



Belief in scientific–technological progress and life satisfaction: The role of personal control



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ABSTRACT

While numerous studies have examined the positive association between religious beliefs and subjective well-being, there is a notable absence of research addressing the potential role of secular beliefs as a source of happiness and life satisfaction. Drawing from literature on compensatory control, the present research fills this void by exploring the association between belief in scientific–technological progress and life satisfaction, investigating its underlying mechanism and examining cross-cultural moderators. The results showed that belief in scientific–technological progress is a stronger predictor of life satisfaction than religious beliefs in a nationally representative sample of the Dutch population (Study 1) and across 69 out of 72 countries (Study 2). Additional analyses highlighted the role of personal control beliefs as the mechanism driving this effect: a strong belief in scientific–technological progress was associated with an enhanced sense of personal control, which in turn contributed to higher life satisfaction. Consistent with previous research on “shared reality” and person–culture fit, the beneficial consequences of an individual’s belief in scientific–technological progress were enhanced when this belief was widely held within a specific culture.

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1. Introduction

Although religious beliefs have frequently been associated with a multitude of positive outcomes, such as an improved health, higher life satisfaction and increased happiness (Diener, Tay, & Myers, 2011; Gebauer, Sedikides, & Neberich, 2012; McCullough & Laurenceau, 2005; Stavrova, 2015; Stavrova, Fetchenhauer, & Schlösser, 2013), average levels of religiosity are on a steady decline throughout most Western societies. According to the International Social Science Program data, the percentage of people who believe in God declined in 14 of the 18 countries studied between 1991 and 2008, with an average (among these 14 countries) decrease of 6.14 percentage points (Smith, 2012). Philosophers (Dennet, 2006; Harris, 2010), and more recently, social scientists (Zuckerman, 2009) have argued that secular beliefs, such as political ideologies or philosophical worldviews, might fill the void left by religion and thus alternatively or additionally contribute to human flourishing. However, the question of whether specific secular beliefs can in fact be a source of subjective well-being has hardly been empirically studied.

A belief in science represents an important part of secularity. One aspect of a belief in science reflects an individual’s acceptance of scientific methods and explanations (Farias, Newheiser, Kahane, & de Toledo, 2013). For example, environmental psychologists attempting

to explain the widespread public denial of climate change have observed that individuals generally differ in their acceptance of scientific findings and explanations, such as smoking being a cause of lung cancer or HIV being a cause of AIDS (Lewandowsky, Oberauer, & Gignac, 2013). Another facet reflects a belief in the ability of science and technology to improve the living conditions of mankind, referred to as a belief in scientific–technological progress. A belief in scientific–technological progress is considered a key element of social optimism (Schweizer & Schneider, 1997), faith in progress and progressive hope (Rutjens, van der Pligt, & van Harreveld, 2009; Rutjens, van Harreveld, & van der Pligt, 2010), describing a general optimism regarding the future of humanity. However, in contrast to faith in social-moral progress (Rutjens, van Harreveld, van der Pligt, van Elk, & Pyszczynski, 2014), a belief in scientific–technological progress focuses on science and technology as viable solutions to current and future problems of mankind (Kashima et al., 2009). Herein, we draw upon this concept and define a belief in scientific–technological progress as a conviction or belief that science and technology help humanity build a better future.

2. Belief in scientific–technological progress as a source of personal control

According to compensatory control theories (Kay, Gaucher, Napier, Callan, & Laurin, 2008; Rothbaum, Weisz, & Snyder, 1982), beliefs often fulfill compensatory control functions. In the absence of immediate personal control, individuals attempt to regain a feeling of control

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through secondary or compensatory sources, such as religious and superstitious beliefs. Indeed, studies have shown that beliefs in superstition (Greenaway, Louis, & Hornsey, 2013; Kay et al., 2008), God or other supernatural agents (Kay, Gaucher, McGregor, & Nash, 2010; Whitson & Galinsky, 2008) increase as a result of an experimentally induced lack of control.

It has been recently suggested that a belief in science and scientific–technological progress might serve similar functions as religious and superstitious beliefs, providing a buffer against existential anxiety and creating a sense of order, predictability and control (Rutjens, van Harreveld, & van der Pligt, 2013). As Albert Einstein (1935) put it, the biggest merit of science is that “by acting on the human mind it has overcome man’s insecurity before himself and before nature.” Indeed, science represents a mechanism through which humans may achieve control over their environment, natural forces, their lives, the future and existential threats (e.g., delaying death and overcoming aging are the leading themes in medical research). Believing that scientists will uncover a cure for cancer, discover cheap and unlimited sources of energy or prevent an asteroid impact on Earth might stir a sense of control over one’s life, future and environment.

Supporting the compensatory control functions of the belief in scientific–technological progress, several recent experiments have shown that lowering an individual’s sense of personal control leads to an increased belief in scientific–technological progress (Rutjens, van Harreveld and van der Pligt, 2010). Affirming the belief in scientific progress in fact reduces perceptions of disorder and chaos (Meijers & Rutjens, 2014). One particular study even suggested that to combat lack of control, individuals prefer scientific theories (e.g., Theory of Evolution) to pseudoscientific theories (e.g., Intelligent Design), particularly when the former highlight the orderliness, rather than the randomness, of the world (Rutjens, van der Pligt, & van Harreveld, 2010).

Furthermore, a belief in science might serve as a buffer against stress and mortality salience. For example, Farias et al. (2013) conducted a field study showing that rowers under high-stress conditions (competition) reported a higher belief in science than rowers under low stress conditions (training). Mortality salience has similarly been shown to increase beliefs in scientific methods and knowledge (Farias et al., 2013). While among religious individuals, a reminder of death has been shown to increase the belief in God and supernatural agents (Norenzayan & Hansen, 2006), among natural science students, a reminder of death leads to an increased acceptance of the Theory of Evolution compared to Intelligent Design (Tracy, Hart, & Martens, 2011).

While the existential and compensatory control functions of religious beliefs are often assumed to underlie the generally positive associations of religiosity with mental health and subjective well-being (C.

Park, 2005), neither the potential associations between belief in scientific–technological progress and subjective well-being nor the pathways through which these associations might occur have yet been addressed in previous research. Herein, we explore whether a firm belief in scientific–technological progress serves as a source of life satisfaction by providing individuals with a sense of control over the world and their lives.

Achieving a sense of control is recognized as an essential ingredient of well-being and even a “psychological and biological necessity” (Leotti, Iyengar, & Ochsner, 2010). Empirical research has demonstrated that personal control is a robust predictor of happiness and life satisfaction (Creed & Bartrum, 2008; Gerstorf et al., 2014; Thompson & Spacapan, 1991), whereas a lack of control leads to anxiety and has downstream negative consequences for health (Spector, 2002). Hence, we expect that a sense of personal control resulting from a firm belief in scientific–technological progress is likely to be positively associated with life satisfaction. Following this reasoning, we therefore examine whether the hypothesized positive effect of a belief in scientific–technological progress on life satisfaction is mediated by the perception of personal control.

3. Culturally shared beliefs in scientific–technological progress

Thus far, we have discussed belief in scientific–technological progress as a personal, private belief. However, humans are social in nature and are strongly motivated to share their beliefs with others. This process of sharing makes private beliefs common (Bar-Tal, 2000) or a “shared reality”, a phenomenon described as “experienced commonality with others’ inner states about the world” (Echterhoff, Higgins, & Levine, 2009, p. 498). Research on shared reality has emphasized that an individual’s perception of the subjective beliefs shared among their social group makes such beliefs seem like an “objective reality” (Hardin & Higgins, 1996). The importance of this process of “social verification” has long been acknowledged in social psychology. Leon Festinger (1950, pp. 272–273) argued that “an opinion, a belief, an attitude is perceived as ‘correct’, ‘valid’ and ‘proper’ to the extent that it is anchored in a group of people with similar beliefs, opinions, and attitudes”. A more recent study confirmed that the process of social verification is essential for the perception of private beliefs and knowledge as valid and true (Kruglanski & Orehek, 2012), and interacting with people who share one’s beliefs creates a sense of a “shared reality” (Hardin & Higgins, 1996).

A sense of shared reality can promote well-being in a number of ways. It can satisfy individuals’ epistemic need, that is, the need to understand the world and their place in it (Hardin & Higgins, 1996). Achieving this understanding can help reduce uncertainty and

Table 1
Means, standard deviations and correlations, Study 1.

	M	SD	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)
1) Belief scien.–tech. progress	7.40	1.40	–	–	–	–	–	–	–	–	–	–	–	–
2) Religiosity	0.00	0.88	–.08**	–	–	–	–	–	–	–	–	–	–	–
3) Life satisfaction	5.00	1.16	.19***	.06*	–	–	–	–	–	–	–	–	–	–
4) Control	6.90	1.42	.24***	–.09**	.24***	–	–	–	–	–	–	–	–	–
5) Extraversion	3.21	0.66	.09**	–.01	.26***	.14***	–	–	–	–	–	–	–	–
6) Agreeableness	3.87	0.51	.05*	.10***	.14***	.06*	.35***	–	–	–	–	–	–	–
7) Openness	3.47	0.50	.20***	–.07**	.12***	.12***	.34***	.25***	–	–	–	–	–	–
8) Emotional stability	3.53	0.69	.17***	–.01	.47***	.21***	.29***	.07**	.18***	–	–	–	–	–
9) Conscientiousness	3.77	0.51	.18***	.05*	.20***	.07*	.13***	.30***	.28***	.24***	–	–	–	–
10) Gender (1 = male; 0 = female)	0.48	0.50	.15***	–.10***	–.01	–.01	–.03	–.31***	.06*	.15***	–.08**	–	–	–
11) Age	54.89	16.04	–.01	.19***	.04	–.08**	.00	.06*	–.13***	.16***	.09***	.07*	–	–
12) Education	3.62	1.52	.19***	–.11***	.06*	.10***	.09***	.01	.32***	.07**	.02	.09**	–.25***	–
13) Income	4081	10,269	.01	–.04	.09**	–.08**	.03	–.05	.05	.03	–.01	.03	.00	.02

Note. The correlations with dichotomous variable gender are point-biserial.

*** $p < .001$.

** $p < .01$.

* $p < .05$.

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