

For God (or) Country: The Hydraulic Relation Between Government Instability and Belief in Religious Sources of Control

Aaron C. Kay
Duke University

Steven Shepherd
University of Waterloo

Craig W. Blatz
Grant MacEwan University

Sook Ning Chua
McGill University

Adam D. Galinsky
Northwestern University

It has been recently proposed that people can flexibly rely on sources of control that are both internal and external to the self to satisfy the need to believe that their world is under control (i.e., that events do not unfold randomly or haphazardly). Consistent with this, past research demonstrates that, when personal control is threatened, people defend external systems of control, such as God and government. This theoretical perspective also suggests that belief in God and support for governmental systems, although seemingly disparate, will exhibit a hydraulic relationship with one another. Using both experimental and longitudinal designs in Eastern and Western cultures, the authors demonstrate that experimental manipulations or naturally occurring events (e.g., electoral instability) that lower faith in one of these external systems (e.g., the government) lead to subsequent increases in faith in the other (e.g., God). In addition, mediation and moderation analyses suggest that specific concerns with order and structure underlie these hydraulic effects. Implications for the psychological, sociocultural, and sociopolitical underpinnings of religious faith, as well as system justification theory, are discussed.

Keywords: compensatory control, God, system justification, political instability

Where governments fail, God never fails.

—Reverend Jeremiah Wright, 2008

Governmental systems are not merely structural features of the environment; they are deeply intertwined with individual-level psychological functioning. Indeed, various programs of research suggest that people often rely on such systems to maintain beliefs

in a predictable, structured, and orderly world (Jost, Banaji, & Nosek, 2004; Kay, Gaucher, Napier, Callan, & Laurin, 2008; Norris & Inglehart, 2004; Sullivan, Landau, & Rothschild, 2010). The stability of governmental systems, however, is in constant flux. Events ranging from economic turmoil to impending elections can lead to the perception that a government is vulnerable, unreliable, and fragile. This raises an intriguing psychological question. How might people cope with events that shake the sense of order that a stable governmental system normally produces?

One answer to this question may be gleaned from the Jeremiah Wright quotation offered above. It conveys the popular view that although the stability and efficacy of governments may fluctuate over time, God's will is everlasting. Might this notion reflect an actual psychological process, in which people rely more on religious belief in times of political instability? In the present article, we provide theoretical and empirical support for the proposition that contexts that weaken beliefs in governmental stability can strengthen faith in the existence of a controlling God.

Although it may seem curious to some that governmental institutions and religious belief can serve overlapping psychological functions, recent psychological theory suggests this idea may not

Aaron C. Kay, Department of Management & Organizations and Department of Psychology & Neuroscience, Duke University; Steven Shepherd, Department of Psychology, University of Waterloo, Waterloo, Ontario, Canada; Craig W. Blatz, Department of Psychology, Grant MacEwan University, Edmonton, Alberta, Canada; Sook Ning Chua, Department of Psychology, McGill University, Montreal, Quebec, Canada; Adam D. Galinsky, Department of Management and Organizations, Northwestern University.

This research was supported by a Social Science and Humanities Council of Canada standard research grant to Aaron C. Kay. The authors thank Richard Eibach and John T. Jost for comments on a draft of this article.

Correspondence concerning this article should be addressed to Aaron C. Kay, 100 Fuqua Drive, Box 90120, Durham, NC 27708-0120. E-mail: aaron.kay@duke.edu

be so farfetched. A considerable amount of research has illustrated a fundamental need to believe in an orderly, structured world (Heine, Proulx, & Vohs, 2006; Kay et al., 2008; Kruglanski, 1989; Kruglanski & Webster, 1996; Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006; Landau et al., 2004; Whitson & Galinsky, 2008), as opposed to one that operates haphazardly or randomly. Moreover, research on the process of compensatory control has demonstrated that the defense of external systems of control—including both governmental institutions and religious entities—can be used to protect and sustain the belief that the world is patterned and orderly (Kay et al., 2008; Kay, Whitson, Gaucher, & Galinsky, 2009; McGregor, Haji, Nash, & Teper, 2008; Sullivan et al., 2010). Such a process can help to explain why people are motivated to defend, bolster, and justify social systems and institutions that affect them (Jost et al., 2004). Thus, there is good reason to believe that these external systems themselves—God and government—may be substitutable for one another, and events that undermine the perceived dependability of the government will strengthen belief in a controlling God. In the following, we elaborate upon the theoretical and empirical foundations for this prediction.

The Importance of Personal Control

The belief that one is in control of one's destiny permeates much of Western culture. The Protestant work ethic is a central theme in American culture (Katz & Hass, 1988), and notions that people get what they deserve and deserve what they get (Lerner, 1980) are common throughout Western and non-Western nations in varied forms. The consequences and importance of motives related to personal control have been researched extensively (Kelly, 1955; Perkins, 1968; Presson & Benassi, 1996; Seligman, 1975, 1976; Skinner, 1995; White, 1959). Generally, feeling that one has personal control is associated with positive psychological outcomes, including better mental health and more effective coping with stressors (Baltes & Baltes, 1986; Bandura, 1989; Glass & Singer, 1972; c.f. Burger, 1989), whereas perceptions of diminished personal control are assumed to beget negative consequences, including increased stress and anxiety in times of crisis (Janoff-Bulman, 1992; Pennebaker & Stone, 2004; Stotland & Blumenthal, 1964) and ultimately a sense of learned helplessness and depression (Abramson, Seligman, & Teasdale, 1978).

One reason why perceptions of personal control are associated with positive outcomes and considered so psychologically important is that personal control necessarily implies an *orderly* world—one in which whatever happens, good or bad, will have a clear cause (Lerner, 1980). In other words, personal control can shield individuals from the threat associated with perceptions of a random, arbitrary, or haphazard social world (Kay et al., 2008; Kruglanski, 1989; Kruglanski & Webster, 1996). However, although the broad need to believe in an orderly, nonrandom world is presumed to be relatively constant (Becker, 1969; Heine, Proulx, & Vohs, 2006; Landau et al., 2004, 2006), perceptions of personal control have proven to be more variable than researchers once thought. Perceptions of personal control tend to vary between people, across cultural contexts, and as a function of situational constraints (e.g., Burger, 1989; Burger & Cooper, 1979; Ji, Peng, & Nisbett, 2000; Dweck & Leggett, 1988; Pepitone & Saffiotti, 1997; Rodin, Rennert, & Solomon, 1980; Sethis & Lepper, 1998;

Weisz, Rothbaum, & Blackburn, 1984; Wohl & Enzle, 2003). Given the consistent need to believe in a nonrandom, structured world, how then do people cope with these fluctuating levels of personal control?

The Substitutability of Personal and External Systems of Control

One means for maintaining perceptions of order and stability—in the absence of personal control—is to endorse external sources of control in one's life, such as the government or God. Doing so can provide the individual with the security of knowing that even though they themselves may not be entirely in control of their life situation, someone or some type of entity is ensuring that things are under control (Antonovsky, 1979; Rothbaum, Weisz, & Snyder, 1982). Externally imposed sources of order, much like personal control, have been tied to healthy psychological functioning (Schwartz, 2000). Although external sources such as these do not necessarily afford perceptions of personal control,¹ they can help people see that the world is under control, nonrandom, and manageable.

Several lines of research support this notion. Kay et al. (2008) found that when perceived personal control was experimentally decreased, participants were more likely to support (a) the legitimacy of their sociopolitical system (also see Sullivan et al., 2010) and (b) the existence of a controlling God. Conversely, when the government was depicted as ineffective, participants perceived more illusory personal control in a contingency task. Other research demonstrates that threats to personal control cause people to see patterns in random external stimuli (Whitson & Galinsky, 2008), attribute conspiratorial underpinnings to world events (Whitson & Galinsky, 2008), and increasingly believe in the influence of clearly defined enemies (Sullivan et al., 2010). A shared theoretical assumption unites these findings: To preserve beliefs in a structured, nonrandom world, people need not rely exclusively on personal control but can also draw on the order imposed by other social and institutional forces (see Jost & Banaji, 1994; Rothbaum et al., 1982).

We propose here that processes of compensatory control need not be restricted only to the substitutability between personal and external resources. Rather, the various external systems that serve this same goal should also be substitutable for one another—a possibility that nobody, to our knowledge, has ever empirically tested.

The Substitutability of God and Government

According to the model of compensatory control (Kay et al., 2008, 2009), which builds on system justification theory (Jost & Banaji, 1994), the process by which people maintain views of the world as orderly is fluid, such that perceptions of control can be obtained from any number of sources—both internal and external—and that the shortcomings of one source of control can be compensated by other similar sources. This is consistent with

¹ However, external systems such as God and governments can also do this (i.e., reestablish feelings of personal control) via prayer and other forms of appeal to higher authorities. This is a key component to Rothbaum et al.'s (1982) model of secondary control.

various psychological theories that similarly conceptualize psychological needs as being effectively met from a diverse range of sources that are interchangeable (Heine, Proulx, & Vohs, 2006; McGregor, Zanna, Holmes, & Spencer, 2001; Steele, 1988; Tesser, 2001; Tesser, Crepez, Beach, Cornell, & Collins, 2000). But can God and government both serve some of the same psychological needs?

God as an External Source of Control

More than a century ago, in his classic series of lectures on *The Varieties of Religious Experience*, William James (1902) observed that “Were one asked to characterize the life of religion in the broadest and most general terms possible, one might say that it consists of the belief that there is an unseen order” (p. 46). Contemporary scholars tend to agree. The order provided by God, or a spiritual force such as Karma, is thought to be common to nearly all religions (Atran & Norenzayan, 2004), and research supports the notion that people turn to God in times of uncertainty and low control. For example, religious coping during life stressors has been shown to be associated not only with decreased distress but also with stronger faith-based religious beliefs (Pargament, 1997). Following specific crises that are associated with randomness and a lack of personal control, people can turn to God and religion to provide them with an orderly framework to understand the event and make it feel less random (Park, 2005). In addition, living in unpredictable, insecure environments has been associated with increased religious devotion across cultures (Norris & Inglehart, 2004).

Correlational research, therefore, strongly supports the notion that instances of life stressors that are beyond one’s control lead people to strengthen beliefs in God. Experimental research also supports this reasoning. Threatening feelings of personal control by having people recall times in which they lacked control, heightening perceptions of randomness via an implicit priming task, and inducing feelings of low control via a guided visualization have all been shown subsequently to increase beliefs in a controlling God (Kay et al., 2008; Kay, Moscovitch, & Laurin, 2010; Laurin, Kay, & Moscovitch, 2008). These effects are most pronounced when God’s controlling powers are emphasized to participants and persist even when accounting for the negative valence of personal control manipulations (Kay et al., 2008; Kay, Moscovitch, & Laurin, 2010). Finally, inducing uncertainty (via a baffling statistical procedure) can increase religious conviction (McGregor, Haji, Nash, & Teper, 2008). Thus, there is considerable correlational and experimental evidence that religious belief generally—and belief in a controlling God specifically—is increased following threats to order and nonrandomness (for a review, see Kay, Gaucher, McGregor, & Nash, 2010).

Government as an External Source of Control

Just as God can provide people with the psychological comfort of knowing that the world is imbued with order, the government, too, can address such needs. System-justification theory (Jost & Banaji, 1994) has for 15 years demonstrated that people are motivated to defend and legitimize the status quo. Many studies have illustrated that under instances of system threat, people bolster their belief in the legitimacy and desirability of political systems

and societal institutions (Jost & Hunyady, 2003; Jost, Kivetz, Rubini, Guermandi, & Mosso, 2005; Kay, Jost, & Young, 2005; Kay et al., 2009). Furthermore, several lines of research suggest that the tendency to defend and support one’s government can be attributed in part to motivations to view one’s world as orderly and controlled: First, threats to personal control increase both resistance to governmental change (Kay et al., 2008, Study 4) and faith in the government’s ability to effectively resolve problems (Kay et al., 2008; Sullivan et al., 2010). Second, cross-national data demonstrate that decreased feelings of personal control are associated with increased desires for governmental control (Kay et al., 2008, Study 3). Third, manipulations that increase people’s beliefs that their government has control over their outcomes have been shown to produce increased justification of governmental decisions (Kay et al., 2009, Study 3). Fourth, threats to personal control lead to increased faith in governmental system, but not when one’s political system is portrayed as unstable and unable to effectively ensure order (Sullivan et al., 2010). Finally, research has suggested that a rigid commitment to a governmental system can serve to satiate diverse psychological needs, including needs for order and structure (Jost, Glaser, Kruglanski, & Sulloway, 2003; Nail & McGregor, 2009; Norris & Inglehart, 2004).

Suggestive Evidence That Belief in God and Government Serve as Interchangeable Sources of Control

There is converging evidence, then, that beliefs toward God and the government can help satiate the same psychological need. Given this overlap, it is conceivable that they will exhibit a substitutable relationship with one another. As described above, this reasoning is consistent with the model of compensatory control (Kay et al., 2008), which suggests that both personal and external sources of control can act interchangeably to confer order and nonrandomness upon the world. Some previous findings also support this possibility.

Archival research (Sales, 1972) has noted that during times of economic downturns, conversion rates to religions offering high levels of order and control increase. To the extent that economic instability is perceived to reflect the government’s inability to ensure order, these findings may suggest a tendency to turn to God or other supernatural sources when confidence in the government is waning. Norris and Inglehart (2004), drawing on theories of secularization and on large cross-national data sets, note that as countries, over time, develop more stable governments and political systems, religious devotion ebbs. In explaining why this happens, Norris and Inglehart (2004) suggested that “the need for religious reassurance becomes less pressing under conditions of greater security” and that “greater protection and control . . . found in postindustrial nations means that fewer people in these societies regard traditional spiritual values, beliefs, and practices as vital to their lives or the lives of their community” (p. 18). These findings provide suggestive support that religious faith can fluctuate as a function of the solidification of other secular sources of control, security, and stability. However, these results are only suggestive because they (a) rely exclusively on correlational analyses; (b) argue that these types of effects occur primarily during an individual’s “formative” years, rather than flexibly according to one’s immediate context, as we suggest; and (c) focus on broad demo-

graphic indicators of security and progress rather than governmental stability.

There is reason to believe, then, that belief in God and support for one's government, despite their superficial dissimilarities, may exhibit a hydraulic relationship with one another. Previous correlational research traditions have associated both religious belief and government defense with needs for stability and order. In addition, research on processes of compensatory control has demonstrated that religious belief and governmental defense can both be engendered from identical threats to personal control, especially when governmental and religious systems are portrayed as controlling and stable. Finally, correlational evidence suggests a possible link between societal instability and religious practice. None of this past research, however, can speak definitively to whether political instability can in fact *cause* heightened religious faith or, more generally, to whether threats to the order imposed by one of these systems will cause people to reach out to the other.

Overview of Present Studies

We present three studies designed to assess whether temporary decreases in government stability lead to increases in religious belief and, if so, whether this effect is due to the substitutable nature of God and government as sources of external control. In a fourth study, we examine if decreased belief that God intervenes in human affairs increases faith in government. These studies employ a diverse set of experimental designs, laboratory, field settings, and independent and dependent measures to triangulate on our hypotheses.

Study 1, using a longitudinal design, relied upon a naturally occurring threat to government stability—a closely contested national election—to test our hypotheses. Data were collected 2 weeks before and 2 weeks after a national election in Malaysia, and perceptions of government stability and belief in God were collected at both time points, along with potential mediating variables. This design allowed us to test whether a naturally occurring event that decreased perceptions of government stability was associated with decreased sense of government legitimacy and increased beliefs in a controlling God. Study 2 sought to replicate this finding experimentally with a Canadian sample by manipulating participants' perceptions of political stability and then measuring beliefs in a controlling God.

In Study 3, three conceptual advances were offered. First, the independent and dependent variables were adjusted to ensure that the observed effects in Studies 1 and 2 were due to threats to stability and order, rather than threats to identity and meaning or purpose. To do so, rather than comparing conditions of government instability versus stability, we compared conditions that manipulated the government's ability to provide stability to its citizens versus the government's ability to provide meaning and identity to its citizens. Second, our dependent measure was adjusted such that for half the participants, God was framed as offering control, and for the other half, God was framed as offering meaning and purpose. Third, to test if there is a truly *hydraulic* relationship between God and government—which implies both that threatening one system should cause increased endorsement of the other and that affirming one system should cause decreased endorsement of the other—we employed affirmation rather than threat manipulations in Study 3. Just as too little control and certainty is thought to be aversive, so also is too much (Wilson,

Centerbar, Kermer, & Gilbert, 2005). It is consistent with a compensatory control approach, therefore, that people would reduce their reliance on a system of control when a different one is boosted.

Finally, Study 4 tested the bidirectionality of the relationship between God and government and again honed in on the specificity of motivational needs for control and order, as opposed to other existential needs, as the primary driver of these findings. If our theorizing surrounding the substitutability of external sources is accurate, then we should not only observe increased beliefs in God following manipulations of political instability but we should also observe increased defense of one's political system following manipulations that lead participants to question the existence of a controlling God. Moreover, this effect should be relatively specific to the aspects of one's political system that provide order and structure.

Study 1

Data was collected in Malaysia 2 weeks before and 2 weeks after the 2008 general election that was to form the Malaysian Parliament for a maximum of 5 years. By collecting data both before and after an election, we were able to capture what we assumed would be a natural occurring but brief change in political stability. Immediately before an election, when people cannot know how their government will look in the near future, the political system is necessarily less stable than it is after the election. We assumed (and testing confirmed) that this would be reflected in people's perceptions of government stability. For each period of data collection, we measured perceptions of government stability, support for the government, and belief in a controlling God.

Our prediction was that lower government stability would lead people to be less apt to defend their political system and more inclined to put faith in the existence of a controlling God. This prediction can be tested in two ways. First, the mean scores across Time 1 and Time 2 can be compared. Here, we predicted that before the election, participants would perceive more instability, show less of an inclination to defend the legitimacy of their government, and demonstrate higher beliefs in the existence of a controlling God compared to after it. Second, by computing difference scores to represent change from Time 1 to Time 2, a path analysis can be used to examine the extent to which changes in perceived government stability and government defense predict changes in belief in a controlling God. Here, we predicted that decreased perceived stability would predict decreased government defense which would, in turn, predict increased belief in a controlling God.

Method

Participants and design. Seventy-four students (33 men, 37 women, 4 unreported) from a major Malaysian university were recruited on campus through posters advertising the study. The study was completed online at both time points. Participants were entered into a drawing to win an mp3 player. The design was a 2 (Time: 1, 2) \times 3 (Measure: government stability, government support, belief in controlling God) within-participants design.

Procedure. Participants completed an online questionnaire that was identical across both Time 1 and Time 2 (i.e., before and after the election). This included measures of perceived political stability, government defense, and belief in a controlling God.

Measure of political instability. Participants read the sentence fragment, “Right now, the Malaysian government seems . . . ,” and were then asked to rate the following adjectives in terms of how well they reflect their current perceptions: unbalanced, united, dependable, and unreliable ($\alpha = .68$). Participants rated the words using a 7-point scale (1 = *not at all*, 7 = *extremely*).

Measure of government support. Three items were included to assess government defense and support: “In general, the Malaysian political system operates as it should,” “Most policies serve the greater good,” and “In general, I’m satisfied with the way things are in Malaysia” ($\alpha = .85$). Items were completed using a 7-point scale (1 = *not at all*, 7 = *extremely*).

Measure of belief in a controlling God (or supernatural deity). Participants completed the two-item measure of beliefs in a controlling God developed for past research (Kay et al., 2008). These items included “To what extent do you think that God or some type of nonhuman entity is in control of the events in the universe?” and “To what extent do you think that the events in the universe unfold according to God’s, or some type of nonhuman entity’s, plan?” on a 7-point-scale (1 = *not at all*, 7 = *extremely*; $\alpha = .88$).

Results

Preliminary analyses. Our predictions concerned the relative changes in perceived political instability, government support, and belief in a controlling God before compared with after the election. For descriptive purposes, however, we first report the simple, zero-order correlational for all three variables, both within and across Time 1 and 2. These correlations are reported in Table 1. Although, intuitively, it may appear as though the positive correlation (at Time 1 and Time 2 and across Times 1 and 2) between government support and belief in a controlling God is inconsistent with our hypotheses that, because they serve the same psychological function, government support and belief in God should affect each other in a hydraulic fashion, this is not the case. In fact, to the extent that these two variables serve the same psychological function, we should see such a relationship. That is, the more a given individual needs to see the world as orderly and nonrandom, the more he or she should rely on both of these constructs. Our hydraulic prediction is not that these variables will be necessarily negatively correlated, because many variables affect these two constructs beyond the relative levels of one another, but that situational constraints that remove people’s faith in one of these will produce an observable increase in faith in the other.² To properly test this prediction, we need to look at change in belief in God as a function of an event that deprives one of faith in government. These analyses are presented in the following section.

Time 1 and Time 2 mean comparisons. To test our hypotheses that during the pre-election period, compared with the postelection period, (a) perceptions of governmental instability would be higher, (b) government support would be lower, and (c) beliefs in a controlling God would be higher, a series of within-subjects *t* tests were conducted. Results supported our hypotheses. Before the election, compared with after it, perceptions of instability were significantly higher ($M = 4.48$, $SD = 1.09$ and $M = 4.10$, $SD = 0.97$, respectively), $t(73) = -3.10$, $p < .01$; participants defended the government significantly less ($M = 2.75$, $SD = 1.32$ and $M = 4.16$, $SD = 0.93$, respectively), $t(73) = -8.43$, $p < .001$; and, crucially,

belief in a controlling God was significantly higher ($M = 4.48$, $SD = 1.97$ and $M = 3.18$, $SD = 1.19$, respectively), $t(73) = 5.59$, $p < .001$.

Path analyses. To examine whether changes in perceived political instability, government support, and belief in a controlling God influenced one another, difference scores (Time 1 – Time 2) were computed for each of these three constructs and were included in a path-analysis model. This model tested whether or not pre-election to postelection changes in political instability predicted changes in government defense, which, in turn, predicted changes in belief in a controlling God.

The results of this model support our hypotheses (see Figure 1). The change in political instability scores significantly and negatively predicted changes in government support, $\beta = -.43$, $t(72) = -2.66$, $p < .01$, and changes in government support scores significantly and negatively predicted changing beliefs in a controlling God, $\beta = -.36$, $t(72) = -2.17$, $p = .03$. Thus, before, compared with after the election, stronger perceptions of instability predicted weaker government support, which, in turn, predicted stronger belief in a controlling God. Although the direct path from changes in perceived political instability to changes in beliefs in a controlling God was not significant, $\beta = .04$, $t(72) = .15$, $p = .88$, a recent review of the mediation literature by MacKinnon, Lockwood, Brown, Wang, and Hoffman (2002) suggests that a significant direct pathway from the predictor variable to the dependent variable is not a requirement for testing mediation. In fact, simply testing the significance of the predictor to the mediator, and the mediator to the dependent variable, was shown to be the best test of mediation out of 14 that were tested by MacKinnon and colleagues. Given this, we used the bootstrapping procedure (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004; Shrout & Bolger, 2002) to test the indirect pathway from perceived uncertainty to government defense to belief in God. The bootstrapping procedure tests whether or not this indirect pathway is significantly different from zero. Significant mediation is indicated when the upper and lower limits of the 95% confidence interval (CI) do *not* include zero. We found this to be the case (95% CI = .018 to .36, $p < .02$), thus indicating a significant indirect pathway from perceived uncertainty to government defense to belief in God.

² As an analogy, consider the relation between wearing warm clothes in one’s house and the temperature at which one chooses to set the furnace. If all other variables are kept constant and we look within a single moment in time, we would expect these two behaviors to be negatively correlated, or exhibit a hydraulic relation, because they both serve the same function—warmth. The hotter the temperature at which one sets the furnace, the less need there is to warm oneself with clothes and vice versa. However, if we just looked at the relationship between these two variables across broad levels of time and temperatures, they would show a positive correlation. That is, when people’s furnaces are set high, they are also wearing more warm clothes, and when they are set low or turned off, they are wearing lighter clothes. This is because the temperature outdoors drives both of these behaviors. When it is cold, people turn up their furnaces and dress warmly; when it is hot, people dress coolly and turn off their furnaces. The same logic applies here. The generalized need for order and nonrandomness drives both government support and belief in a controlling God, which is why we see a positive relationship between them. If this need was measured and partialled out, much like if outside temperature was partialled out when looking at the relation between furnace temperature and clothing, a negative relation would likely emerge.

Table 1
Zero-Order Correlations for All Measures (Study 1)

Variable	1	2	3	4	5
1. Time 1 instability	—				
2. Time 1 government support	-.63**	—			
3. Time 1 belief in controlling God	-.15	.24*	—		
4. Time 2 instability	.51**	-.23†	-.09	—	
5. Time 2 government support	-.25*	.23†	.29*	-.11	—
6. Time 2 belief in controlling God	-.52**	.73**	.27*	-.35**	.29*

† $p = .05$. * $p < .05$. ** $p < .001$ (two-tailed).

Discussion

When government instability was perceived to be high, immediately before an election, people were more likely to believe in a controlling God and less likely to defend their government, compared with immediately after an election, when a sense of government stability was restored. This initial test of our hypothesis is compelling in its ability to capture our predicted effects using a quasifield study that capitalized on a naturally occurring change in political stability.

Because Study 1 relied on correlational data, however, we cannot draw causal inferences with confidence. It is also possible that some event other than the election occurred between our Time 1 and Time 2 measurements that drove the observed effect. An experimental, laboratory replication of the primary findings from Study 1 is therefore needed to shed further light on this phenomenon. In addition, by replicating the effect in a new sample, we can ensure that the effects seen in our Malaysian participants will replicate in a sample that is quite different, both culturally and politically, from Malaysia.

Study 2

In Study 2, government instability was experimentally manipulated by exposing Canadian participants to fictitious news articles in which political pundits predicted that the minority political parties in the Canadian parliament were either likely or unlikely to unite and enact a no-confidence vote, which would necessitate an immediate election to reestablish the government structure. Following this manipulation, we measured the extent to which participants believed in a controlling God. As in Study 1, we predicted that when the government was portrayed as unstable (i.e., a no-confidence vote was likely), beliefs in a controlling God would be

higher than when the government was portrayed as stable (i.e., a no-confidence vote was unlikely).

Method

Participants and design. Twenty-five women and 23 men ($N = 48$) were recruited to complete our study in a public space on campus in exchange for a chocolate bar. The experiment involved two conditions (government: stable, unstable).

Procedure.

Manipulation of political stability. Participants were first asked to read an article ostensibly from *The Globe and Mail*, the most widely circulated Canadian newspaper (the full text of the article is presented in Appendix 1). This article served as our manipulation of perceived government stability. In one condition, participants read an article describing the current political situation in Canada as “unstable” and were told that the opposition party could “pull the plug on the current government tomorrow” The article went on to state that “nobody can predict when an election will be held,” and that if there were an election, “it is not clear what that would mean for the ordinary Canadian.” In a second condition, a similarly worded article instead described Canada’s political future as certain and stable, that there are no plans among the opposition party to call for an election, and that if an election was called, nothing much would change in the governmental structure.³

Measure of belief in a controlling God (or supernatural control). These items were identical to those used in Study 1.

Results and Discussion

An analysis of variance (ANOVA) was performed to examine whether experimentally increasing perceptions of government in-

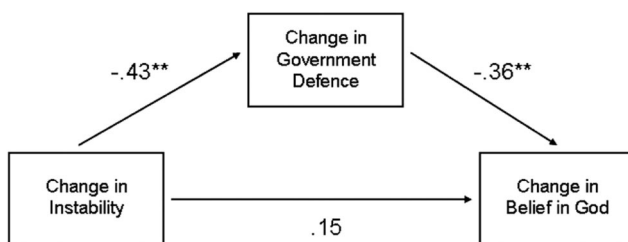


Figure 1. Mediation model of political uncertainty predicting government defense predicting belief in a controlling God (Study 1). ** $p < .01$.

³ Participants completed a manipulation check to ensure that those in our unstable condition perceived less political stability in Canada and felt uncertain about it. Participants rated the extent to which Canada seems unsteady, predictable, uncertain, and unsettled, and thinking of Canada makes them feel anxious, uncertain, and calm. All items were rated on a 1–9 scale (1 = *strongly disagree*, 9 = *strongly agree*). A composite score was formed across the two sets of items, forming a reliable composite ($\alpha = .85$). The two news articles had the desired effect. Those who read the article predicting an imminent election indicated lower thoughts and feelings of political stability ($M = 5.02$, $SD = 0.82$) than did those who instead read that an election is unlikely to happen anytime soon ($M = 5.62$, $SD = 0.82$), $F(1, 46) = 5.27$, $p = .03$.

stability increased participant's beliefs in a controlling God. This hypothesis was supported. Participants who read that an election may occur at any point showed stronger beliefs in a controlling God ($M = 4.78$, $SD = 2.17$) than did those who read that the current government is likely to remain unchallenged ($M = 3.52$, $SD = 2.16$), $F(1, 46) = 4.07$, $p = .05$. The results of this second study, therefore, successfully replicate the key phenomenon from Study 1.

Study 3

Studies 1 and 2 provided experimental and quasiexperimental support for our hypothesis that when perceptions of governmental stability were decreased—via information of an impending election—ratings of the likely existence of a controlling God increased. These findings are consistent with our compensatory control hypothesis but are not definitive. We interpret these findings as evidence that when one source of external control (i.e., the government) is threatened, people will flexibly rely on another (i.e., God). However, it is possible that our manipulation of government stability threatened more than just its ability to offer control—one's federal government, as a representation of one's country, could also fulfill a sense of identity or personal significance, and so our observed effects may have arisen because the manipulation threatened the government's ability to affirm identity and significance. Study 3 aimed to tease apart these two potential explanations and more clearly illustrate that people are in fact turning to God as a source of imposed order during times of political instability. To these ends, we made two changes to our experimental design.

First, we switched from examining the effects of government *threat* to examining the effects of government *affirmation* on belief in a controlling God. The model of compensatory control suggests people strive to maintain a preferred level of perceived order and structure in their world, not that they want as much order as possible. Indeed, too much order and predictability, much like too little, is argued to be aversive (Wilson et al., 2005). The goal for optimal human functioning, it has been suggested, is to maintain the desired balance between personal freedom and imposed structure (Schwartz, 2000; Brewer, 1991). Thus, by examining the effects of an affirmation of government control on belief in God, we can provide broader support for our hydraulic hypothesis.

Second, in Study 3, we implemented a more conservative set of comparison conditions to better demonstrate the precision of these effects. In the key experimental condition, participants were exposed to an article that depicts the government as highly capable of controlling and stabilizing the economy during the 2008/2009 recession. This condition was not compared with a neutral article, but to one that depicted the country as doing an excellent job at providing its citizens with feelings of identity and significance. Furthermore, we also orthogonally manipulated the *type* of God participants are asked about as the dependent measure, framing the concept of God as either a provider of control or as a provider of meaning and identity. We predicted that our manipulations of government control and belief in God would interact so that only when government was portrayed as providing control (but not identity) would it effect belief in God as a controller (but

not God as a provider of meaning). Doing so allowed us to more clearly differentiate our approach from other theories that also focus on threat and compensation but through different mechanisms.

Method

Participants and design. A total of 95 Canadian participants completed the study online for partial course credit. Three participants were excluded from analyses because they were suspicious about our hypotheses, and six participants were excluded because they did not spend a sufficient amount of time reading the article for it to be an effective manipulation. This left us with a total sample of 86 participants (42 men, 44 women). The design was a 2 (Government Providing: control, meaning) \times 2 (God Providing: control, meaning) between-participants design.

Procedure. The study was advertized as examining perceptions of social issues. Participants were first asked to read carefully the article that appeared on the screen, ostensibly from a Canadian news website (see Appendix 2). In one version of the article (the "government control" article), the government was framed as being very capable and effective in managing the economy throughout the economic hardships of 2008–2009. The article made reference to the government as a whole, as opposed to any one political party. It suggests that the government plays an important role in stabilizing the costs of goods in Canada and keeps the economy from "spiraling out of control." Factual, correct information was also included in the article to bolster this point, such as that Canada's banking system was ranked number one in the world in terms of its security and resistance to the effects of recessions and economic hardships (Porter & Schwab, 2008).

A second version of the article comprised a story highlighting the virtues of being a Canadian citizen (the "meaningful culture" article) and offered recent data, ostensibly from a national sociological survey, suggesting that most Canadians get a strong sense of personal identity and sense of meaning and purpose from their Canadian heritage and identity. The article states that "Most of the people we interviewed see Canada as teeming with significance; a place where a real sense of personal self-worth can be derived," and contains quotes ostensibly from interviewees, such as "[Canadian culture] makes it very easy to have a good sense of belonging, a sense of who you are, and where you come from."

Participants then completed a series of items measuring their thoughts on God. This served as a between-subjects variable, where participants received a series of items about God as either a source of control or a source of personal significance. Items assessing beliefs in a controlling God included, "I feel that God is at least partly responsible for the ongoing events in our universe," and "The idea that God is directing everyone's lives is a bit silly," forming a five-item composite score ($\alpha = .85$).

Items assessing God as a source of personal significance included, "In the search for meaning in life, I look to places other than God," and "In life, I think that God can answer, 'Why am I here, and what is my purpose?'" forming a nine-item composite

($\alpha = .87$).⁴ All items were rated on a 9-point scale (1 = *strongly disagree*, 9 = *strongly agree*).

Results and Discussion

We conducted a 2 (Government Providing: control, meaning) \times 2 (God Providing: control, meaning) univariate ANOVA to test the effects of our manipulations on perceptions of God, both as a controller and as a provider of meaning. This test yielded a significant two-way interaction in the predicted direction, $F(1, 82) = 5.87, p = .02$ (see Figure 2). When the government was depicted as an effective agent in stabilizing the economy, participants believed in a controlling God significantly less ($M = 3.33, SD = 2.08$) than when the country was depicted as an effective provider of personal significance ($M = 4.80, SD = 2.09$), $F(1, 42) = 5.44, p = .03$. The government control article and the meaningful culture article did not have differential effects on items that assessed views of God as a source of personal significance and purpose in life ($M = 4.58, SD = 1.50$ and $M = 4.18, SD = 1.31$, respectively; $F = .86, p = .36$).

Study 3 provides further support for our hypotheses. In this study, we compared the effects of an affirmation of the government's ability to provide order and structure with an affirmation of its ability to provide identity and personal significance. Afterward, participants were asked not just about a controlling God but also about a God that provides meaning and purpose. An interaction effect was observed, such that participants demonstrated lower belief in a controlling God following the affirmation of government control, compared with the affirmation of national identity. But this manipulation had no effect when God was framed as a provider of meaning or personal significance.

This pattern of data is best explained by our compensatory control approach. Other models of threat and worldview defense, or identity preservation, would not predict a pattern of data so specific to the type of manipulation and framing of God.

Study 4

To this point, we have manipulated perceptions of government stability and observed the effects on belief in God. This is because we are most interested in understanding if changing political climates can drive religious belief, a notion that has been speculated about before but never experimentally examined. Our results are consistent with the idea that God and government can substitutably address needs for structure and

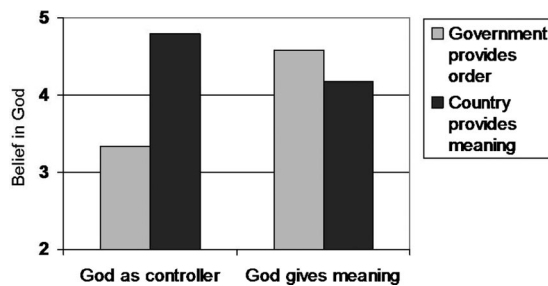


Figure 2. Belief in a controlling God versus God as a source of meaning in life, as a function of condition (Study 3).

order. To properly demonstrate substitutability, however, we need to demonstrate that this relation is in fact bidirectional. Not only should beliefs in a controlling God be strengthened following political instability but support for the political system should be enhanced when beliefs in supernatural control are weakened.

To test this hypothesis, we first manipulated participants' beliefs that God, or a similar supernatural agent, may be at least partly in control of the universe. By providing information on cutting edge findings from world-leading physicists, we exposed participants to information suggesting that, although we cannot speak at all to God's ultimate existence, advances in physics have begun to shed light on the extent to which there is any divine intervention in the operation of the universe. Afterward, participants were asked a series of questions to gauge their support for the functioning of their government. We predicted that participants would most staunchly defend the operation of their government when beliefs in religious sources of control were weakened, because the government represents an alternative source of control and order. Past research on compensatory control has demonstrated that one expression of the need for heightened control is to defend the legitimacy and existence of an obviously controlling system (Kay et al., 2008, 2009). Thus, to optimally connect this study to past compensatory control research, and to allow it to shed light on underlying mechanisms in past research suggesting a motivation to defend political systems (see Jost et al., 2004), we opted to measure general government defense as our dependent variable, rather than only government control. However, to ensure that any observed effects are specifically tied to compensatory control processes, we also asked participants for their opinions on the significance and identity provided by Canadian *culture*. We expected the manipulation of religious control to have little to no effect on this measure.

Method

Participants and design. A public and representative sample of 79 participants (33 men, 46 women) were recruited through an online data-collection service. Participants were paid \$3 for their participation in the study.

Procedure. Participants were first asked to read a summary of an article ostensibly published in *Science*. The content of this article was manipulated so that the research findings suggested either (a) that it is very possible that an intelligent being, such a God, intervenes in the world's affairs, or (b) that should God exist, it is impossible for God to intervene in the world's affairs (see Appendix 3). In the version of the article that depicts God as meddling in the world's affairs, it is said that recent scientific evidence points toward an intelligent being who is "continuously making changes to alter the course of cosmic history." In a second

⁴ Our five-item measure of God as a source of control is derived from a larger set of items that participants completed about both God and religion as a source of control. We selected only the items related to God, specifically. Likewise, the nine-item measure of God as a provider of personal significance and meaning in life was derived from a larger set of items assessing both God and religion as a source of meaning. Again, we selected only the items related to God, specifically.

version of the article, God is instead framed as a creator, but not as a controller, of the universe. The article states that the idea that God created the universe is possible but that in order for God to intervene in human affairs, the “laws of physics would have to change, which would destroy the universe and all life within it.” Therefore, both articles suggest that the existence of God is entirely possible and even likely; however, they critically differ in terms of how they describe the range of God’s powers. In one article, God is described as being able to intervene in human affairs, whereas in the other, God is not.⁵

The following sections of the questionnaire included various items about views toward society and a number of different topics. Mixed throughout were critical items assessing support for the government, forming our primary dependent variable. Eight items, including, “I feel that the current federal government, all in all, is doing a good job” and “I am becoming increasingly displeased with our system of government and its ability to run the country” (reverse coded) formed a reliable composite ($\alpha = .93$). All items were completed using a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Six items measured perceptions of the effectiveness of Canadian culture for providing its citizens unique feelings of identity and significance. Previous research has demonstrated that these and similar items are increasingly endorsed following self-uncertainty inductions (Shepherd, Kay, & Landau, 2010). Examples included, “Canadian culture is a rich source of meaning for Canadians,” and “Canada lacks a culture to uniquely call its own” (reverse coded; $\alpha = .80$).

Results and Discussion

To test our hypothesis that weakening beliefs in the likelihood that God plays a controlling role in the world will lead to increased government support, we conducted a one-way ANOVA. This analysis supported our prediction. When participants were led to believe that scientists have concluded that God is unlikely to intervene in the world’s affairs (i.e., is *not* an effective source of control), participants showed higher levels of government support ($M = 3.49, SD = 1.33$), compared with those who instead learned that God may play an interventionist role ($M = 2.91, SD = 1.24$), $F(1, 77) = 3.97, p = .05$ (see Figure 3). Thus, not only do manipulations of government stability affect belief in a controlling God but manipulations of the existence of a controlling God also impact support for the political system. This additional finding provides compelling evidence for our hypothesis regarding the

substitutability of government and God as external sources of control.

Parallel effects were not obtained on our measure of support for Canadian culture. That is, framing God as a potential source of control ($M = 4.41, SD = 1.06$) or as unable to intervene in the world ($M = 4.41, SD = 1.30$) had no significant effect on support for Canadian culture as a source of meaning and identity, $F(1, 77) = 0, p = .98$ (see Figure 3), suggesting that these effects may be particularly applicable to external systems that provide order, control, and stability, rather than other more distal psychological needs.

General Discussion

Previous research has demonstrated that external sources of control, such as God and government, can compensate for decreased levels of personal control. Here, we demonstrate that external systems of control themselves can also compensate for one another. Across two countries (with rather distinct cultural and political differences), perceptions of decreased government stability led to increased beliefs in a controlling God (Studies 1 and 2). Likewise, increased perceptions of political stability led to weaker beliefs in a controlling God (Study 3). Finally, the bidirectionality of this effect and model was illustrated in Study 4, which demonstrated that when God was depicted as a source of control and order, participants less ardently defended the legitimacy of their government.

Throughout, moderator and mediator variables established that the observed phenomena were likely due to specific needs for order and control. First, in Study 3, we observed that affirming the government’s ability to provide stability and order, but not the government’s ability to provide its citizens with a unique identity and feelings of significance, affected participants’ subsequent beliefs in a *controlling* God, but not beliefs in a God that provides personal meaning or significance. The substitutability of God and government, that is, revealed itself only when we employed manipulations of government control and measures of beliefs in religious control. Second, in Study 1, the longitudinal study, a path analysis demonstrated that conditions of political instability lead to increased belief in a controlling God via decreased faith in the government’s ability to maintain order. Third, in Study 4, which examined the bidirectionality of this relationship, leading participants to believe God probably does not exert control over the universe caused participants to increasingly defend the operation

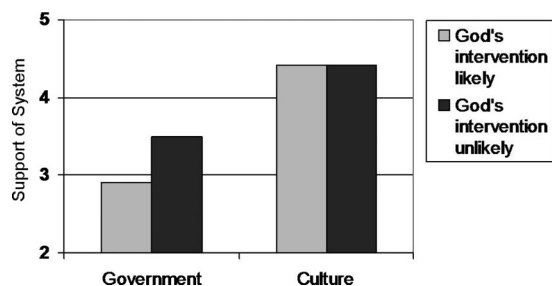


Figure 3. Support for the government versus culture, as a function of condition (Study 4).

⁵ Participants completed a series of items about God as a source of control to check for the effectiveness of this manipulation. This measure was composed of four items, two of which were the two belief in a controlling God items from Studies 1 and 2, with the addition of “To what extent do you think it is likely that God, or some type of nonhuman entity in control of the world, exists?” and “To what extent do you think God, or some type of nonhuman entity, is watching out for you and your loved ones?” These items formed a reliable composite ($\alpha = .96$). Results of a one-way ANOVA reveal that, as predicted, those who read the article suggesting that God likely does not intervene in the world’s affairs were significantly less likely to report seeing God as a source of control in the world ($M = 3.83, SD = 2.26$) than were those who read that God may very well intervene in the operation of the universe ($M = 4.88, SD = 1.95$), $F(1, 77) = 4.78, p = .03$.

of their political system but not the meaning and significance offered by their culture. Fourth, the relationship between God and government was shown to be truly hydraulic, which entails both that threatening one belief leads to increased defense of the other and that affirming one belief leads to decreased defense of the other. Such a finding is consistent with the Kay et al. (2009) model of compensatory control—a model that suggests a set point or preferred level of control or order that people seek to maintain, rather than an absolute search for as much control as possible (see Kay, Gaucher, et al., 2010; Schwartz, 2000).

These studies therefore add to a body of literature showing that God (Kay, Gaucher, et al., 2010; Kay et al., 2008; Kay, Moscovitch, & Laurin, 2010; Laurin et al., 2008) and the government (Kay et al., 2008; Laurin, Shepherd, & Kay, 2010; Sullivan et al., 2010) are both capable of helping people cope with threats to perceptions of order in the world. The compensatory control model posits that (a) personal control is substitutable for failing external sources of control, (b) external sources of control are substitutable for personal control, and, crucially, (c) external sources of control are substitutable for one another. The present studies are the first to test this third tenet of the model.

Implications for Understanding Religious Belief and Conviction

This research holds important implications for our understanding of the formation and strengthening of religious belief, particularly of beliefs in controlling religious deities. Although there are undoubtedly multiple causes of religious belief—indeed, something so enduring and prevalent is highly likely to be multiply determined—one cause may be the relative unavailability of a stable government that can provide people with feelings of order and control. To the extent this is the case, we should see higher levels of religious belief, commitment, and even extremism in those countries that have the least stable governments and other secular institutions. In support of this notion, cross-national data sets do suggest that, in general, cultures that have the most stable and developed secular support systems do indeed show the lowest levels of religious commitment (Norris & Inglehart, 2004). Given what we have observed in the present set of studies—that shifts in religious belief can even occur as a function of temporary and transient threats to government stability—this process may be even more fluid than has been previously theorized.

To illustrate the substitutability of God and government in meeting control needs, the current research bottled a common and frequently occurring instance of governmental instability, namely, political instability. By doing so, we observed that political instability need not be bloody or revolutionary (as it is often conceived) to create these effects. In a majority of our studies, perceptions of political instability were simply heightened by the presence of, or the possibility of, a national election; something that, in many countries, is relatively benign and happens every few years. It is striking that such common instances of instability, which are of no real threat to people's lives, are sufficient to at least temporarily increase people's reported belief in a controlling God.

Contradictions With Lay Perceptions

Although the empirical case for the relation between God and government appears relatively sound here, it is worth noting the

extent to which this may conflict with people's lay conception of how these variables relate. First, it often appears, from both media representations and social scientific data (Altemeyer, 1988), that those highest in religious orthodoxy are also those who most staunchly support conservative policies that seek to maintain the status quo and traditional patriotic ideals. In the American Bible Belt, for example, people are considered both very patriotic and very religious. Although on the surface this may appear to contradict the experimental findings demonstrated here—and our general prediction that God and government, as external sources of control, should exhibit a hydraulic relation—this is not the case. The integrity of the model we have proposed is not affected by observations of the co-occurrence of religiosity and conservative, system-justifying values across groups or individuals. Indeed, our first study showed that support for government and belief in a controlling God were positively correlated within and across Time 1 and Time 2. To conclude that two psychological constructs exhibit a hydraulic relation, it is *not* necessary that wherever the absolute level of one is high, the absolute level of the other is low. This is because both variables may have many determinants, other than one another, that dictate their absolute levels and so both may be very high or very low at once for a variety of reasons (see Footnote 2). All that is implied by a hydraulic relation is that relative increases or decreases in one will cause relative increases or decreases in the other, respectively. Imagine a plank of wood balanced on a cement block sitting in the center. The relative height of the two ends of this plank of wood will be necessarily hydraulic, such that as one is raised higher the other will move lower. However, the absolute height of both ends can vary dramatically without affecting this hydraulic relationship. If the plank was placed on top of 100 stacked cement blocks, for example, both ends would be very high off the ground at all times; if they were placed on one block, both would always be low. But in both cases, the two ends would continue to hold a hydraulic relationship with one another.

In the case of religious and political beliefs, both of these constructs are without a doubt multiply determined and can therefore be heightened simultaneously for many reasons (e.g., long-held family values, cultural conditions, basic needs for order). Thus, simply because support for two external sources of control may be especially high among specific populations of people, it does not mean they cannot serve the same psychological need and thereby exhibit a substitutable relationship with one another.

A second observation that may appear to contradict with our hypotheses and data is that, in the United States of America, religious commitment does not appear to be waning as secular systems develop and stabilize—a pattern of data that is almost exclusively limited to the United States. This particular exception, although notable, can be explained by a pair of factors that are unique to the United States (see Norris & Inglehart, 2004): Unlike most other advanced nations, as the United States has strengthened, the gap between the rich and poor has remained very wide. This has led to a substantial proportion of the population that has not experienced more personal stability as the country has developed overall. Compounding this, the United States has experienced a massive and consistent influx of immigrants from less developed countries throughout its history. This continues to fill the popula-

tion with people who have become accustomed to fragile governmental and economic systems (Norris & Inglehart, 2004).

Concluding Remarks

Needs for order and randomness are presumed to be universal (Heine et al., 2006; Landau et al., 2006), although how they manifest themselves (i.e., which external systems people may opt to rely upon following threat) seems to vary considerably (e.g., Iyengar & Lepper, 1999; Kim & Markus, 1999; Weisz et al., 1984). Governmental systems—or governing groups of people—exist in almost all developed cultures, but the extent to which they attempt to exert control and imbue their populations with structure certainly varies (Gelfand, Nishii, & Raver, 2006), as does their effectiveness at doing so. Thus, although governments may often serve as sources of external control, they may serve this psychological function more so in some countries than in others. Beliefs in a controlling God or similar sources of supernatural control are also incredibly widespread (Atran & Norenzayan, 2004) but, like cultures, differ in their content (Cohen, 2009). As such, religious belief may serve the specific purpose we have outlined here more in some cultures more than others.

That said, there may very well be something particularly attractive about these two sources of external control. Although the reach of government pales in comparison with the potential reach of God, these two external systems represent the broadest sources of order and control that exist in the developed world. They also both hold the advantage of being relatively amorphous and secretive, which has been suggested to be a key component to ensuring that a given external system can help people cope with needs to deny randomness (Becker, 1969; Sullivan et al., 2010), insofar as a wider range of outcomes can be attributed to mysterious causal agents than to agents that are discrete and well understood. Of course, other powerful sources of external control also likely exist. Social groups, for example, have been shown to be an excellent source of compensatory control and uncertainty relief (Hogg, 2007; Fritsche, Jonas, & Fankhänel, 2008).

But regardless of which other types of systems can serve a similar function, and regardless of the cultural relativity of people's reliance on God and government, it is clear from the studies presented here that external systems of control can be flexibly and substitutably relied upon to serve needs for order and structure, a noteworthy finding not previously demonstrated. These studies also make clear that government instability can cause increased religious belief in both Western and non-Western samples. These findings, and the broader theoretical models they support, offer significant contributions to the social psychological literature and our grasp on how people relate to the various external systems within which they are embedded. Furthermore, given how little we still know about the individual, interpersonal, and sociocultural determinants of religious beliefs and the clear importance of religious beliefs for everyday behavior and pressing social problems, these findings offer novel insights into the underpinnings of one of humankind's most consequential beliefs.

References

- Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87*, 49–74. doi:10.1037/0021-843X.87.1.49
- Antonovsky, A. (1979). *Health, stress and coping*. San Francisco, CA: Jossey-Bass.
- Atran, S., & Norenzayan, A. (2004). Religion's evolutionary landscape: Counterintuition, commitment, compassion, communion. *Behavioural and Brain Sciences, 27*, 713–730. doi:10.1017/S0140525X04000172
- Baltes, M. M., & Baltes, P. B. (1986). *The psychology of control and aging*. Hillsdale, NJ: Erlbaum.
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*, 1175–1184. doi:10.1037/0003-066X.44.9.1175
- Becker, E. (1969). *Angel in armor*. New York, NY: Free Press.
- Brewer, M. B. (1991). The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin, 17*, 475–482. doi:10.1177/0146167291175001
- Burger, J. M. (1989). Negative reactions to increases in perceived personal control. *Journal of Personality and Social Psychology, 56*, 246–256. doi:10.1037/0022-3514.56.2.246
- Burger, J. M., & Cooper, H. M. (1979). The desirability of control. *Motivation and Emotion, 3*, 381–393. doi:10.1007/BF00994052
- Cohen, A. B. (2009). Many forms of culture. *American Psychologist, 64*, 194–204. doi:10.1037/a0015308
- Dweck, C. S., & Leggett, E. L. (1988). A social cognitive approach to motivation and personality. *Psychological Review, 95*, 256–273. doi:10.1037/0033-295X.95.2.256
- Fritsche, I., Jonas, E., & Fankhänel, T. (2008). The role of control motivation in mortality salience effects on ingroup support and defense. *Journal of Personality and Social Psychology, 95*, 524–541. doi:10.1037/a0012666
- Gelfand, M. J., Nishii, L. H., & Raver, J. L. (2006). On the nature and importance of cultural tightness–looseness. *Journal of Applied Psychology, 91*, 1225–1244. doi:10.1037/0021-9010.91.6.1225
- Glass, D. C., & Singer, J. E. (1972). *Urban noise: Experiments on noise and social stressors*. New York, NY: Academic Press.
- Heine, S. J., Proulx, T., & Vohs, K. D. (2006). The meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review, 10*, 88–110. doi:10.1207/s15327957pspr1002_1
- Hogg, M. A. (2007). Uncertainty-identity theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 39, pp. 69–126). San Diego, CA: Academic Press.
- James, W. (1902). *The varieties of religious experience*. New York, NY: Longmans, Green, and Co. doi:10.1037/10004-000
- Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. New York, NY: Free Press.
- Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the role of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology, 76*, 349–366.
- Ji, L. J., Peng, K., & Nisbett, R. E. (2000). Culture, control, and perception of relationships in the environment. *Journal of Personality and Social Psychology, 78*, 943–955. doi:10.1037/0022-3514.78.5.943
- Jost, J. T., & Banaji, M. R. (1994). The role of stereotyping in system justification and the production of false consciousness. *British Journal of Social Psychology, 33*, 1–27.
- Jost, J. T., Banaji, M. R., & Nosek, B. A. (2004). A decade of system justification theory: Accumulated evidence of conscious and unconscious bolstering of the status quo. *Political Psychology, 25*, 881–919. doi:10.1111/j.1467-9221.2004.00402.x
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129*, 339–375. doi:10.1037/0033-2909.129.3.339
- Jost, J. T., & Hunyady, O. (2003). The psychology of system justification and the palliative function of ideology. *European Review of Social Psychology, 13*, 111–153. doi:10.1080/10463280240000046
- Jost, J. T., Kivetz, Y., Rubini, M., Guermendi, G., & Mosso, C. (2005). System-justifying functions of complementary regional and ethnic ste-

- reotypes: Cross-national evidence. *Social Justice Research*, *18*, 305–333. doi:10.1007/s11211-005-6827-z
- Katz, I., & Hass, R. G. (1988). Racial ambivalence and American value conflict: Correlational and priming studies of dual cognitive structures. *Journal of Personality and Social Psychology*, *55*, 893–905.
- Kay, A. C., Gaucher, D., McGregor, I., & Nash, K. (2010). Religious belief as compensatory control. *Personality and Social Psychology Review*, *14*, 37–48. doi:10.1177/1088868309353750
- 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. doi:10.1037/0022-3514.95.1.18
- Kay, A. C., Jost, J. T., & Young, S. (2005). Victim derogation and victim enhancement as alternate routes to system justification. *Psychological Science*, *16*, 240–246. doi:10.1111/j.0956-7976.2005.00810.x
- Kay, A. C., Moscovitch, D. A., & Laurin, K. (2010). Randomness, attributions of arousal, and belief in God. *Psychological Science*, *21*, 216–218. doi:10.1177/0956797609357750
- Kay, A. C., Whitson, J. A., Gaucher, D., & Galinsky, A. D. (2009). Compensatory control: Achieving order through the mind, our institutions, and the heavens. *Current Directions in Psychological Science*, *18*, 264–268. doi:10.1111/j.1467-8721.2009.01649.x
- Kelly, G. A. (1955). *The psychology of personal constructs*. New York, NY: Norton.
- Kim, H., & Markus, H. R. (1999). Deviance or uniqueness, harmony or conformity? A cultural analysis. *Journal of Personality and Social Psychology*, *77*, 785–800. doi:10.1037/0022-3514.77.4.785
- Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: Cognitive and motivational bases*. New York, NY: Plenum Press.
- Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: “seizing” and “freezing.” *Psychological Review*, *103*, 263–283. doi:10.1037/0033-295X.103.2.263
- Landau, M. J., Greenberg, J., Solomon, S., Pyszczynski, T., & Martens, A. (2006). Windows into nothingness: Terror management, meaninglessness, and negative reactions to modern art. *Journal of Personality and Social Psychology*, *90*, 879–892. doi:10.1037/0022-3514.90.6.879
- Landau, M. J., Johns, M., Greenberg, J., Pyszczynski, T., Martens, A., Goldenberg, J. L., & Solomon, S. (2004). A function of form: Terror management and structuring the social world. *Journal of Personality and Social Psychology*, *87*, 190–210. doi:10.1037/0022-3514.87.2.190
- Laurin, K., Kay, A. C., & Moscovitch, D. A. (2008). On the belief in God: Towards an understanding of the emotional substrates of compensatory control. *Journal of Experimental Social Psychology*, *44*, 1559–1562. doi:10.1016/j.jesp.2008.07.007
- Laurin, K., Shepherd, S., & Kay, A. C. (2010). Restricted emigration, system inescapability, and defense of the status quo: System-justifying consequences of restricted exit opportunities. *Psychological Science*, *21*, 1075–1082.
- Lerner, M. J. (1980). *The belief in a just world: A fundamental delusion*. New York, NY: Plenum Press.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, *7*, 83–104.
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioural Research*, *39*, 99–128.
- McGregor, I., Haji, R., Nash, K. A., & Teper, R. (2008). Religious zeal and the uncertain self. *Basic and Applied Social Psychology*, *30*, 183–188.
- McGregor, I., Zanna, M. P., Holmes, J. G., & Spencer, S. J. (2001). Compensatory conviction in the face of personal uncertainty: Going to extremes and being oneself. *Journal of Personality and Social Psychology*, *80*, 472–488.
- Nail, P. R., & McGregor, I. (2009). Conservative shift among liberals and conservatives following 9/11/01. *Social Justice Research*, *22*, 231–240.
- Norris, P., & Inglehart, R. (2004). *Sacred and secular: Religion and politics worldwide*. New York, NY: Cambridge University Press.
- Pennebaker, J. W., & Stone, L. D. (2004). Translating traumatic experiences into language: Implications for child abuse and long-term health. In L. J. Koenig, L. S. Doll, A. O’Leary, & W. Pequegnat (Eds.), *From child sexual abuse to adult sexual risk: Trauma, revictimization, and intervention* (pp. 201–216). Washington, DC: American Psychological Association.
- Pargament, K. I. (1997). *The psychology of religion and coping: Theory, research, practice*. New York, NY: Guilford Press.
- Park, C. L. (2005). Religion as a meaning-making framework in coping with life stress. *Journal of Social Issues*, *61*, 707–729.
- Peppone, A., & Saffiotti, L. (1997). The selectivity of nonmaterial beliefs in interpreting life events. *European Journal of Social Psychology*, *27*, 23–35.
- Perkins, C. C. (1968). An analysis of the concept of reinforcement. *Psychological Review*, *75*, 155–172.
- Porter, M. E., & Schwab, K. (Eds.). (2008). *The Global Competitiveness Report 2008–2009*. Geneva, Switzerland: World Economic Forum.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments & Computers*, *36*, 717–731.
- Presson, P. K., & Benassi, V. A. (1996). Illusion of control: A metaanalytic review. *Journal of Social Behavior and Personality*, *11*, 493–510.
- Rodin, J., Rennert, K., & Solomon, S. K. (1980). Intrinsic motivation for control: Fact or fiction. In A. Baum & J. E. Singer (Eds.), *Advances in environmental psychology: Vol. 2. Applications of personal control* (pp. 131–151). Hillsdale, NJ: Erlbaum.
- Rothbaum, R., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social Psychology*, *42*, 5–37.
- Sales, S. M. (1972). Economic threat as a determinant of conversion rates in authoritarian and nonauthoritarian churches. *Journal of Personality and Social Psychology*, *23*, 420–428.
- Schwartz, B. (2000). Self-determination: The tyranny of freedom. *American Psychologist*, *55*, 79–88.
- Seligman, M. E. P. (1975). *Helplessness: On depression, development and death*. San Francisco, CA: Freeman.
- Seligman, M. E. P. (1976). *Learned helplessness and depression in animals and men*. Morristown, NJ: General Learning Press.
- Sethis, S., & Lepper, M. R. (1998). *Rethinking the role of choice in intrinsic motivation: A cultural perspective*. Unpublished manuscript, Stanford University.
- Shepherd, S., Kay, A. C., & Landau, M. J. (2010). *Evidence for the specificity of motive systems in worldview defense: Distinguishing compensatory control from uncertainty management and terror management processes*. Unpublished manuscript, University of Waterloo, Waterloo, Ontario, Canada.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and non-experimental studies: New procedures and recommendations. *Psychological Methods*, *7*, 422–445.
- Skinner, E. A. (1995). *Perceived control, motivation, and coping*. Thousand Oaks, CA: Sage.
- Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 261–302). San Diego, CA: Academic Press.
- Stotland, E., & Blumenthal, A. L. (1964). The reduction of anxiety as a result of the expectation of making a choice. *Canadian Journal of Psychology*, *18*, 139–145.
- Sullivan, D., Landau, M. J., & Rothschild, Z. (2010). An existential function of enemyship: Evidence that people attribute influence to personal and political enemies to compensate for threats to control. *Journal of Personality and Social Psychology*, *98*, 434–449.

- Tesser, A. (2001). On the plasticity of self-defense. *Current Directions in Psychological Science, 10*, 66–69.
- Tesser, A., Crepaz, N., Beach, S. R. H., Cornell, D., & Collins, J. C. (2000). Confluence of self-esteem regulation mechanisms: On integrating the self-zoo. *Personality and Social Psychology Bulletin, 26*, 1476–1489.
- Weisz, J. R., Rothbaum, F. M., & Blackburn, T. C. (1984). Standing out and standing in: The psychology of control in America and Japan. *American Psychologist, 39*, 955–969.
- White, R. (1959). Motivation reconsidered: The concept of competence. *Psychological Review, 66*, 297–330.
- Whitson, J. A., & Galinsky, A. D. (2008, October 3). Lacking control increases illusory pattern perception. *Science, 322*, 115–117, 268.
- Wilson, T. D., Centerbar, D. B., Kermer, D. A., & Gilbert, D. T. (2005). The pleasures of uncertainty: Prolonging positive moods in ways people do not anticipate. *Journal of Personality and Social Psychology, 88*, 5–21.
- Wohl, M. J. A., & Enzle, M. E. (2003). The effects of near wins and near losses on losses on self-perceived personal luck and subsequent gambling behavior. *Journal of Experimental Social Psychology, 39*, 184–191.

Appendix A

Article Manipulation Used in Study 2

Government Is Stable

For political junkies, it looks like it's going to be a boring summer. In a minority government, as we currently have in Canada, the government can fall whenever the opposition decides to pull its support from the governing party. Although some people claim the Liberals are unhappy with the current state of affairs, others claim that leader Stephane Dion is not ready to go to the polls. Sources inside the opposition Liberal Party claim that the party knows that it is not going to let this government fall for some time. "I know exactly what to expect," said a senior source inside the Liberal Party of Canada. "This government will last for years." What makes this situation unique is that it is pretty easy to predict what will happen if an election were to be held. Recent polling data shows that the support for political parties is stuck where it is. "Everybody knows what to expect right now. It's boring," says an anonymous Conservative source when asked about the political situation. "If an election were called today, it would be the status quo. Right now, there is no other conclusion." Everybody knows what the ramifications of this election result will be: more of the same. Because parties have been ready to run an election for years, they have tried to maintain an updated platform. If either the Liberals or Conservatives won the election there would be little change for the ordinary Canadian. All this predictability will be comforting to the average Canadian who just wants to know what to expect to plan their lives. But for us addicts of political drama, an uneventful and boring summer seems inevitable.

Government Is Unstable

For political junkies, it looks like it's going to be a fun summer. In a minority government, as we currently have in Canada, the government can fall whenever the opposition decides to pull its support from the governing party. Although some people claim the Liberals are happy with the current state of affairs, others claim that leader Michael Ignatieff is tired of compromise and is ready for a fight. Sources inside the opposition Liberal Party claim that the party has no idea when or even if they will pull the plug on the current government. "I don't know what to expect," said a senior source inside the Liberal Party of Canada. "We could pull the plug tomorrow, or this government could last for years." What makes this situation unique is that nobody can predict what will happen if an election were to be held. Recent polling data shows that the support for political parties is fluctuating more than it is staying constant. "Nobody knows what to expect right now. It's crazy," says an anonymous Conservative source when asked about the volatile political situation. "If an election were called today, it could be our greatest victory or, just as easily, our worst disaster. Right now, it is impossible to tell." Creating even more confusion, nobody even knows what the ramifications of an election result will be. Because parties have been compromising so much to keep the government functioning, nobody knows where the other side stands. If the Liberals or Conservatives did win the election, it is not clear what that would mean for the ordinary Canadian. All this uncertainty may be upsetting to the average Canadian who just wants to know what to expect to plan their lives. But for us addicts of political drama, the fun is just about to start.

(Appendices continue)

Appendix B

Article Manipulation Used in Study 3

Government Control Article

Economic turmoil, without a doubt, was the dominant topic of this past election, with politicians largely focusing their campaigns around how to keep the country's economy, and everything that comes with it, such as fuel prices, and cost of living, from spiraling out of control. Fortunately, our parliamentary system can keep the boat from sinking, as stated in a series of reports published from January 2009 through February 2009. Overall, the reports seem to come to a general consensus: that our government, as a whole, stabilizes Canada in times of difficulty and instability. "When you actually think about the various criticisms that individual parties face, it might be surprising to see that our system of government, overall, keeps us afloat," says Dale Collins, an economist and professor at the business school at Queen's University. "The government plays a huge factor in stabilizing the average Canadian's income level, quality of life, cost of living, and investments." The major theme of the reports is that government actions are effective in maintaining national stability, compared to other nations. In other words, what the government does to influence the economy has a predictable influence on economic trends, and in the grand scheme of things, it is mostly for the better. "Take a look at the economy in the United States, for example," says Bay Street investor and economist George Forwell, who is coauthor of one of the recently published reports. "They had to implement a 700 billion dollar bailout, which is only showing preliminary signs of stabilizing their economy, while here in Canada, our system of government, which differs from the United States, has allowed for a rebound in the markets with much less effort." Additional proof comes from the recent survey by the World Economic Forum, which has ranked Canada's banking system as number one in the world, above countries like Sweden and Australia. "Simply put, our economy is sound and secure, which is mostly due to the checks that our parliamentary system has in place that ensure that things stay, for the most part, stabilized," Forwell adds. "The bottom line is that when it comes to your job security in a global market, inflation rates, and the cost of food, fuel, and living, the government largely has these things in check in comparison to

other nations. It's a stability that is unparalleled anywhere else." Dale Collins adds, "I get together every day with fellow economists and colleagues to discuss all the issues that are related to the economy, and truth be told, we sleep well at night knowing that our money, and our livelihoods are safe."

Meaningful Culture Article

When people think of Canada, what comes to mind? A recent poll reveals the answer: a proud national identity. The national poll, conducted by sociologists and anthropologists from three Canadian universities reveals that when Canadians were interviewed about their country, a whopping 74% said it provides them with "a meaningful identity." Other common responses included, "a deep connection with others" at 67%, and "being a part of something significant," at 65%. "This is fantastic," says Dr. Joseph Fulton, a sociologist who led the recent research project. "More and more people are seeing our country as offering something substantial and meaningful to their lives. Our research shows that even though we do not realize it all of the time, being Canadian has this influence on just about all of us. Most respondents who said 'a meaningful identity' when they were asked about being Canadian were pleased that a real sense of purpose and connectedness with people can be derived from their country and its history," Fulton adds. "Most of the people we interviewed see Canada as teeming with significance; a place where a real sense of personal self-worth can be derived." Indeed, the Canadians we asked responded similarly. Judy Michaels of Ontario says, "Being Canadian means feeling like you are a part of something. I feel that way today as much as I ever did. It makes it very easy to have a good sense of belonging, a sense of who you are, and where you come from." She adds, "I've seen other countries where so many people can't define themselves or gain a sense of importance through their country, but I think it is easy here." "I feel like I live a meaningful life, and a lot of that comes from being Canadian. I have a great appreciation for my country and what I am a part of in the world," adds 21-year-old Kyle Wicks of Vancouver. Full results of this study can be found in November's *National Heritage Journal*.

(Appendices continue)

Appendix C

Article Manipulation Used in Study 4

God Possibly Intervenes Article

Theoretical physicists have wondered for years why the world functions according to mathematics. Now it appears we know the answer. God is fudging the numbers. A recent paper out of the prestigious scientific journal *Nature* argues that God is meddling in the universe. The paper, authored by Stern Krisophsen of the Stockholm Institute of Physical Science, reviews three recent findings from three separate laboratories, which compel the conclusion that an intelligent being is altering the laws of physics to make life as we know it possible. The paper also concludes that these findings make religion's claim that God intervenes in human affairs quite possible. Recent advances in empirical metaphysics out of the CERN lab in Switzerland (the same people who invented the Internet) suggest that around 6.3 billion years ago there was a drastic shift in the maximum temperature at which carbon is formed before destroying itself. Had this change not occurred, carbon (which is the second most common compound in living beings) would have formed at a much slower rate. Thus, we would not have the amount of carbon we need to form planets, animals, plants, and humans. The paper notes that the timeline of this shift is remarkably similar to a shift in two other laws of physics. Recent research out of the Theoretical Physics Institute at Cambridge University in England shows that slightly before this change in carbon formation, the temperatures released when energy is converted into mass drastically dropped as well. Similarly, research out of the California Institute of Technology has revealed that slightly after the carbon formation temperature drop, the chemical composition of water (the most common compound in human beings), altered in order to make it a noncorrosive universal solvent, which is necessary for water to carry nutrients, oxygen, and carbon dioxide. Without this advance, life would not be possible. The paper concludes: "Although it appears that these changes in what we once thought were the fundamental laws of physics happened millions of years apart, if you were to take the history of the world and boil it down to one day, all these changes would happen in the same one 20th of a nanosecond. Had any of these three changes not occurred, had they not occurred in the order they did, and had they not occurred at the time they did, we would not be here today. The most logical conclusion of these three findings is that there is a God that is continuously making changes to alter the course of cosmic history." When asked to comment, Harvard physicist Gael Fitzsimmons said: "If God can change the fundamental laws of physics, who knows what else God can or does change? When religious authorities say that God intervenes in human affairs, they may be right after all. Who knows? Maybe I should start praying for more intervention?"

God Cannot Intervene Article

Theoretical physicists have wondered for years why the world functions according to mathematics. Now it appears we know the

answer. It was designed that way. A recent paper out of the prestigious scientific journal *Nature* argues that the fundamental laws of physics cannot change. However, because they provide us with just the perfect conditions for life, God must have set it up to give life. The paper, authored by Stern Krisophsen of the Stockholm Institute of Physical Science, reviews three recent findings from three separate laboratories, which compel the conclusion that an intelligent being created the laws of physics to make life as we know it possible. However, the paper also concludes that these findings make religion's claim that God intervenes in human affairs impossible. To do so, the laws of physics would have to change, which would destroy the universe and all life within it. Recent advances in empirical metaphysics out of the CERN lab in Switzerland (the same people who invented the Internet) suggest that even the slightest shift in the temperature at which carbon is formed will lead it to destroy itself. Had this temperature been set even slightly differently, carbon (which is the second most common compound in living beings) would have formed at a much slower rate. Thus, we would not have the amount of carbon we need to form planets, animals, plants, and humans. The paper notes two other laws of physics that are set just perfectly. Recent research out of the Theoretical Physics Institute at Cambridge University in England shows that the temperatures released when energy is converted into mass cannot change either. If it dropped we would not have enough energy from the Sun to power life, but if it increased, the earth would be hundreds of thousands of degrees too hot to form life. Similarly, research out of the California Institute of Technology shows that even the slightest change in the chemical composition of water (the most common compound in human beings), makes it either corrosive, or not a universal solvent, two properties without which water could not carry nutrients, oxygen, and carbon dioxide. Without this exact composition of water, life would not be possible. The paper concludes: "Although it once appeared that life could survive in a different form if you altered the laws of physics, it now appears that even the slightest changes to these laws, makes any form of life impossible. The most logical conclusion of these three findings is that there is a God who created life as we know it These data also demonstrate that it is impossible for God to intervene into human life. Even the slightest change to these conditions would destroy the universe. If God wanted to intervene into human affairs, the universe, as we know it, would end." When asked to comment, Harvard physicist Gael Fitzsimmons said: "If God cannot change the fundamental laws of physics, he cannot alter the course of the universe. When religious authorities say that God intervenes in human affairs, they must be wrong. Oh well. At least I don't have to pray so much anymore."

Received March 16, 2010

Revision received June 13, 2010

Accepted June 17, 2010 ■