 3.84$) conditions ($p = 0.571$). However, low self-control participants in the mortality salience condition ($M = 6.99$, $SD = 2.85$) showed significantly higher advantageous inequity than those in the negative affect condition ($M = 3.49$, $SD = 3.42$, $p = 0.001$). This indicates that mortality salience promoted selfishness and inequitable resource allocation only among participants with low self-control. Moreover, under the mortality salience condition, low self-control participants ($M = 6.99$, $SD = 2.85$) exhibited significantly higher advantageous inequity than high self-control participants ($M = 3.90$, $SD = 3.31$, $p = 0.002$), whereas no significant difference was found between low and high self-control participants under the negative affect condition ($p = 0.331$). These results suggest that following morality salience, individuals with low (vs. high) self-control tend to allocate more money to themselves at the expense of fairness (see Figure 1).

Additionally, to test for the moderating effect of self-control on the relationship between mortality salience and advantageous inequity, we conducted a moderation analysis using Hayes' PROCESS, Model 1 [44]. The independent variable was dummy-coded (0 = negative affect, 1 = mortality salience), and the self-control was mean-centered. Mortality salience had a positive effect on advantageous inequity, $b = 1.662$, $SE = 0.701$, $t = 2.372$, $p = 0.020$, but no significant main effect of self-control was found, $b = 0.015$, $SE = 0.048$, $t = 0.310$, $p = 0.758$. The self-control by mortality salience interaction was also significant, $b = -0.155$, $SE = 0.065$, $t = -2.390$, $p = 0.019$. Simple slopes analysis indicated that mortality salience increased advantageous inequity at low levels (-1 SD) of self-control, $b = 3.355$, $SE = 0.989$, $t = 3.391$, $p = 0.001$, but had no effect at high levels (+1 SD) of self-control, $b = -0.031$, $SE = 1.003$, $t = -0.031$, $p = 0.975$. Within the mortality salience condition, self-control was negatively associated with advantageous inequity, $b = -0.140$, $SE = 0.043$, $t = -3.233$, $p = 0.002$, but was unrelated to advantageous inequity within the negative affect condition, $b = 0.015$, $SE = 0.048$, $t = 0.310$, $p = 0.758$. These results align with the ANOVA findings above, further confirming that mortality salience promotes self-serving allocation behavior and high self-control can mitigate this effect.

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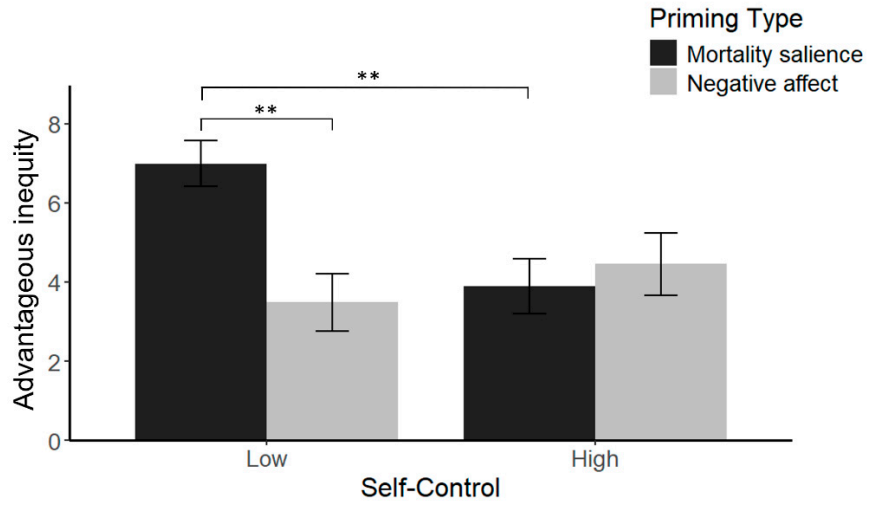

Figure 1. Advantageous inequity under mortality salience condition and negative affect condition for low versus high self-control participants. Notes: Error bar represent standard errors. $^{**}p < 0.01$.

3.3. Discussion

The results of Study 2 support both Hypotheses 1 and 2. Mortality salience increases selfish behavior, but this effect is restricted to participants with low self-control, who exhibited more inequitable resource allocation in the dictator game. This suggests that participants with low self-control likely depleted their self-control resources while managing death anxiety, leaving them less able to suppress their egoistic motives. In contrast, participants with high self-control retained sufficient resources to regulate these motives effectively.

4. General Discussion

The current study examined the impact of mortality salience on fairness-related decision-making and the moderating role of self-control. In Study 1, we found that mortality salience led individuals to become more selfish, as evidenced by their preference for self-serving distribution schemes in the dictator game over fair allocations. Study 2 replicated and extended these findings by measuring trait self-control. We found that the mortality salience effect on fairness-related decision-making occurred among participants with low but not high self-control.

4.1. Mortality Salience and Selfish Behavior

Our research suggests that mortality salience increases selfish motivation, leading participants to allocate resources more unfairly in the dictator game. One possible explanation is that individuals require self-control to manage death-related thoughts [8]. Since self-control relies on limited cognitive resources, depletion of these resources from one task can lead to ego depletion, impairing the ability to exert further self-control [7]. Consequently, after experiencing mortality salience, individuals may exhaust their self-control resources, making it challenging to suppress the selfish motivations and leading them to prioritize monetary gain over fairness.

Another explanation for why mortality salience makes individuals greedier in the dictator game could be that people try to alleviate death anxiety by acquiring money. Money, with symbolic psychological power, can serve as a buffer against death anxiety [19,20]. Additionally, the drug theory of money suggests that money not only serves as a tool for exchange, but can also "act like" natural incentives, similar to drugs, providing emotional regulation and alleviating physical and psychological pain [45]. Since individuals in a state of ego depletion rely more on affective processes rather than cognitive ones [26], those depleted after mortality salience may seek to relieve death anxiety through the immediate feedback provided by the “money drug”. Consequently, following mortality salience, individuals tend to allocate more money to themselves at the expense of fairness.

4.2. Self-control Buffers the Mortality Salience Effect

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Our findings also highlight that self-control can buffer the mortality salience effect on fairness-related decision-making. Participants with high self-control did not become more unfair in resource allocation following mortality salience, unlike those with low self-control. Previous research supports that self-control can function as a buffer against death anxiety [7,8]. For instance, increased accessibility to death thoughts and worldview defense after mortality salience were observed only among individuals with low self-control, and these moderating effects occurred independently of self-esteem [8]. Moreover, temporary enhancement of self-control through glucose consumption has been shown to improve the suppression of death-related thoughts, reducing defensiveness after mortality salience [6]. Thus, our results align with these findings, indicating that individuals with high self-control appear to manage death-related thoughts more effectively and retain sufficient self-control resources to suppress their self-serving motivations, thus mitigating the impact of mortality salience on fairness-related decision-making.

An alternative explanation for why self-control buffers the effect of mortality salience on fairness-related decision-making is that individuals with high self-control are more likely to adhere to socially approved norms and have higher levels of self-esteem [7]. Individuals with high self-control tend to be more disciplined, perform better academically, and are less likely to experience impulse control issues [35]. Additionally, they exhibit fewer symptoms of psychopathology and demonstrate better psychological adjustment [43]. Furthermore, they often have greater empathy, healthier interpersonal relationships, and more fulfilling emotional lives [34]. Consequently, individuals with high self-control may be protected from the fear of death through a dual-component cultural anxiety buffer, composed of self-esteem and cultural worldviews.

4.3. Limitations and Future Directions

Although our results support our hypothesis that suppressing death-related thoughts depletes limited self-control resources, leading individuals to fail to inhibit selfish motivations after mortality salience, more direct and robust evidence is required. Future research could employ neuroimaging techniques, such as fMRI, to examine whether mortality salience affects brain regions associated with self-control (e.g., the dorsolateral prefrontal cortex), thereby contributing to selfish behavior. Additionally, self-control varies not only as a trait but also as a state. However, we did not examine the role of state self-control [7]. Previous studies have shown that state self-control can influence decision-making and mortality salience effects [5,7]. Future research could explore whether enhancing state self-control can buffer the effects of mortality salience on fairness-related decision-making.

5. Conclusions

The present study integrated Terror Management Theory and the strength model of self-control to investigate the effects of mortality salience on fairness-related decision-making and the moderating role of self-control. We found that mortality salience led individuals to behave more selfishly, allocating resources less fairly, but self-control buffered this effect. Individuals with low self-control appeared to deplete their limited self-control resources while suppressing death-related thoughts, leading to a failure to inhibit selfish instincts after mortality salience. In contrast, individuals with high self-control managed death anxiety and suppressed death-related thoughts more effectively, retaining sufficient self-control resources to regulate selfish motivations. Overall, this study extends both Terror Management Theory and the strength model of self-control by demonstrating that self-control may serve as a key buffer against the effects of mortality salience on fairness decision-making.

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