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Abstract

A simple reminder of the fact that we do not always control life's outcomes reduced people's belief in Darwin's Theory of Evolution. This control-threat resulted in a relative preference for theories of life that thwart randomness, either by stressing the role of a controlling God (Intelligent Design) or by presenting the Theory of Evolution in terms of predictable and orderly processes. Moreover, increased preference for Intelligent Design over evolutionary theory disappeared when the latter was framed in terms of an orderly process with inevitable outcomes. Thus, psychological threat enhances belief in God, but only in the absence of other options that help to create order in the world. (108 words)

Keywords: Control motivation, religion, science, order, worldviews, compensatory control

The field of social and personality psychology is currently witnessing an increased interest in religious belief (see Sedikides, 2010). Perhaps one of the most striking findings related to this topic is that belief in God and other supernatural agents can increase as a result of psychological threats such as existential uncertainty (Norenzayan & Hansen, 2006) and lack of control (Kay, Gaucher, McGregor, & Nash, 2010). Several theories argue that the need to perceive and imbue order and meaning in the universe lies at the heart of this phenomenon, see for example terror management theory (see Greenberg, Solomon, & Pyszczynski, 1997) but particularly the recently proposed model of compensatory control (Kay, Gaucher, Napier, Callan, & Laurin, 2008; Kay et al., 2010). Belief in God as a controlling agent thwarts notions of randomness in the universe and provides order.

Some worldviews acknowledge that the controllability of life's outcomes is limited and allow for uncertainty and randomness. Darwin's Theory of Evolution is an example. Given the fact that confrontations with randomness are generally seen as aversive (Kay, Moscovitch, & Laurin, 2010) it is not surprising that controversy still surrounds Darwin's theory. Interestingly, however, a recently introduced version of evolutionary theory emphasizes that evolution is actually an orderly and predictable process (Conway-Morris, 2005). This alternative view on evolution should be less threatening due to its emphasis on order and predictability, which enables us to address the question what needs are fulfilled by different theories and beliefs about life on this planet. More specifically, what determines their attractiveness when personal control is threatened, the notion of a supernatural agent (i.e., God) or the mere affirmation of an orderly world and universe? If the latter is the case, people should be less in need of God when order in the world is affirmed, for example by offering an orderly perspective on evolution. In other words, even a highly secular and

scientific worldview (see Preston & Epley, 2009) should be capable of protecting the person from the aversive experience of randomness, rendering belief in a controlling God superfluous.

Thus, we hypothesize that a threat to personal control (which poses a threat to perceiving the world as orderly and structured, see Kay et al., 2008, 2010) only increases belief in an external agent (i.e., God) when no notion of an orderly world is available. To test this idea, we conducted an experiment in which control was manipulated and participants indicated their preference for different perspectives on the world and the evolution of life. These included Darwin's Theory of Evolution (TE; randomness, no agent), Intelligent Design (ID; order, agent), and a slightly modified version of TE developed by Conway-Morris (2005), which states that evolution is not a random process but is orderly and predictable (CMTE; order, no agent).

Method

Participants. A total of 140 undergraduate students (108 female; M_{age} = 21.06, *SD* = 3.96) participated in this study. Participants' religiosity was measured using a single item ("Do you consider yourself to be a religious person?"), which could be answered on a 9-point scale ranging from 1 (*very religious*) to 9 (*not religious at all*). After recoding the answers so that a higher number indicates more religiosity, we obtained a mean value of 2.86 (*SD* = 2.18). Thus, our sample could be considered to be fairly secular[1].

Procedure and materials. Participants were randomly assigned to a control-threat or no-threat condition. Control was manipulated by a bipartite task: first,

participants were asked to recall an unpleasant situation over which they had or lacked control, and to subsequently summarize this event in 50-100 words. Next, they were asked to provide three reasons supporting the notion that the future is (un-) controllable (see Rutjens, van Harreveld, & van der Pligt, 2010). Then, participants were presented with two of the three perspectives described above; chance determined which combination they received. 58 participants were presented with summaries of TE (85 words) and ID (91 words). The TE summary explained evolution, inheritance, and procreation, and emphasized that natural selection is generally a random process in which unpredictable features of the natural environment determine the outcomes. The ID summary explained how a controlling designer, not random processes, provides the best way to explain the world. A total of 41 participants were presented with summaries of TE and CMTE (86 words), and the remaining 38 participants were presented with CMTE and ID. The CMTE summary described how evolution of life is not random but orderly and predictable; replayed, evolution would inevitably result is a similar world as the present one[2]. We asked participants to choose the theory that in their view "provides the best framework to explain the origin of life on this planet".

The experiment ended with a manipulation check of control, consisting of three items. The first item asked participants to think back of the situation they had to recall, and to subsequently indicate the amount of experienced control in the situation (on a 7-point scale ranging from *no control* [1] to *full control* [7]). The two remaining items assessed generalized feelings of control (e.g., "Are you the actor in, or director of, your own life?", $r = .62$). Participants indicated their level of agreement with each item on a 7-point scale, with higher scores indicating higher levels of control.

Results

Manipulation check. No-control participants reported less control over the retrieved situation (M = 1.77, SD = .91) than participants whose control was not threatened (M = 5.91, SD = 1.01), $F(1, 139) = 615.34$, $p < .001$). Means for generalized feelings of personal control were 4.68 (SD = 1.03) and 5.30 (SD = .89), respectively, $F(1, 139) = 6.99$, $p < .01$. Thus, the manipulation also affected more general feelings of control over life[3].

Main analyses. As shown in Figure 1 (left panel), nearly all participants in the no-threat condition favored TE over ID, but this number was considerably reduced in the control-threat condition, $\chi 2(1) = 3.54$, $p = .056$. Thus, preference for ID increased as a result of a threat to control. Results revealed a similar effect of control-threat for participants choosing between TE and CMTE, $\chi 2(1) = 5.38$, $p = .023$. As shown in Figure 1, preference for CMTE was higher for no-control participants. Finally, control-threat did not affect preference when choosing between ID and CMTE, $\chi 2(1) = .79$, $p = .32$.

{INSERT FIGURE 1}

Discussion

Results of this study indicate that a control-threat increases belief in a controlling designer (ID; order, agent), but only in the absence of other options that help to create order in the world[4]. When other viable options are available (in the present case CMTE; order, no agent), the threat-induced increase in religious belief is not present. Control-threat also increased preference for an orderly perspective on evolution when it was compared to the original Theory of Evolution (randomness, no agent). Thus, in the current study, affirming order provides in the same need as affirming belief in a

supernatural agent, and consequentially nullifies increases in belief in such an agent. Interestingly, results also show that non-threatened participants seemed more able to cope with randomness (see also Kay et al., 2010, p. 38), as indicated by their overwhelming preference for Darwin's theory; 95% favored TE over CMTE and 96% chose TE over ID. This baseline preference is perhaps not surprising, since our sample of participants was fairly secular, although based on research on teleological bias one could perhaps expect, at least on an implicit level, a higher baseline preference for ID; see Keleman & Rosset, 2009.

The current findings fit well within the model of compensatory control (Kay et al., 2008). The added value of the present findings is that they show that affirming order, which is the primary motivation behind compensatory control efforts, consequentially nullifies such efforts. In other words, external agents that provide compensatory control (either religious or secular, such as governmental institutions; Kay, Shepherd, Blatz, Chua, & Galinsky, in press) are, according to the current results, only needed when a) personal control is threatened and b) no affirmation is present that the world is an orderly place in the first place[5]. These findings shed a different light on enhanced beliefs in supernatural agents after threat (Kay et al., 2010; Norenzayan & Hansen, 2006). The primary motivation of perceiving order and thwarting randomness can be met in different ways, and exactly how this order is achieved (e.g., bolstering belief in an agent or affirming a scientific worldview) appears to be secondary.

In sum, although it has been argued that science and religion are fundamentally opposed explanations of life (Preston & Epley, 2009), it seems that they can be deployed interchangeably to restore order (Kay et al., in press). As we have seen in this study, framing Darwin's Theory of Evolution as depicting an orderly

and predictable process reduced the need to bolster belief in a supernatural agent. In other words, increases in religious belief under threat are nullified when other (even science-based) options to restore order are present. To conclude, because of its emphasis on random processes the theory of evolution in its original form will in all probability continue to spark controversy around the world, especially in uncertain times.

Appendix

Three perspectives on the origin of life – the full texts (translated from Dutch).

Darwin's Theory of Evolution (TE):

"Evolutionary theory posits that the way our world and the universe work springs from evolution; a process in which inheritance, procreation, and natural selection play an important role. Natural selection, the basis of this theory, is generally an unstructured and random process in which unpredictable features of the natural environment determine how life evolves. A wide array of circumstances determines how life evolves, and coincidence plays a large part in this process."

Intelligent Design (ID):

"Intelligent Design theory posits that the way our world and the universe work can be best explained as the result of the efforts of a higher power (for example God), who designed our world and exerts control over it. Contrary to evolutionary theory, which explains life on our planet as the results of random processes, ID theory posits that, given the complexity of our planet, its design requires an external agent."

Conway Morris' version of evolutionary theory (CMTE):

"A recently introduced version of evolutionary theory has been developed from the basic assumption of 'converging evolution'. According to this principle, life on our planet is not the result of random processes: if evolution would be replayed, results would inevitably be similar to the present state of affairs. The course of evolution follows certain paths and is therefore best described as a mechanism that is bound to have specific structural characteristics."

References

Conway-Morris, S. (2005). *Life's solution: inevitable humans in a lonely universe*. Cambridge: Cambridge University Press.

Greenberg, J., Solomon, S., & Pyszczynski, T. (1997). Terror management theory of self-esteem and social behavior: Empirical assessments and conceptual refinements. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 61–139). New York: Academic Press.

Kay, A. C., Gaucher, D., Napier, J. L., Callan, M. J., Laurin, K. (2008). God and the government: Testing a compensatory control mechanism for the support of external systems. *Journal of Personality and Social Psychology*, *95*, 18-35.

Kay, A. C., Gaucher, D., McGregor, I., & Nash, K. (2010). Religious belief as compensatory control. *Personality and Social Psychology Review*, *14*, 37-48.

Kay, A. C., Moscovitch, D. A., & Laurin, K. (2010). Randomness, attributions of arousal, and belief in God. *Psychological Science*, *21*, 216-218.

Kay, A. C., Shepherd, S., Blatz, C. W., Chua, S. N., & Galinsky, A. D. For God (or) country: The hydraulic relation between government instability and belief in

religious sources of control. *Journal of Personality and Social Psychology*, in press.

Keleman, D., & Rosset, E. (2009). The human function compunction: Teleological explanation in adults. *Cognition*, *111*, 138-143.

Norenzayan, A., & Hansen, I. G. (2006). Belief in supernatural agents in the face of death. *Personality and Social Psychology Bulletin*, *32*, 174-187.

Preston, J., & Epley, N. (2009). Science and God: An automatic opposition between ultimate explanations. *Journal of Experimental Social Psychology*, *45*, 238-241.

Rutjens, B. T., van Harreveld, F. & van der Pligt. J. Yes we can: Belief in progress as compensatory control. *Social Psychological and Personality Science*, in press.

Sedikides, C. (2010). Why does religiosity persist? *Personality and Social Psychology Review*, *14*, 3-6.

Notes

[1] More than 50% of the participants scored a 1 or 2 on the reverse-scored scale, and only 14 out of 140 participants scored above the scale midpoint. The reported analyses include all participants. Controlling for religiosity however did not change the pattern of results.

[2] The full texts can be found in the appendix.

[3] We also performed manipulation checks for each of the groups of participants (TE vs. ID; TE vs. CMTE; CMTE vs. ID) separately. On all control items, we found significant effects of the control manipulation (all *p*'s <.05).

[4] Notably, notwithstanding the fact that the current research was conducted among a reasonably nonreligious group of participants, this absence of other order-restoring worldviews increased the appeal of belief in a supernatural agent.

[5] Recent research by Kay et al. (in press) shows that different sources of compensatory control, such as God and government, are interchangeable and display a hydraulic relationship. We would therefore expect that an affirmation of order in the world (such as provided by Conway-Morris' take on evolution) would nullify the bolstering and defense of governmental institutions after control-threat in a similar vein as has been shown in the current research.

Figure 1. Percentage of participants favoring ID over TE, CMTE over TE, and ID over CMTE after a control-threat or no control-threat.

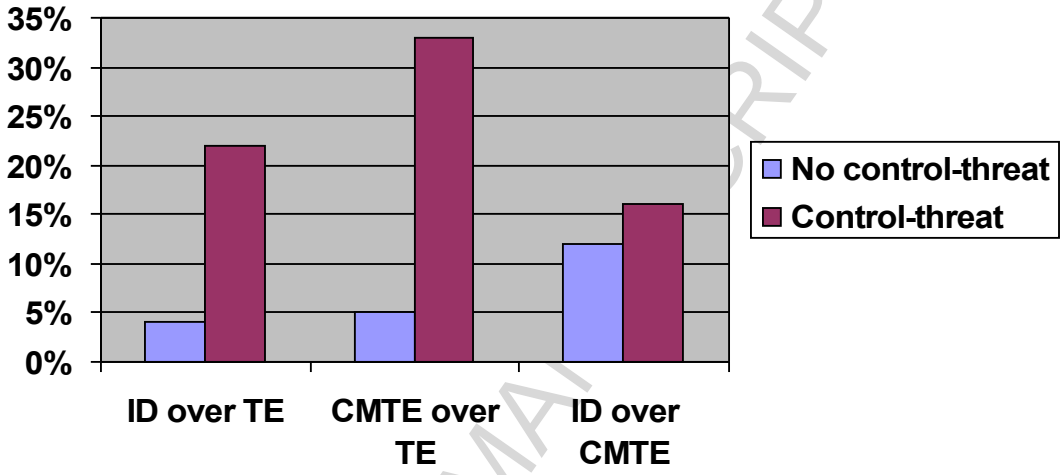

Figure 1