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### Start making sense: Compensatory responses to control- and meaning threats

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**Publication date**  
2012

[Link to publication](#)

#### **Citation for published version (APA):**

Rutjens, B. T. (2012). *Start making sense: Compensatory responses to control- and meaning threats*.

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## **Chapter 6**

### **On cannibals and cutlery: Belief in moral versus technological progress as a shield against existential threat**

This chapter is based on Rutjens, B. T., van Harreveld, F., van der Pligt, J., & Pyszczynski, T. On cannibals and cutlery: Belief in moral versus technological progress as a shield against existential threat. *Manuscript under review.*

One of the most influential political philosophers in recent times is John Gray, whose work focuses to a large extent on the ubiquitous belief in progress in most modern societies. According to Gray (2004, 2007), faith in progress has essentially replaced religion as a meaning provider in modern secular cultures. This contemporary belief in progress has sprung largely from the Enlightenment, a period in which thinkers such as Hume and Montesquieu argued that humanity progresses toward a more perfect state in concordance with scientific and technological advances. Ever since then, faith in progress has proven to be robust. According to Gray and others (Brunner, 1972; Plant, 2009; but see Blumenberg, 1983) belief in progress is appealing because it is a secular, humanistic version of the Christian belief in salvation: a sense of progress promises that the course of history is not cyclic but is moving toward a better state of being for humankind. Viewing history as progressive implies that humankind is able to learn from the past; ongoing progress implies a better future that will ultimately lead to a utopian society, which for secular humanists might well be the highest goal attainable (Rutjens, van der Pligt, & van Harreveld, 2009). This view can be traced to Bury (1955), who argued that belief in human progress constitutes a faith that can be characterized as highly similar to the notion of providence (but without an external agent) and personal immortality, in that it justifies the entire course of human history (i.e., imbues it with meaning).

Findings obtained by Rutjens et al. (2009) support these ideas by showing that belief in progress can provide a protective buffer against mortality concerns, similar to religious belief (e.g., Dechesne et al., 2003; Norenzayan & Hansen, 2006; Pyszczynski, Solomon, & Greenberg, 2003). Adopting a terror management theory perspective (TMT; Greenberg, Solomon,

& Pyszczynski, 1997), they showed that thinking about one's own death (mortality salience) led people to more vigorously defend the notion of progress, and that questioning progress led to an increase in death-related thoughts (death-thought accessibility; Arndt, et al., 1997). A manipulation affirming progress eliminated the effects of mortality salience on subsequent measures of death-thought accessibility and cultural worldview defense. However, because progress is a multifaceted phenomenon and no distinction was made between different types of progress (i.e., moral, technological), this previous research did not show *why* belief in progress provides existential protection. Envisioning scientific advances, for example, might make the future seem more controllable and future events to be more predictable (see Landau et al., 2004 for the link between structure and coherence and terror management processes). Similarly, the notion of progressing knowledge might trigger general feelings of hope and positive emotion, which might be appealing under conditions of mortality salience (DeWall & Baumeister, 2007).

The present research addresses the question *why* belief in progress provides protection when facing existential threat. Building on Gray's (2004, 2007) ideas, we suggest that this anxiety-buffering function is primarily due to the meaning provided by viewing the course of human history as progressing forward. Although the literature provides diverging definitions of meaning (e.g., Steger, Frazier, Oishi, & Kaler, 2008)<sup>20</sup>, we use the term to refer to human purpose and significance (Spilka, 1993), which according to TMT helps human beings to transcend their own existence through affirming their

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<sup>20</sup> There is a distinction between meaning as comprehensibility/coherence versus meaning as purposefulness/significance (e.g., Janoff-Bulman & Yopyk, 2004). The second definition, which we focus on, seems more closely related to existential concerns (see also Becker, 1962; Hill et al., 2000; Wong & Fry, 1998).

significance in an enduring world (Greenberg, 2008). This means that belief in progress has to entail more than simply being optimistic about the future and life in general ('things will improve'): it should concern the future development of *humankind* ('we will improve'). Just as the religious conception of salvation and an afterlife provides the hope of literal immortality, the secular concept of human progress permeates the course of history with meaning and thus provides a sense of symbolic immortality. The belief that humankind is improving and moving forward towards a better future establishes a meaningful link between past and future (and also harbors the promise of continuous progress once the individual itself is no longer around; see also Sani, Herrera, and Bowe, 2009). Thus far there is no empirical evidence to support this line of reasoning; below we describe the theoretical foundation underlying our viewpoint in more detail.

### **Not all progress provides meaning**

During the Enlightenment, faith in scientific advance went hand in hand with a belief in the progress of the human condition (i.e., moral or ethical progress, Gray, 2005; see also De Botton, 2004). As a consequence, Gray argued that a general belief in progress has a similar meaning-providing function as religion. However, progress comes in different flavors. We expect that only belief in moral (and not technological) progress imbues life with meaning and thus will be enhanced in the face of existential concerns. This assumption is based on 1) the work of Gray (2004), who contends that, to permeate the course of human history with meaning, we need to believe that humanity advances (i.e., there is some form of moral progress), and 2) the fundamental importance of morality in defining what it means to be human (see, e.g., Haidt, 2008; Haslam, 2006; Katz, 2000; Skitka, 2010). Previous

research has shown that human uniqueness buffers thoughts of death (e.g., Cox, Goldenberg, Pyszczynski, & Weise, 2007; Beatson & Halloran, 2007). Given that most people construe human beings as the only creatures for whom morality is relevant, faith in human moral progress may also ward off death-related concerns. This led to our hypothesis that, in order for progress to be meaningful, it must concern human morality and entail more than mere material or scientific advances. Such technological progress does not necessarily make the world a better or more ‘meaningful’ place. It could even be argued that the opposite is true, since “science enlarges human power [*but*] it cannot make humanity itself more reasonable, peaceful or civilized” (Gray, 2004, p. 4); in fact, “human life can become more savage and irrational even as scientific advance accelerates”. In the words of Polish poet Stanislaw Lec (1909-1966) - a cannibal using knife and fork is still a cannibal. Technological progress can even lead to moral decay because it provides mankind with more options to pursue immoral goals (e.g., nuclear and chemical warfare). Thus, in order for progress to be meaningful, advancing human *knowledge* is not sufficient; it has to be accompanied by an improvement of the human *condition* (i.e., moral progress).

To test our main hypothesis that only belief in moral progress provides existential meaning, we assess both moral and technological progress and investigate how they relate to existential anxiety. Following Gray’s argument that progress in science and technology is a fact, while moral progress is a myth (2004; 2007), we expect beliefs in moral progress generally to be less pronounced than belief in technological progress. Crucially, we expect that belief in moral progress will be enhanced by mortality salience, while belief in technological progress is expected to be unaffected.

In addition to our main hypothesis, we also aim to investigate the role of religiosity with regard to belief in moral progress. More specifically, if belief in moral progress is primarily a secular meaning provider that functions much like religious belief -- and if Gray is right that moral progress is a secular *substitute* for religion as a provider of death-transcending meaning -- then the increased faith in moral progress after mortality salience should be primarily observed among secular participants. This idea is in accordance with the theoretical work of Gray (2004; 2007) and also supported by some empirical evidence. For example, Norenzayan, Dar-Nimrod, Hansen, and Proulx (2009) report that cultural worldview defense reactions after mortality salience do not occur among religious participants. Jonas and Fischer (2006) describe a similar finding. Thus, since religious individuals are likely to resort to their religious faith as a source of meaning when confronted with existential threat, we suspect that they will not display an increased belief in moral progress after mortality salience. A moderating role of religiosity would therefore provide evidence for our hypotheses that a) existential threat triggers a need to believe in moral progress because it provides meaning and b) belief in moral progress as such primarily functions as a *secular* protective buffer.

### **Overview of the current research**

In two studies, we investigate if belief in moral progress is an especially important source of protection against death-related threats. The first study was designed to provide a first test of the existential functions of belief in moral versus technological progress. The death-thought accessibility hypothesis (Schimel, Hayes, Williams, & Jahrig, 2007) posits that if a psychological structure protects people from mortality concerns, then attacking this structure should increase the accessibility of death-thoughts.

Thus, we assess whether challenging belief in moral progress increases death-thought accessibility to a larger extent than a challenge to belief in technological progress, relative to a neutral control condition. In Study 6.2 we aim to more directly investigate if people show an increased belief in moral versus technological progress upon existential threat. Following the mortality salience hypothesis (Greenberg et al., 1997; Schimel et al., 2007); if only belief in moral progress provides an especially potent buffer against death-related anxiety, then mortality salience should increase participants' faith in moral but not technological progress. In this study we made use of a representative sample of the Dutch population, consisting of both secular and religious participants. This enabled us to further establish the meaning-providing aspect of belief in moral progress and its relation to religiosity. We predict that if moral progress primarily constitutes a secular meaning provider, it will be less useful as an anxiety-buffer for religious participants and therefore not increase in response to a mortality salience induction.

### **Study 6.1**

#### **Method**

**Participants, procedure, and design.** Eighty-five undergraduate students (57 females) participated in this study, which was part of a larger session consisting of a series of unrelated experiments. Their mean age was 22 years ( $SD = 5.81$ ). Participants were randomly assigned to one of three conditions; in each of the conditions participants were asked to read an essay. Depending on the condition to which participants were randomly assigned, the essay challenged the notion of moral progress, technological progress or, in the control condition, criticized the Dutch Railways. All essays were similar

in length and structure<sup>21</sup>. After reading the essay, participants continued with a death-thought-accessibility measure, which consisted of a word-completion task modeled after those used in previous TMT-research (for a review, see Hayes, Schimel, Arndt, & Faucher, 2010). This task consisted of 16 word-fragments, of which 11 could be completed with either a death-related or a neutral word (e.g., gra., which could be completed to form the word *graf* [grave] or *grap*, which is Dutch for joke). The remaining five fragments were fillers that could not be completed to form a death-related word. Participants were fully debriefed after the entire experimental session was over.

## Results and discussion

An omnibus ANOVA with essay (anti-moral progress; anti-technological progress; control) as independent variable and death-thought accessibility as the dependent variable approached significance,  $F(2, 84) = 2.84, p = .064$ . Following the recommendations of Rosenthal and Rosnow (1985), we conducted *a priori* contrast analyses. Results showed that questioning moral progress (contrast weight: 2) led to higher death-thought accessibility ( $M = 5.72, SD = 1.85$ ) than questioning technological progress (contrast weight: -1;  $M = 4.68, SD = 2.50$ ) or reading a control essay (contrast weight: -1;  $M = 4.54, SD = 1.77$ ),  $t(82) = 2.37, p = .020$ , Cohen's  $d = .52$ <sup>22</sup>.

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<sup>21</sup> To assess whether the anti-moral progress and anti-technological progress essays were equally convincing, we conducted a pilot study. Fifty-two undergraduates read one of the two essays and were asked to rate them on 9-point scales. The items were "Do you agree with the contents of the essay?", "Do you think that what the author wants to convey makes sense?", "Does the author have strong arguments in making his point?" ( $\alpha = .88$ ). A t-test on the composite score showed that participants rated the anti-moral progress essay equally ( $M = 5.02, SD = 2.11$ ) to the anti-technological essay ( $M = 5.18, SD = 1.83$ ),  $t(50) = -.28, p = .78$ . This was also the case for the separate items, all  $p$ 's  $> .46$ . See the Appendix for the essays.

<sup>22</sup> LSD posthoc tests confirmed this finding and showed that death-thought accessibility was higher in the anti-moral progress condition than in the control condition ( $p = .033$ ). The difference between the anti-moral progress condition and the anti-technological progress condition was however marginally significant ( $p = .059$ ). The difference between the anti-technological progress and control condition was not significant,  $p = .80$ .

Thus, challenging the notion of moral progress increased the accessibility of death-related cognitions relative to a neutral control condition and challenges to the notion of technological progress. This provides a qualifier on the results of Rutjens et al. (2009) and suggests that some forms of progress are more useful for controlling existential anxiety than others.

### **Study 6.2**

Study 6.2 aimed to provide converging evidence for our hypothesis that belief in moral progress is a particularly potent meaning-providing construct that protects people from mortality concerns. If this is the case, then people should increase their faith in future moral but not technological progress when their mortality has been made salient (Greenberg et al., 1997). We tested this hypothesis by assessing participants' expectations of moral and technological progress after being reminded of either their own morality or an aversive control topic. Moreover, as argued in the introduction, if belief in moral progress functions as a secular alternative to religious belief (Gray, 2007), people low in religiosity should be especially prone to bolster this belief when their mortality is made salient. In the present study we therefore approached a representative sample of the Dutch population (in terms of age, gender, education, and religiosity) and included a measure of religiosity. We also added open-ended questions to assess the content of participants' progress-related thoughts, in order to gain insight in their views on what in their view constitutes progress.

### **Method**

**Participants, procedure, and design.** A representative sample of 438 Dutch people was approached using an online survey. Of these potential respondents, 162 did not wish to participate (yielding a response rate of 63%);

thus, 276 respondents completed the survey in exchange for a monetary reward. All measures were programmed in an online survey tool and participants completed the survey on a computer from their own homes. The sample consisted of 145 males and 131 females. Mean age was 42 years ( $SD = 12.79$ ), with a range of 18-64.

Participants were randomly assigned to a mortality salience or dental pain condition. In the mortality salience condition, participants responded to two open-ended questions (Rosenblatt et al., 1989): “Please briefly describe the emotions that the thought of your own death arouses in you” and “Write down, as specifically as you can, what will happen to you as you die and once you are physically dead”. Participants in the dental pain condition were asked two similar questions, but with respect to dental pain (see Greenberg et al., 1997). After the manipulation participants filled out the PANAS (Watson, Clark, & Tellegen, 1988) in order to create a delay between the manipulation and the dependent measures (see Arndt et al., 1997). Then, participants proceeded with two belief in progress measures (one measuring moral progress and the other measuring technological progress; the order of the measures was randomized by the online survey tool software). The moral progress measure was presented as part of a collaborative research effort with the Faculty of Humanities at a European university on the topic of civilization and human development. Participants were asked to indicate their belief in moral progress during the next decade, on a measure resembling a visual graph (based on Rutjens, van Harreveld, & van der Pligt, 2010). In the current study, the measure consisted of a bar, which was set at zero (labeled as “no change”) and could be slid to the left (labeled as “decline”) or to the right (labeled as “progress”). The endpoints of the scale were -10 (decline) and +10

(progress). The technological progress measure was identical, except that it was presented as a collaborative effort with a European university's Faculty of Life Sciences. Participants were asked to express their views on technological advances in the next decade. To gain more insight into the way people define moral and technological progress, we also asked participants, with two open-ended questions, to explain what type of progress they thought about. The study then continued with several demographic measures and the Santa Clara Strength of Religious Faith Questionnaire (Plante & Boccaccini, 1997), which served as our measure of religiosity (10 items,  $\alpha = .98$ ). A typical item is "I look to my faith as providing meaning and purpose in life". All items were scored on 4-point scales from 1 (*strongly disagree*) to 4 (*strongly agree*).

## **Results and Discussion**

**Religiosity.** Scores on the Santa Clara Strength of Religious Faith Scale could range from 10 (low faith) to 40 (high faith). Mean score was 19.66 ( $SD = 9.57$ ). There was no effect of condition on this scale,  $t(274) = .70$ ,  $p = .48$ .

**Main analyses.** To test our hypotheses that a) mortality salience enhances belief in moral progress, and that b) this only holds for those low in religiosity, we performed a series of moderated regression analyses (see Hayes & Matthes, 2009). First, condition was dummy-coded (mortality salience = 1, dental pain = -1) and religiosity scores were centered. We began with investigating the effects on belief in moral progress. Entering condition, religiosity, and the interaction term only revealed a significant interaction effect,  $b = -.07$ ,  $t = -3.45$ ,  $p < .001$ . The model summary statistics were  $R^2 = .056$ ,  $F(3, 272) = 5.37$ ,  $p < .002$ . Simple slope analyses revealed an effect of mortality salience on belief in moral progress, but only among those low in

religiosity (1 SD below the mean),  $b = 1.03$ ,  $t = 3.63$ ,  $p < .001$ . Among religious participants (1 SD above the mean), mortality salience did not affect belief in moral progress,  $b = -.35$ ,  $t = -1.25$ ,  $p = .21$ . Figure 6.1 depicts the interaction plot and shows that mortality salience enhances belief in moral progress only when religiosity is low.

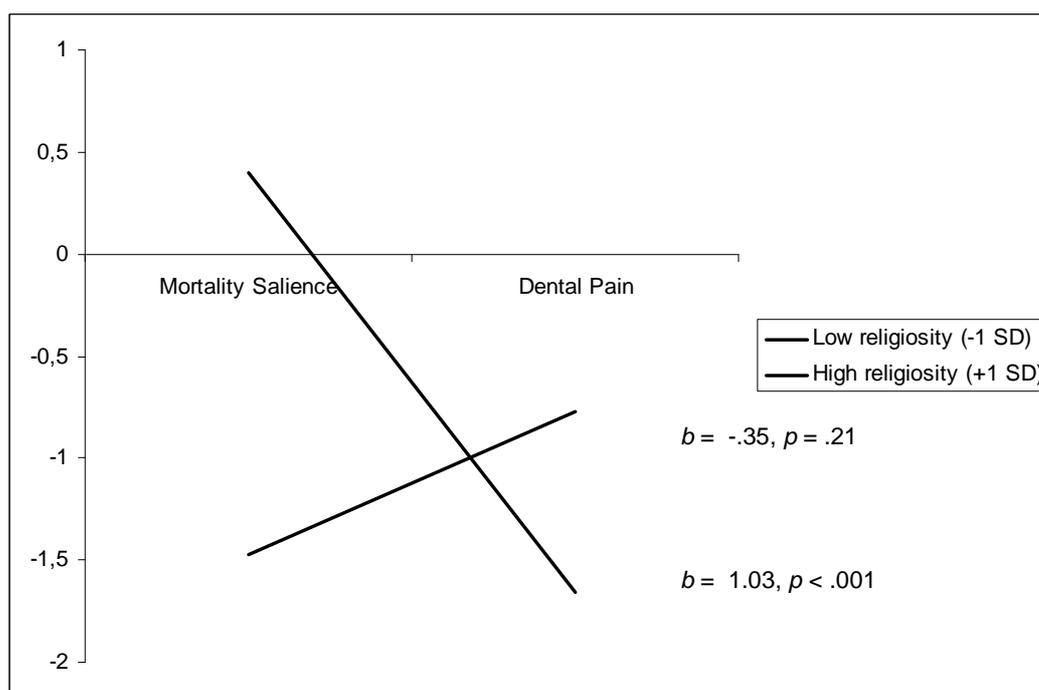


Figure 6.1. Belief in moral progress as a function of condition (mortality salience or dental pain) and religiosity (1 SD below the mean or 1 SD above the mean). Study 6.2.

The same analyses were conducted with belief in technological progress as a dependent variable. As expected, condition, religiosity, and the interaction term did not yield significant effects (condition  $p = .43$ ; religiosity  $p = .17$ ; interaction term  $p = .57$ ). The model summary statistics were  $R^2 = .010$ ,  $F(3, 272) = .92$ ,  $p = .43$ . Simple slope analyses showed that there were no conditional effects of mortality salience at low (-1 SD) and high (+1 SD) values of religiosity, both  $p$ 's  $> .33$ . See Figure 6.2 for the plotted results<sup>23</sup>.

<sup>23</sup> An alternative way of analysis is coding whether participants expressed a belief in moral progress (upward line) or moral decline (downward line). We computed a new variable consisting of three levels:

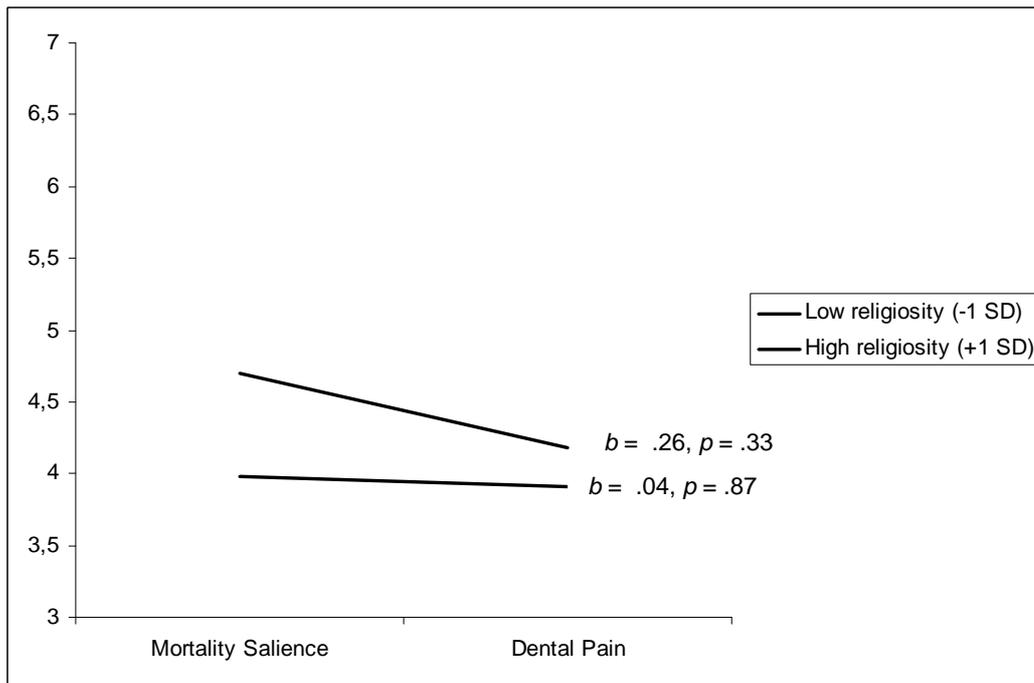


Figure 6.2. Belief in technological progress as a function of condition (mortality salience or dental pain) and religiosity (1 SD below the mean or 1 SD above the mean). Study 6.2.

These findings were further corroborated by an analysis in which belief in progress was treated as a within-subjects variable (moral vs. technological). A 3-way GLM mixed-design interaction analysis revealed a significant 3-way interaction effect of condition, religiosity, and belief in progress,  $F(1, 272) = 7.44, p = .007, \eta_p^2 = .027$ , confirming the previous analyses. See footnote for a complete summary of the GLM effects<sup>24</sup>.

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progress ( $N = 84$ ), decline ( $N = 184$ ), and no change ( $N = 8$ ). For the sake of the current analyses, we dichotomized religiosity by means of a median split. Chi<sup>2</sup> analyses showed that, among the nonreligious participants, mortality salience resulted in 39% of the participants believing in progress, 53% in decline, and 8% indicated no change. In the dental pain condition, only 27% indicated a belief in progress and 72% in decline (1% no change). This effect of condition was significant,  $\chi^2(2) = 7.07, p = .029$ , Cramer's  $V = .23$ . There was no effect of condition for the religious participants,  $p = .35$  (in both conditions, approximately 27% of the religious participants indicated a belief in moral progress and 71% in moral decline). Similar analyses for belief in technological progress yielded no effects, all  $p$ 's  $> .25$ . Regardless of condition or religiosity, more than 92% of the participants expressed faith in technological advance (versus no change or decline).

<sup>24</sup> A 3-way GLM mixed-design interaction analysis was performed in which we entered condition (mortality salience vs. dental pain) and religiosity (continuous Santa Clara scores) as between-subjects factors and type of progress (belief in moral vs. technological progress) as a within-subjects variable. This analysis yielded a number of effects, which were all qualified by a significant 3-way interaction

**What constitutes moral progress?** Upon completion of the belief in progress measures, participants were asked to indicate, in one or two sentences, which domain they had in mind when thinking about progress. Of particular interest to the current research is the content of the moral progress measure. Inspection of participants' answers revealed a number of themes that were frequently mentioned. Of these answers, 65% fell into one of the following four categories: Norms and values brought by civilization versus the blurring of moral standards (19%); tolerance, acceptance, and cooperation versus violence, intolerance, and intercultural conflict (14%); altruism and social cohesion versus individualism, egocentrism, and polarization (24%); sustainability and care for the environment versus profit seeking and exploitation of natural resources (8%). Interestingly, two of the larger categories (14% and 24%) revolve around the theme of cooperation and social cohesion versus individualism and intolerance, thus mapping onto what according to Bloom (2010) is one of the most important facilitators of moral progress: associating with other humans and sharing common goals. Other themes that were mentioned less frequently were mankind's arrogance, economic progress, greed, human goodness, and spirituality.

**Discussion.** Study 6.2 shows that mortality salience increases belief in moral progress, but only among participants low in religious belief. Interestingly, as the results show (see Footnote 23), baseline belief in moral progress was modest among our participants. Even after a mortality salience manipulation, more than half of the participants expressed a belief in future

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effect. First, we obtained a main effect of condition,  $F(1, 272) = 8.33, p = .004, \eta_p^2 = .030$ , and a condition by religiosity interaction effect,  $F(1, 272) = 6.15, p = .014, \eta_p^2 = .014$ . We also obtained a main effect of type of progress,  $F(1, 272) = 103.10, p < .001, \eta_p^2 = .275$  and an interaction type of progress and condition,  $F(1, 272) = 8.04, p = .005, \eta_p^2 = .029$ . Finally, we obtained a significant 3-way interaction effect of condition, religiosity, and type of progress,  $F(1, 272) = 7.44, p = .007, \eta_p^2 = .027$ .

moral decline. Among control participants and religious participants, this was more than 70%. Study 6.2 further shows that belief (or disbelief) in moral progress primarily concerns the advancement of human nature and human relations. Finally, belief in technological progress was fairly undisputed, regardless of experimental condition and religiosity.

### **General Discussion**

Two studies investigated the relationship between belief in progress and existential anxiety. As expected, we found that belief in moral, but not technological, progress buffers mortality concerns. Study 6.1 showed that only the challenging of moral progress increases death-thought accessibility. In Study 6.2 participants were asked to indicate their belief in moral and technological progress during the coming decade. Mortality salience led participants to indicate more belief in moral progress but had no effect on belief in technological progress. Moreover, supporting our second hypothesis, the effect on belief in moral progress was moderated by religious belief: Only non-religious participants bolstered belief in moral progress when mortality was made salient.

The current research thus shows that in order for progressive faith to provide a shield against existential anxiety, it has to entail more than technological advance (which could increase our ability to predict and control the environment or provide optimism, e.g., in the case of combating environmental problems or disease). Rather, to imbue the course of history with meaning and facilitate protection against mortality concerns, people need to believe that mankind progresses morally. These findings are consistent with recent findings that of the various bases for human judgments, the moral dimension appears to be the most important (e.g., Haidt & Graham, 2007;

Skitka, 2010). They also attest to Gray's observation (2004, 2007) that technological progress is an observable characteristic of contemporary society that is assumed to be stable, whereas belief in moral progress requires faith (see also Bury, 1955). Indeed, in Study 6.2, belief in technological progress was unequivocally present and did not differ between conditions, and challenging it did not increase death-thought accessibility in Study 6.1. Previous research however has shown that both moral and technological progress beliefs are enhanced when *personal control* is low (Rutjens et al., 2010). Indeed, observing technological progress may provide people with the assurance that things will be under control in the future, thus providing a source of compensatory control. Together with the current findings, this once more suggests that a belief in moral progress is qualitatively different from belief in technological progress: whereas needs to restore control and order lead to the bolstering of both moral and technological progress, existential needs triggered by mortality salience result only in an enhanced belief in moral progress<sup>25</sup>.

The notion that belief in moral progress is especially useful as a *secular* meaning provider was supported in Study 6.2. We found that mortality salience only affected belief in moral progress for participants low in religiosity. It seems likely that the religious participants in our sample turn to religious sources of meaning when facing existential threat (e.g., Jonas & Fischer, 2006; Norenzayan et al., 2009). Moreover, more fundamentalist followers of religious belief systems are more likely to express the view that contemporary Western society is in moral decline or even believe that people

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<sup>25</sup> For discussion on threat and the need for order versus meaning, see Rutjens and Loseman (2010) and Shepherd, Kay, Landau, & Keefer (2011).

are incapable of morality (i.e., human beings are inherently sinful). Such views might be strengthened upon confrontation with existential concerns and thus might constitute another reason for the absence of hope of moral progress among our more religious participants. Study 6.2 provided some evidence for this line of reasoning. We asked participants, upon completion of the demographics measures, to indicate to what extent they agreed with the statement “All people are inherently moral sinners” on a scale from 1 (*totally disagree*) to 4 (*totally agree*)<sup>26</sup>. It seems plausible that a firm belief in this view on humanity leaves little room for faith in moral progress. We found this item to correlate positively with the mean religiosity score, as measured by the Santa Clara Strength of Religious Faith Questionnaire ( $r = .55, p < .001$ ). Moreover, belief in mankind’s inherent sinfulness correlated negatively with belief in moral progress,  $r = -.12, p = .040$ . These correlations provide some further insight pertaining to why our religious participants did not bolster belief in moral progress as a source of meaning.

Thus, whereas religious individuals can focus on the promise of a better world in the form of a supernatural hereafter, those not adhering to a religion must find solace in earthly existence. Study 6.2 provided some insights into what kind of beliefs can provide this solace. For a large part these beliefs seem to revolve around the hope that human nature can improve (e.g., more altruism, less egocentrism, higher moral standards), and perhaps even more so that human relations can improve (e.g., more cooperation, tolerance, and social cohesion; see also Bloom, 2010). It is somewhat sobering, then, to observe that such faith in the improvement of human nature and human

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<sup>26</sup> There was no effect of condition (mortality salience vs. dental pain salience) on this measure,  $p > .97$ . Grand mean was 2.03 ( $SD = 1.06$ ).

relations is rather modest among our participants. Seculars' use of belief in moral progress to cope with death concerns suggests that they too, like religious individuals, focus on a better future, but that this future is constrained to life on earth. From this perspective, the secularization of most western countries might in itself not lead to a better world<sup>27</sup>, but when people are in need for meaning it at least triggers a tendency to *believe* in a better world. Perhaps those adhering to or promoting a politics of progress can benefit from this idea, by providing people with the tools to find meaning in building a better future and seeking moral and societal progress. Moreover, viewing the course of history as linear and not cyclic might prove to be an effective way to cope with extreme examples of human moral failure (e.g., Abu Ghraib, the recent atrocities in central Africa, and the Balkan war; see also Greenaway and Louis, 2010); acceptance of their occurrence might perhaps be facilitated by realizing that people can learn from the past.

To conclude, to successfully protect ourselves from existential anxiety by affirming our secular belief in progress, we have to convince ourselves that 'we will improve' and that history is a march to a better world (cf. Gray, 2007), where (former) cannibals will use their cutlery to eat *with* each other.

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<sup>27</sup> Although it is worth mentioning that some thinkers have argued that secularization actually *has* resulted in a morally advanced world (see Dawkins, 2006).

## Appendix

### Essays used in Study 6.1 (translated from Dutch)

#### Anti-moral progress essay

*Below you find part of an article published in a magazine some months ago. In this article the author discusses the issue of moral progress. Please read the text carefully and answer the questions below.*

“This question is easy to answer; I think moral progress is definitely an illusion. We always seem to think that we can learn from the past, yet we still can’t establish large scale peace and find it impossible to establish political cooperation. There’s plenty of evidence that we haven’t witnessed any real progress since the Middle Ages: we ruin our environment, political systems do not function better than say 100 years ago, there still is poverty in the world, and so on. We don’t seem to learn from history and keep making the same mistakes. From an ethical point of view, politicians are no different from those in power 100 years ago. Not to mention the people responsible for the credit crisis! People are primarily interested in their own wellbeing, they always have. That’s why I cannot believe that our children will encounter a world that is better than the world we live in today. People are people, and morally and socially we simply do not make any progress. All in all, I think we have to face reality: progress is an illusion!”

## Anti-technological progress essay

*Below you find part of an article published in a magazine some months ago. In this article the author discusses the issue of technological and scientific progress. Please read the text carefully and answer the questions below.*

“This question is easy to answer; I think technological and scientific progress is definitely an illusion. We always seem to think that science will bring us anywhere we want to be, but that is just one of the many ways of looking at reality. If there truly is scientific progress, then why can’t we find solutions to all these problems that we haven’t been able to solve for over a century? We ruin our environment by logging rainforests and pollution, and there still exists poverty in the world. Science does not have an answer to any of these problems. Not to mention medical science; once we have managed to control certain diseases, there will always be new ones to deal with. That’s why I cannot believe that our children will encounter a world that is better than the world we live in today. Technology is fallible, and scientifically and technologically we simply do not make any real progress. All in all, I think we have to face reality: progress is an illusion!”

## Control essay:

*Below you find part of an article published in a magazine some months ago. In this article the author discusses the issue of human progress. Please read the text carefully and answer the questions below.*

“This question is easy to answer; I think public transport is abominable. We always seem to think that public transport is the solution for our environmental problems and crowded motorways, but meanwhile everybody keeps using his or her own car. There are plenty of examples illustrating that this is unavoidable: trains are too often delayed, and often do not depart at all. Moreover, too many people are crammed into chockfull compartments, and so on. Unfortunately, the Dutch Railways do not seem to learn from history and keep making the same mistakes over and over again. Moreover, once they claim they have found a solution for their overcrowded trains, they also increase the prices of the tickets. That’s why I cannot believe that the future looks bright for public transport. The Dutch Railways are the Dutch Railways so let’s be realistic: our cars remain indispensable!”