Helping in a Random World: Evidence that Prosocial Intentions and Behavior can Satiate

Compensatory Control Needs

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

The present research examines a unique motivator of prosocial intentions and behavior: the need to believe that the world is an orderly, predictable place. Previous social psychological research has explained helping behavior as due to either empathic concern for victims (e.g., Batson et al., 1981) or a desire to relieve one's negative affective state (Cialdini, et al., 1973). Drawing on recent research on compensatory control, I suggest that the act of helping others may be a means through which people compensate for threats to their belief in a controlled and orderly social world. The results of the current studies indicate that, when the belief in an orderly world is threatened, helping behavior can serve as a means for restoring perceptions of control. Specifically, I found that: a threat to personal control increased intentions to give blood at a blood donor drive (Study 1); a threat to order in the world increased helping intentions, and was not moderated by individual differences in socially-desirable responding (Study 2); providing participants with an unrelated opportunity to affirm personal control eliminated the effects of control threat on helping intentions (Study 3); and the effect of control threat on helping behavior was moderated by individual differences in aversion to unpredictability (Study 4). Implications for the psychological understanding of helping behavior and processes of compensatory control are discussed.

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Introduction

Every few months, it seems, a natural disaster strikes somewhere in the world. From a tsunami in Southeast Asia, to Hurricane Katrina, to an earthquake in Haiti, we are regularly confronted with acts of nature that cost lives and livelihoods. What is particularly remarkable about these disasters beyond the devastation is the consistent outpouring of support – financial and otherwise – from people around the world. In the two months following the 2010 Haiti earthquake, for example, $2.2 billion was donated worldwide (CBC, 2010); following the tsunami in the Indian Ocean in 2004, $14 billon was donated (CBC, 2006). Given that most donators are far removed from these disasters and their victims, and the presumed self-interested nature of homo economicus, how can we explain such behavior? Previous accounts of prosocial behavior would suggest that people likely contributed, in part, because they genuinely empathized with the victims (Batson, Duncan, Ackerman, Buckley, & Birch, 1981; Coke, Batson, & McDavis, 1978; Toi & Batson, 1982) and wanted to alleviate their suffering (Lerner, 1980), and, in part, because donators wished to alleviate any guilt, sadness or negativity they may have felt as a result of seeing others suffer (Cialdini, Darby, & Vincent, 1973; Cialdini & Kenrick, 1976; Cialdini, Schaller, Houlihan, Arps, & Fultz, 1987). Without disputing these accounts, I draw on recent research on processes of compensatory control to propose and test a novel potential motivation for this sort of prosocial behavior.

Compensatory Control

People are often motivated to perceive a sense of personal control over their social environments and outcomes (Kelly, 1955; Perkins, 1968; Presson & Banassi, 1996; Seligman, 1975, 1976; Skinner, 1995; White, 1959; but see Burger, 1989). Theorists have proposed that one source of this motivation is people's desire to avoid perceiving their social world as random

or chaotic. Such perceptions can be psychologically stressful and anxiety-provoking (e.g., Janoff-Bulman, 1992; Pennebaker & Stone, 2004; van den Bos & Lind, 2002). People prefer to view their social worlds as structured and orderly (Kruglanski, 1989; Kruglanski & Webster, 1996; Landau et al., 2004, Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006). Consequently, the motivation to perceive personal control is considered a sub-goal of the larger and more inclusive motivation to *defend against perceptions of randomness and chaos* within the social environment. It is also clear, however, that perceptions of personal control, the motivation to achieve such perceptions, and the positive effects of such perceptions all fluctuate greatly across situations and people (e.g., Burger, 1989; Burger & Cooper, 1979; Iyengar & Lepper, 1999; Ji, Peng, & Nisbett, 2000; Dweck & Leggett, 1988; Pepitone & Saffiotti, 1997; Rodin, Rennert, & Solomon, 1980; Weisz, Rothbaum, & Blackburn, 1984; Wohl & Enzle, 2003). How might people maintain beliefs in order and structure, and defend against perceptions of randomness, in the face of fluctuating perceptions of personal control?

The model of compensatory control suggests that the belief in personal control and the belief that things are under control are interchangeable (Antonovsky, 1979); both beliefs are capable of insulating the self from feelings of randomness and chaos. According to the compensatory control model, people flexibly and interchangeably draw on both the self (personal control) and the external environment (external sources of control) to preserve their faith in a non-random, controlled world (Kay et al., 2008). In support of this model, researchers have demonstrated that threats to personal and external control cause compensatory control strivings, including increased faith in external sources of control (e.g., supernatural order, government control, religious belief), increased attempts to exert personal control, increased illusions of personal control, and increased perceptions of order in random arrays (Kay et al., 2008; Kay,

Gaucher, McGregor, & Nash, 2010; Kay, Whitson, Gaucher, & Galinsky, 2009; Sullivan, Landau, & Rothschild, 2010; Whitson & Galinsky, 2008). Compensatory control efforts are motivated by the anxiety elicited by perceptions of randomness and disorder (Kay et al., 2008; Kay, et al., 2009; Kay, et al., 2010; Kay, Moscovitch, & Laurin, 2009; Laurin, Kay, & Moscovitch, 2008; Sullivan et al., 2010). In other words, reminders of randomness – whether they originate from the external world (e.g., a threat to the orderliness of the universe) or from the self (e.g., a failure to exert personal control) – tend to elicit compensatory reactions aimed at re-establishing perceptions of order and non-randomness. Furthermore, researchers (Shepherd, Kay, Landau, & Keefer, 2011) have demonstrated the specificity of compensatory control reactions to threats to order and control. Other types of threat, such as those to mortality or uncertainty do not elicit compensatory control reactions.

There are many threats to perceptions of the world as an orderly, predictable place. Natural disasters are one example of these threats, but there exist many more examples that do not involve death, destruction, or even negativity. Headlines about unexpected fluctuations in the stock market, news about lottery winners, or heart-warming stories of chance encounters between long-lost friends confront us on daily basis. Indeed, even reminders of randomness that are affectively positive – insofar as they, too, pose a threat to the belief that one's personal world is under control – have been shown to trigger compensatory control reactions (Kay et al., 2008).

Do Compensatory Control Motivations Contribute to Helping Behavior?

Engaging in helping behavior is one way of exerting personal control. Helping others, when defined as intending to provide them some benefit (Dovidio, 1984), gives people the opportunity to influence an outcome, which is a key component of personal control. Helping necessarily involves an attempt to influence another person's life – contributing money to

earthquake victims is intended to help them recover, donating blood is intended to help others survive accidents and surgeries. These attempts to benefit others allow people to feel as though they have control over *something*, and exerting control over the environment is one of the pathways to a strong sense of control (Shapiro, Schwartz, & Astin, 1996). Indeed, Gray (2010) demonstrated that donating to charity literally conferred greater agency to people, allowing them, for example, to hold a weight for a longer time period. Thus, when people act to benefit others, they feel greater self-control, tenacity, and physical strength, all of which are theoretically related to feelings of personal control.

If helping behavior represents a potential means of compensatory control, then people's inclinations to help may increase following experiences that suggest their world is random or unpredictable. These experiences need not be exceptional cases, such as natural disasters, that are explicitly connected to the helping domain. Imagine, for example, that Sarah's morning newspaper contains a story about unexpected fluctuations in the stock market. Later, while walking to work, a Red Cross canvasser stops her to ask for a donation. Still feeling somewhat anxious about the unpredictability that she read about, and needing to re-establish a feeling that the world is controllable, Sarah reaches for her cheque book. I suggest that making a charitable donation allows Sarah to cope with the anxiety she experienced after reading about randomness in the stock market. Although it may not be a conscious process, Sara donates because helping others allows her to feel control over *something*.

Importantly, I am not suggesting that increased helping will occur simply as a function of intentions to "do good" (e.g., donate to the Red Cross) after learning about something bad (e.g., the stock market is crashing). Nor am I suggesting this compensatory process is motivated by an urge to balance, or compensate for, the badness in the world with some goodness (although I do

not deny that that may also occur). Instead, I suggest that people will be more likely to engage in helping behavior following control threats because helping behavior enables them to restore a sense that the world can be controlled. To the extent this hypothesis is valid, I predict that increases in helping behavior should follow control threats that include positive, and not only negative, events, and that increases in helping should abate when people are provided with an alternative means to restore perceptions of control.

I am also not suggesting that increased helping behavior will occur because people want to "fix" a specific problem (although, again, I am not denying that this, too, does occur). Helping can serve as a means of compensatory control so long as it restores feelings of control in general, regardless of whether or not doing so serves to resolve the initial threat. As such, threatening control, through any means, should engender increased helping behavior, even if the threat is not related to the helping behavior (cf. Cialdini, Darby & Vincent, 1973). This theorizing further suggests that helping behavior can be initiated, for compensatory control reasons, even when people are not confronted with any suffering victims. This prediction is in contrast to other approaches that suggest that helping behavior only serves a specific emotional state if it addresses the original source of that emotion. Dovidio, Allen, and Schroeder (1990), for instance, found that empathic concern associated with a specific problem evoked altruistic motivation only toward that problem.

The compensatory control approach can also be distinguished from much of the past work specifically investigating helping behavior in response to people in need. A large majority of past research on helping behavior has focused on whether helping is selfless (e.g., Batson et al., 1981; Batson et al., 1988; Piliavin & Charng, 1990; Schroeder, Dovidio, Sibicky, Matthews, & Allen, 1988) or selfish (e.g., Cialdini et al., 1987; Cialdini, Brown, Lewis, Luce, & Neuberg,

1997). Although I do posit here a relatively selfish motivation for helping others – regulating the anxiety associated with perceiving randomness and chaos – the current research is not intended to address this debate. Unlike much of the work by Batson et al. (1981) and Cialdini et al. (1987), the helping behavior that interests me does not necessarily remove the source of the threat. I introduced this paper by evoking examples of natural disasters involving considerable loss of life, but reminders of randomness in the world need not involve victims. *Any* reminder of randomness poses a threat to perceptions of control. From a compensatory control perspective, therefore, helping behavior need not address the *source* of the threat, or even involve a need-based situation at all. This theoretical dissociation of the threat from the helping context allowed me to conduct conservative tests of the effect of reminders of randomness on helping behavior.

The literature on belief in a just world (BJW) has also focused on people's desires to alleviate the suffering of victims (e.g., Haynes & Olson, 2006). Innocent victims threaten other people's belief in a just world because the innocence of the victims violates the belief that people get what they deserve (Lerner, 1977, 1980). In order to restore beliefs in deservingness and justice, people respond to innocent victims by offering help (Lerner & Simmons, 1966). From a BJW perspective, helping is a means of maintaining the helpers' beliefs that their own outcomes will be just (Zuckerman, 1975). From the perspective of compensatory control, however, people should be motivated to alleviate others' suffering to the extent that doing so allows them to restore a sense of personal control, rather than maintain the balance of deservingness.

Overview of Studies

In five studies, I manipulated perceptions of either personal or external control and observed the effect on helping intentions and behaviors. Studies 1 and 2 capture the phenomenon of interest and Studies 3-4 conceptually replicate this phenomenon and provide evidence that it is

motivated by compensatory control strivings. In Study 1, I showed that remembering instances in which personal control was limited (even when these memories are positive in valence) increased intentions to give blood at a clinic during the following week. In Study 2, I replicated the findings of Study 1 with different operationalizations of the independent and dependent variables and different participants. In Study 3, I explicitly linked the effect of increased helping to need for control by demonstrating that prosocial intentions did *not* increase if people were provided an alternative means through which to exert personal control after an external control threat. In Study 4, I offered further evidence of the presumed motivational account: the effect of an external control threat on donating food to combat world hunger was moderated by individual differences in the extent to which people can tolerate randomness and unpredictability. In Study 5, I sought to demonstrate that the effects of Study 4 were due to a specific desire to restore feelings of control, rather than a general desire to feel better following threat.

Study 1

I have reasoned that certain types of helping behavior may be elicited, at least in part, by motivations to compensate for threats to beliefs that the world is an orderly, non-random place. This account implies that prosocial behavior should increase following a manipulation that threatens any of the means through which people commonly protect the cherished belief that the world is controllable. In Study 1, I employed a simple two-cell design, in which I first threatened beliefs in personal control and then observed the effects on prosocial intentions, operationalized as participants' intentions to give blood the following week.

Method

Participants. Participants were recruited from a public venue on campus in exchange for a chocolate bar. Participants who knew that they were ineligible to give blood were excluded, as were three participants whose scores on the main dependent measure differed from the mean by more than two standard deviations. The final sample consisted of 40 students at the University of Waterloo (27 men, 13 women). Their mean age was 20.6 years.

Procedure. Participants were invited to take part in a study of factors affecting the likelihood of blood donation. Participants were randomly assigned to one of two conditions that constituted the manipulation of control. Half of the participants were asked to write a short paragraph about a recent positive event over which they had no control (control threat condition): "Please try to think of something positive that happened to you in the past few months that was not your fault (i.e., that you had absolutely no control over)." They were asked to write about that event using no more than 100 words. This condition was intended to threaten participants' perceptions of personal control. The remaining participants wrote about a positive event over which they had control. Previous research has shown that this manipulation alters feelings of

personal control without affecting self-esteem, or positive and negative moods (Kay et al., 2008).

Participants then read that many Canadians require blood at some point in their lives and

completed a questionnaire, in which was embedded the primary measure of interest – willingness

to donate blood the following week. Five items ($\alpha = .87$) assessed participants' desire and

willingness to give blood at the blood drive, as well as their intentions to sign up for a timeslot

("I want to give blood next week," "I have no interest in giving blood," (reverse-coded) "I plan

to give blood next week," "I will sign up for a time to give blood," "When I am done this study, I

will go to the Turnkey desk to sign up for a time to give blood."). Participants responded to the

items on a scale of 1 (*strongly disagree*) to 9 (*strongly agree*). Higher numbers indicated greater

willingness to donate blood the following week.

Results

Reading of the events revealed that all events recalled were positive (common responses

across conditions included events like finding money or obtaining a good grade on an exam). A

one-way ANOVA on willingness to give blood revealed the predicted main effect of control

threat, $F(1, 38) = 5.25$, $p = .03$, partial $\eta^2 = .12$. Participants were more willing to give blood

when their sense of personal control was experimentally threatened ($M = 4.36$) than when it was

not ($M = 3.23$).

Discussion

Threatening participants' sense of personal control caused them to express greater

willingness to give blood. Although the dependent measure was not behavioral, it did ask

participants about a behavior they intended to perform in the *next week*.

Why did remembering a time when they lacked control over a positive event cause

participants to express greater willingness to give blood? I suggest that the control threat

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motivated participants to seek opportunities to restore perceptions of control. They compensated for their reduced sense of control by increasing their willingness to help others, a behavior that would allow them to exert some degree of control over the world. Although the results of Study 1 support this specific motivational account, it is possible that the increase in intentions to help occurred for reasons other than the one I suggest.

An alternative explanation of these findings is that participants in the control threat condition may have felt undeserving of the unexpected positive event, causing them to restore the balance of deservingness with a good deed (Gaucher, Hafer, Davidenko, & Kay, 2010). Other interpretations are also possible. For example, perhaps participants found it difficult to remember a time when they lacked control over a positive event. If so, the difficulty of recall might have led participants to infer they normally possessed a great deal of personal control (Schwarz et al., 1991). Therefore, the effects observed in the control threat condition may not have been due to increased needs to engage in compensatory control efforts, as I surmised. Instead the effects may reveal that participants in the control threat condition experienced increased control and believed that by giving blood they "could really make a difference."[1]

To address these concerns, I used a different manipulation of control in Study 2. Rather than directly manipulating personal control, I used a manipulation developed by Gray and Wegner (2010) to threaten the idea that events in the world can be explained. According to Gray and Wegner, an unexplained event suggests a lack of control in the world. That threat, then, should be just as effective at eliciting helping as the personal control threat.

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[1] Previous pre-testing (Kay et al., 2008), however, has demonstrated that this exact personal control manipulation does in fact lower personal control and does not cause generalized contrast effects.

It is also possible that the control threat did not engender more helping behavior specifically – which has been previously associated with agency – but rather increased participants' concerns with being nice or acting in socially-desirable ways. To address this concern in Study 2, I measured individual differences in socially-desirable responding to evaluate whether control threat differentially affects people who score low and high in social desirability. If control threat does not interact with individual differences in social desirability, I can be relatively confident that the effect is not due to concerns about self-presentation. Additionally, I measured helping intentions at a general level to demonstrate that the effect of control threat was not limited to donating blood.

Finally, in Study 1, participants were explicitly told that I was interested in factors affecting likelihood of giving blood. Although participants were led to believe the paragraph they generated at the beginning of the study was simply a measure of their background characteristics, participants knew that it was related in some way to the helping measures they later completed. To reduce the concern that participants' knowledge of the purpose of the study affected their responses, in subsequent studies I avoided drawing participants' attention to the measure of helping. I also recruited a sample of American participants online to demonstrate that the effect was not limited to University of Waterloo undergraduate students.

<center>**Study 2**</center>

Method

  Participants. Participants were recruited online via Mechanical Turk in exchange for 50 cents each. Participants were 139 (64 men, 74 women, 1 unspecified) US residents, with a mean age of 33.2 years.[2]

  Procedure. Participants read that they would take part in a study of "reactions to events," which would involve answering questions regarding their opinions about the world, their personality, and responding to a short passage. First, participants were randomly assigned to one of two conditions that constituted the manipulation of control (see Gray & Wegner, 2010). All participants read a brief story about the Millers and their dog, whose picnic was disrupted by the flooding of a river. To threaten control, I assigned a random half of the participants to read that the sudden flood was unexplained. In the no-threat condition, participants read that the flood was explained by the actions of an angry dam employee.[3] To enhance the cover story, I included a few filler items for participants to evaluate the article (e.g., "The author expressed his/her ideas clearly.") before they completed the dependent measure.

  The dependent measure contained seven items assessing participants' willingness and desire to engage in helpful activities ($\alpha = .83$), ("I like to help when I know it will solve a problem," "It is important to me to help others in need," "I strive to make the world a better place," "If I see someone in distress, I will try to help them," "I would like a career where I get to

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[2] Degrees of freedom differ somewhat throughout because some participants failed to complete all of the measures.

[3] For exploratory purposes, I manipulated the severity of the event – half of the participants read that the Millers drowned and half of the participants read that they simply got wet. Theoretically, I did not expect severity to matter because the active ingredient of the effect of interest is perceptions of order. The severity manipulation produced no main effect or interaction, so I collapsed over it in all analyses.

make a positive difference in the world," "If I think there is a problem in the world, I will do everything I can to fix it," "The best way to solve a world problem is to take action myself."). Participants responded to the items on a scale of 1 (*strongly disagree*) to 9 (*strongly agree*). Higher numbers indicated more willingness to help.

After a filler scale, I assessed socially-desirable responding[4] using the classic scale developed by Crowne and Marlowe (1960). Thirty-three items ($\alpha = .79$) assessed participants' propensity to respond in socially desirable ways by asking them to indicate whether the items were true or false with respect to them personally. I omitted the second scale item from all analyses, because of overlap with the dependent measure of helping (the omitted item reads "I never hesitate to go out of my way to help someone in trouble.").

Results

The helping intention scale was scored by averaging participants' responses to the seven items (see Table 1 for means within conditions). The social desirability scale was scored by coding socially-desirable responses as 1 and summing them.

I expected threat to increase helping intentions, regardless of individual differences in social desirability. To test this prediction, I conducted regression analyses. I effect-coded threat (no threat = -1, threat = 1), centered scores on social desirability, and computed the interaction with threat. I entered social desirability on the first step of the regression model to control for its influence, followed by threat on the second step, and the interaction on the third step. Social desirability significantly predicted helping scores, $t(128) = 4.22$, $p < .001$, $\beta = .35$. More

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[4] I assessed social desirability at the end of the study, rather than before the manipulation, to avoid arousing suspicions about the true purpose of the study. A one-way ANOVA on social desirability scores revealed that participants were no more likely to report socially-desirable responses following threat, $F(1, 128) = .002$, $p = .96$, partial $\eta^2 = .00$.

important, however, the threat variable significantly affected helping scores even when

controlling for the effect of socially-desirable responding, $t(127) = 2.23$, $p = .03$, $\beta = .18$. Social

desirability did not interact with threat on the helping measure, $t(126) = .40$, $p = .69$, $\beta = .03$.

Table 1

Helping Intentions as a Function of Threat Condition in Study 2

Threat	No threat
7.22 (1.11)	6.79 (1.11)

Note. Scores are means of the seven items, which were rated on a 9-point scale. Standard

deviations appear in brackets.

Discussion

The results of this study extend the findings of Study 1 in several ways. Using very

different operationalizations of the independent and dependent variables, I replicated the finding

that a threat to order increases willingness to help. These results rule out the possibility raised by

Study 1 that participants volunteered to help as a way of maintaining their belief in a just world

in the face of unexpected good fortune. In this study, participants did not personally experience

any good or bad fortune, so their reported helping intentions were unlikely to be due to a desire

to restore deservingness in their own lives. I also showed that the effects generalized to a non-

university sample of participants. Finally, I showed that the effects held even when controlling

for socially-desirable responding. These findings support the hypothesis that the increase in

support for helping behavior following a control threat is due to a desire to restore order, rather

than a generalized need to present oneself in a positive light.

The remaining studies hone in on the role of control needs by examining moderators of the threat effect. I also address concerns about mechanism in Studies 3-4, which specifically examine the potential role of control needs (Study 3) and aversions to unpredictability (Study 4).

Study 3

Study 3 was designed to assess the role of control needs in generating helping behavior and to address the alternative interpretations noted above. If helping behavior serves as a compensatory control resource, then providing people with an opportunity to exert control in an entirely unrelated domain – and thereby satiating their need to re-affirm control – should reduce control-motivated helping. In Study 3, all participants first read a passage suggesting that the world operates according to random principles. This passage should boost participants' compensatory control needs. Next, participants were randomly assigned to one of three conditions. In one experimental condition, they were asked to complete a task that offered them an opportunity to exert personal control. Participants in a second condition completed a similar task but with the personal control component removed. The remaining participants proceeded directly to the dependent measures without completing any prior tasks. Finally, all participants were asked about their interest in helping to solve various social problems. I hypothesized that control-restoring helping behavior would be significantly reduced in the condition in which participants were offered an alternative means for restoring control.

Method

Participants. Forty students at the University of Waterloo (19 men, 21 women) participated in exchange for course credit. Participants' mean age was 21.0 years.

Procedure. Participants participated individually in this laboratory study, which they were told concerned memory, problem solving, and personal opinions. First, all participants read a passage that constituted the threat to order in the world. They were told to read the passage carefully, as they would later have a memory test. Participants believed they were reading a real news excerpt, titled "*Is Everything Under Control? A Harvard Conference Reveals the Answer.*"

The passage detailed the results of a recent conference attended by scientists who wished to understand the causes of events in the world. Participants read that scientists had concluded that the world operates mostly unpredictably and that people's behavior does not have clear causes (see Appendix A for full text). Following the passage, participants were randomly assigned to one of three conditions. In the control-restoration condition, participants completed a computerized task that required them to try to control the onset of a green circle (adapted from Alloy & Abramson, 1982). The computer program was designed to display a green circle at random intervals, but participants were led to believe that they could learn how to control its onset by pressing the space bar. The task, then, was designed to afford participants the belief in personal control, thereby restoring their perceptions of control. Previous research indicates that the task does breed an illusory sense of control (e.g., Alloy & Abramson, 1979). In the filler condition, participants completed a variant of the same computerized task that required them to indicate, using the keyboard, where the circle appeared on the screen (i.e., left, right, or center). This condition was designed to account for the time delay introduced by having some participants complete the computer program before continuing to the dependent measures, but not to restore a sense of control. This condition also gave participants an opportunity to succeed at a task, as in the control-restoration condition. Thus, the tasks were similar in theme, affective content, and time required for completion. Following the computer tasks, participants completed the dependent measure. In the third condition, participants proceeded immediately to the dependent measure with no intervening computerized task.

To assess support for helping behavior, I used the seven-item measure from Study 2 of participants' willingness and desire to engage in helpful activities ($\alpha = .90$). Participants

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responded to the items on a scale of 1 (*strongly disagree*) to 9 (*strongly agree*). Higher numbers

indicated more willingness to help.

Results

I expected participants to be less willing to help when they had a chance to restore their

perceptions of control during the computerized task. A one-way ANOVA on helping intentions

revealed a main effect of control-restoration condition, $F(2, 37) = 3.54$, $p = .04$, partial $\eta^2 = .16$

(see Table 2 for means). As predicted, participants reported less interest in helping following the

control-restoration task compared to following the filler task, $F(1, 37) = 4.36$, $p = .04$, or no-task

control conditions, $F(1, 37) = 6.30$, $p = .02$. The latter two conditions did not differ significantly

from each other, $F(1, 37) = .07$, $p = .79$.

Table 2

Helping Intentions as a Function of Condition in Study 3

No task	Control-restoring task	Filler task
7.32 (.91)	5.98 (1.95)	7.06 (1.01)

Note. Scores are means of the seven items, which were rated on a 9-point scale. Standard

deviations appear in brackets.

Discussion

When participants (all of whom were exposed to information about randomness in the

world) were provided with an opportunity to restore control in a domain entirely unrelated to

helping behavior, their helping intentions decreased. This decrease occurred when compared to a

condition in which participants were asked about helping intentions directly after the randomness

exposure, and when compared to a condition that included a filler task designed to be as similar

to the control-restoration task as possible. The findings provide support for the hypothesized

compensatory control explanation of helping behavior. Furthermore, these findings are difficult to explain from the perspective of belief in a just world. All of the participants were exposed to a very general threat of randomness, which did not involve any injustice to the self or others. Moreover, it seems unlikely that engaging in the control-restoring task would alleviate any justice concerns that might have arisen. These results suggest that, by increasing feelings of control, the control-restoring task obviated the need for participants to compensate for the threat of randomness by expressing their willingness to help.

In Study 4, I sought to provide triangulating evidence for the specific motivational perspective using a different methodological approach. I also provided a behavioral measure of helping, rather than the intention items used in Studies 1-3.

Study 4

In the face of reminders of randomness, which are presumed to arouse anxiety (but not general negative affect, see Kay et al., 2008), I suggest people engage in increased helping behavior as a means of re-establishing feelings of control. Studies 1 and 2 demonstrated that control threats increased helping intentions compared to a baseline condition. Study 3 demonstrated that, in the context of a reminder of randomness, helping intentions decreased for those given the opportunity to affirm their control needs in an unrelated way. None of these studies, however, provided evidence that it is the aversiveness of acknowledging that events are random that increased helping behavior. Given that specific emotional threat responses of this ilk are difficult to measure (see Proulx & Heine, 2009; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989; Zanna & Cooper, 1974), and therefore not particularly amenable to mediational designs, in Study 4 I tested this hypothesis via moderation. Specifically, I explored the role of individual differences in aversion to randomness and unpredictability in predicting prosocial reactions to reminders of randomness.

People differ in their aversion to unpredictability (Buhr & Dugas, 2002; Greco & Roger, 2001). If people increase their helping behavior following control threats because these threats cause concern over randomness, then the increase in helping should be moderated by the extent to which people dislike unpredictability. Those high in aversion to unpredictability should be particularly likely to engage in helping behavior following reminders of randomness. Study 4 tested this specific prediction. I employed a behavioral measure of helping to study increases in actual helping rather than intentions or self-reports.

Method

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Participants. The sample consisted of 81 students at the University of Waterloo who participated in exchange for course credit. I excluded two participants for suspicion, one participant who recognized the manipulation from an unrelated study, one participant who closed the Internet browser precluding the research assistant from recording the dependent measure (explained below), and three participants who did not agree that world hunger is a problem (as indicated by their responses to an item in the questionnaire).[5] The final sample included 74 participants (36 men, 37 women, 1 unspecified). Participants' mean age was 19.3 years.

Procedure. Participants participated individually in this laboratory study, which they were told concerned evaluations of media. Participants first completed background information, in which were embedded 7 items ($\alpha = .79$) assessing the extent to which they dislike randomness and unpredictable situations (e.g., "Unforeseen events upset me greatly," and "I can't stand being taken by surprise."). These items appear in a subscale validated by Buhr and Dugas (2002) that assesses the extent to which people regard unexpected events as aversive. After completing a filler scale and demographic questions, participants were then randomly assigned to read one of two passages. One passage was the same as that used in Study 3, which constituted the reminder of randomness. The second passage was similar, but asserted instead that the world is relatively orderly and operates in predictable ways (see Appendix B for full text). Participants were told to read the passage carefully, as they would be asked to evaluate it later.

After the passage, participants read an information sheet drawn from information available on freerice.com. The sheet indicated, correctly, that the website is run by the United Nations World Food Programme to provide rice to hungry people. After participants read the

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[5] It is unclear what donating rice means to participants who do not think hunger is a problem. Presumably, they do not think of the act as helping, so it may not have the control-restoring properties I would expect.

information sheet, a research assistant opened an internet browser to freerice.com. She told participants to spend as much time interacting with the website as was needed for them to feel prepared to evaluate it and then left the room. One option within the website was to choose to send 10 grains of rice to the World Food Programme each time participants correctly answered a skill-testing question. Participants could answer as many questions as they wished. Participants were also free to investigate other aspects of the website, such as reading the associated blog, the latest news about world hunger, and perusing the various types of questions (e.g., art, French). When participants felt they had spent enough time on the website, they retrieved the research assistant who waited in the hallway. The research assistant glanced at the computer screen and noted how many grains of rice participants earned, which constituted the measure of helping behavior.

Participants then completed a questionnaire about their opinions of the website and world hunger. Specifically, they rated their agreement with five statements ($\alpha = .84$) about the efficacy of the website ["The freerice website is an effective way of combating world hunger," "The freerice website cannot really help solve world hunger," (reverse coded) "The freerice website helps people in need," "I can help reduce world hunger by using the freerice website," and "Using the freerice website made me feel like I was solving a problem."]. I also assessed participants' perceptions of the significance of world hunger ("World hunger is a big problem."). I included these measures to examine the possibility that any obtained effects could be attributed to varying perceptions of the website or of world hunger. Participants indicated their agreement with these statements on a scale from 1 (*strongly disagree*) to 9 (*strongly agree*).

Results

Rice Donation. I predicted a 2-way interaction. Participants should donate more grains of rice following control threat, but the effects of threat should be especially high among participants with an aversion to unpredictability. To test this, I regressed the amount of rice donated onto centered aversion to unpredictability scores, the manipulation (effect coded; no threat = -1, threat = 1), and the interaction between the two. The analysis revealed a marginal 2-way interaction between threat and aversion to unpredictability (see Figure 1), $t(70) = 1.82$, $p = .07$, $\beta = .21$. The main effects of threat and aversion to unpredictability were not significant (ps > .13).

To decompose the interaction, I conducted separate regression analyses for participants low (i.e., one standard deviation below) and high (i.e., one standard deviation above) in aversion to unpredictability (Aiken & West, 1991). For participants low in aversion to unpredictability, the effect of threat was not significant, $t(70) = -.22$, $p = .83$. For participants high in aversion to unpredictability, however, the effect of threat was significant, $t(70) = 2.35$, $p = .02$, $\beta = .40$. Following threat, these participants donated more rice than following no threat. Alternatively stated, there was no effect of aversion to unpredictability on rice donation in the no-threat condition [$t(33) = -1.13$, $p = .27$], but there was a positive (though non-significant) association in the threat condition, $t(37) = 1.53$, $p = .14$, $\beta = .24$.

Figure 1. Estimated mean number of grains of rice donated as a function of control threat and individual differences in aversion to unpredictability in Study 4.
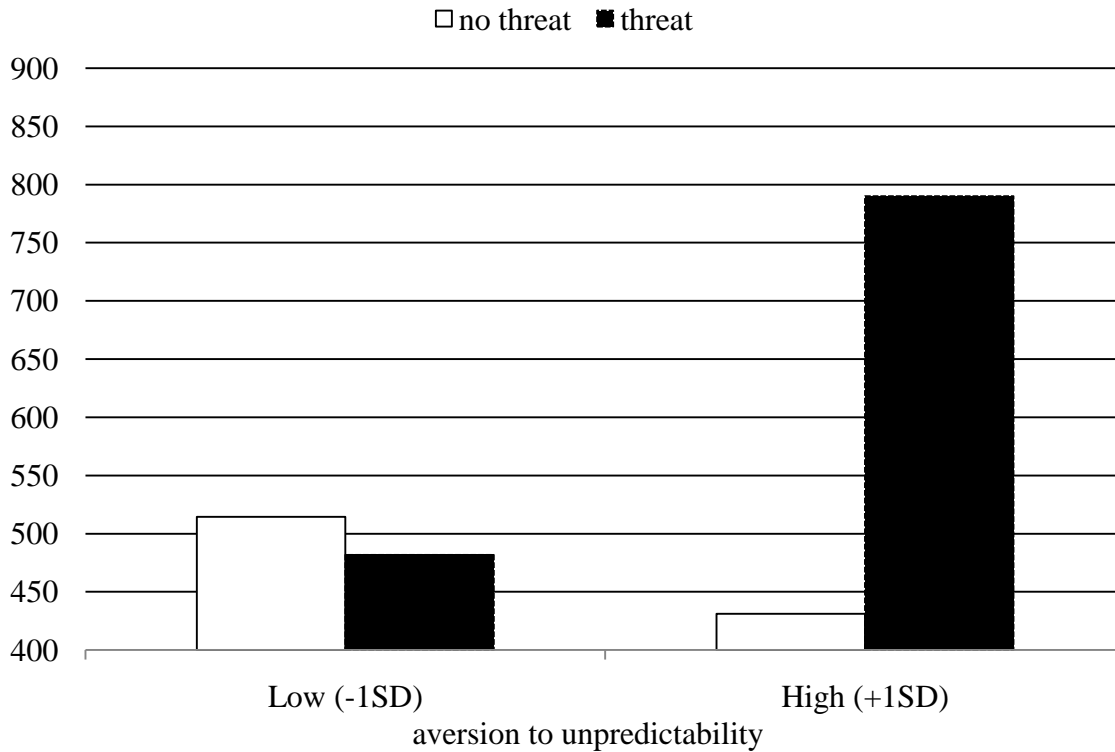
Questionnaire. I submitted the questionnaire items to the same regression analyses as the donation measure. Scores on the perceived efficacy composite and beliefs about whether hunger is a problem revealed no effects of the manipulation or the individual difference (all ps > .06).

Discussion

Studies 1 and 2 demonstrated that control threats increased helping intentions, and Study 3 demonstrated that helping behavior was reduced when people were first given an alternative means of establishing control. In Study 4, the effect of control threat on actual helping behavior was moderated by individual differences in the anxiety people feel when confronted with unpredictable situations. Participants were more helpful (i.e., donated more rice, in fact, nearly twice as many total grains) following a reminder of randomness, but only if they were dispositionally high in the extent to which they dislike unpredictability. For those participants who were less averse to unpredictable situations, this effect of threat was nonexistent.

The absence of a significant main effect of control threat is somewhat surprising, given the results of the previous studies. One possible explanation is that the dependent measure in this study was not framed as a measure of helping, whereas the previous measures were clearly linked to helping. Furthermore, although the rice donation truly did help hungry people, contributing a few hundred grains of rice may have seemed inconsequential in contrast to the significant problem of world hunger. Participants, then, may not have construed their behavior as having significant impact on the world, which would reduce the task's overall effectiveness at restoring a sense of control.

Despite the lack of main effect in this study, the findings across the four studies support the contention that people engage in helping behavior as a way of coping with the anxiety produced by threats to control. The null findings from the questionnaire items suggest that the results in Study 4 are not due to systematic differences in perceptions of the efficacy of the website or the problem of world hunger.

An alternative explanation of the findings from Study 4, however, is that participants high in aversion to unpredictability wanted to feel better about themselves following threat, and the nature of the freerice website provided that opportunity. Perhaps those participants persisted longer at answering questions simply because they felt better when they answered the questions correctly, not because helping restored a sense of control. The current data cannot rule out this alternative possibility, so I sought to replicate and extend this study in a way that would address this alternative explanation. If participants donated more rice simply because it made them feel better to succeed at a task following threat, then it should not matter whether or not the task is effective at reducing hunger. In contrast, if they donated more rice as a means of restoring personal control through helping, then they should only donate more following threat if the task

is effective at reducing hunger. In Study 5, I sought to test this hypothesis by varying the degree

to which the helping task was portrayed as effective at alleviating suffering.

Study 5

The purpose of Study 5 was to replicate and extend the findings of Study 4 by incorporating a manipulation of the effectiveness of the helping task. The only difference between Studies 4 and 5, then, was the introduction of a manipulation of the effectiveness of the freerice website at helping to alleviate suffering. I expected that participants high in aversion to unpredictability would be particularly likely to engage in helping behavior following a reminder of randomness, but especially when the website was portrayed as effective.

Method

Participants. The sample consisted of 184 students at the University of Waterloo who participated in exchange for course credit. I excluded 19 participants for suspicion[6] and four participants who did not agree that world hunger is a problem (as indicated by their responses to an item in the questionnaire). An additional 22 participants closed the Internet browser before the research assistant could record the dependent variable,[7] so they were necessarily excluded from

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[6] Suspicion was assessed in debriefing by the research assistant and was fairly evenly distributed across experimental conditions. It is unclear why the suspicion rate was higher in this study than in Study 4, given the consistency in the study materials. The research assistants were different for the studies, however, which may account for the difference. It is possible, for example, that one research assistant had a lower threshold for perceiving suspicion or that participants were more willing to report suspicion to one research assistant. The research assistants' behavior may have differed across studies, arousing different levels of suspicion. This latter explanation is less likely because research assistants followed a standardized experimental script.

[7] The number of participants who closed the browser was fairly even across experimental conditions. It is unclear why so many participants in this study closed the internet browser, as compared to Study 4. I deliberately avoided asking participants to leave the browser open because I did not want to arouse their suspicions about the purpose of the task. Again, the disparity may be due to differences in how the research assistants delivered the experimental instructions.

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the analyses (they did not differ statistically from the other participants on any background characteristics that I measured). The final sample included 139 participants (60 men, 79 women). Participants' mean age was 19.2 years.

Procedure. As in Study 4, participants were told they would complete a study on evaluations of media. Participants first completed background information, in which were embedded the same 7 items from Study 4 ($\alpha = .82$) that assessed the extent to which they dislike randomness and unpredictable situations. After a filler scale and demographic questions, participants were then randomly assigned to read one of the two passages from Study 4 that constituted the manipulation of randomness. Participants were told to read the passage carefully, as they would be asked to evaluate it later. After reading the passage, participants were asked to evaluate a website. Prior to interacting with the website, participants read one of two versions of an information sheet about freerice.com, which constituted the manipulation of effectiveness. The "effective" version was identical to the information read by participants in Study 4. I added two phrases to the "ineffective" version to raise doubts about the effectiveness of the website. Specifically, participants read that "The website can alleviate some of the need, but it is not entirely effective" and "Some people do benefit from this website, but it cannot eliminate world hunger." As in Study 4, after reading the information sheet, participants were asked to interact with the website for as long as they needed to evaluate it. When participants felt they had spent enough time on the website, they retrieved the research assistant who waited in the hallway. The research assistant glanced at the computer and noted how many grains of rice participants donated. Finally, participants completed the same questionnaire from Study 4 about the perceived efficacy of the website ($\alpha = .76$) and their perceptions of the problem of world hunger.

Results

Rice Donation. I predicted a three-way interaction: participants would donate more grains of rice following control threat, but only if they were high in aversion to unpredictability and they believed that the website was effective. I regressed the amount of rice donated on centered aversion to unpredictability scores, the threat manipulation (effect coded; no threat = -1, threat = 1), the effectiveness manipulation (effect coded; ineffective = -1, effective = 1) and all of the possible interactions. Aversion to unpredictability was positively related to rice donation, $t(131)$ = 2.36, p = .02, β = .21. The other main effects and two-way interactions did not attain significance (all ps > .50), nor did the predicted three-way interaction (see Figures 2 and 3), $t(131)$ = .11, p = .92, β = .01. This is a particularly difficult interaction to obtain, because I predicted that one condition would differ from all of the remaining conditions, which should not differ from each other. Thus, despite the non-significant three-way interaction, I explored whether there was any evidence to support my predictions. To do so, I decomposed the three-way interaction by the effectiveness manipulation, which also allowed me to examine whether I replicated the effects of Study 4 in the "effective" condition.

Within the ineffective condition, no effects emerged (all ps > .20). Within the effective condition, aversion to unpredictability was positively related to rice donation, $t(70)$ = 2.20, p = .03, β = .26. The interaction did not attain significance, $t(70)$ = .30, p = .77, β = .04. An analysis of the simple slopes within the effective condition revealed that aversion to unpredictability predicted rice donation following threat [$t(35)$ = 2.36, p = .02, β = .37], but not following no threat [$t(35)$ = 1.10, p = .28, β = .18]. Within the ineffective condition, aversion to unpredictability did not predict rice donation following threat [$t(32)$ = 1.16, p = .25, β = .20] or no threat [$t(29)$ = .60, p = .55, β = .11].

In Study 4, participants high in aversion to unpredictability responded to threat with a significant increase in rice donation. To test whether that effect replicated in the current study, I also conducted regression analyses for participants low (i.e., one standard deviation below) and high (i.e., one standard deviation above) in aversion to unpredictability (Aiken & West, 1991) within the effective condition. For participants low in aversion to unpredictability, the effect of threat was not significant, $t(70) = -.15$, $p = .88$. For participants high in aversion to unpredictability, the effect of threat was not significant, $t(70) = .30$, $p = .77$.

Figure 2. Estimated mean number of grains of rice donated as a function of threat and individual differences in aversion to unpredictability within the *effective* condition in Study 5.
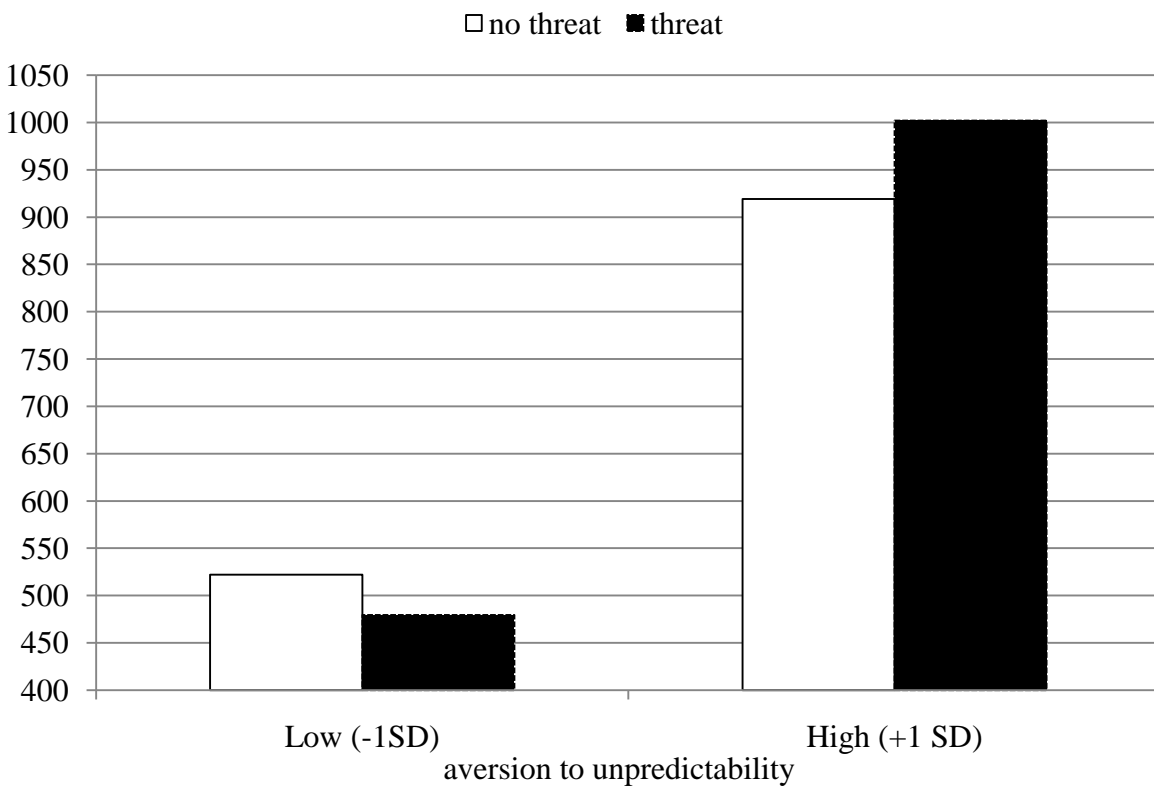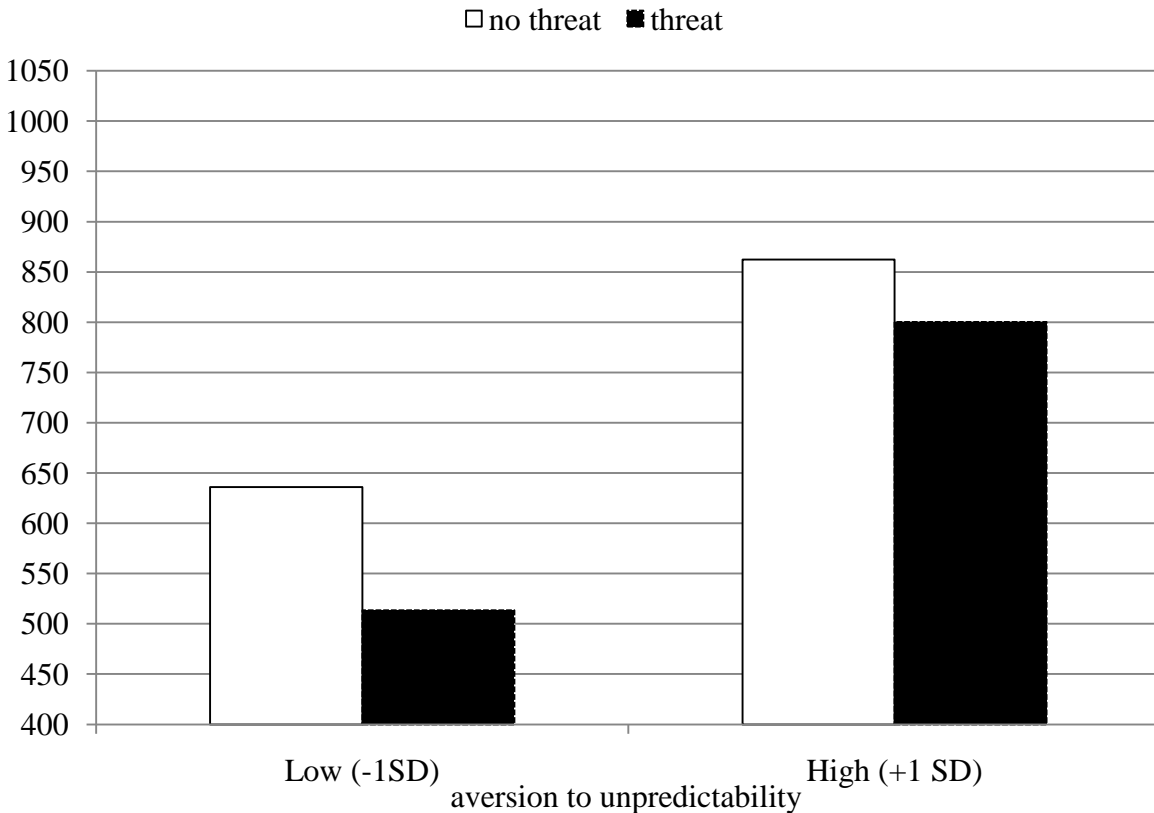

Figure 3. Estimated mean number of grains of rice donated as a function of threat and individual differences in aversion to unpredictability within the *ineffective* condition in Study 5.

no threat ■ threat

x-axis: Low (-1SD) High (+1 SD)
aversion to unpredictability

Questionnaire.

I submitted the questionnaire items to the same regression analyses as the donation measure. I expected a main effect of the effectiveness manipulation on the perceived efficacy of the website, but no effects on perceptions of the problem of world hunger.

Perceived efficacy of the website. Analysis of responses to the composite of items evaluating the efficacy of the website did not reveal the anticipated main effect of the effectiveness manipulation ($p > .70$).[8]

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[8] The three-way interaction was not significant ($p > .40$), but the step involving two-way interactions did attain significance [F change $(3, 132) = 5.17$, $p = .002$, R^2 change $= .11$], so I decomposed it to examine the two-way interactions. A threat by effectiveness interaction emerged [$t(132) = -2.25$, $p = .03$, $\beta = .19$], as did an effectiveness by aversion to unpredictability interaction, $t(132) = 3.11$, $p = .002$, $\beta = .26$.

World hunger as a problem. Perceptions of world hunger revealed no effects of the manipulations or individual difference (all ps > .06).

Discussion

Although the pattern of rice donation within the effective condition resembles that of Study 4, the interaction did not attain significance. This failure to replicate is disconcerting, given that the experimental materials were identical. One possible explanation is that although the number of participants was similar in both studies, the standard deviation of the dependent measure in Study 5 (SD = 859.96) was nearly double that of Study 4 (SD = 436.87). A future study could address this issue with more participants or a dependent variable not prone to such high variance.

Unfortunately, the current study also failed to address the concern raised by Study 4 that participants higher in aversion to unpredictability donated more rice following threat because they enjoyed answering questions on the freerice website. The lack of main effect of the effectiveness manipulation on perceived efficacy of the website also suggests that the relatively subtle wording difference was insufficient to produce the anticipated differences. It is encouraging, however, that the effects appear less strong in the ineffective condition than in the

Decomposing the threat by effectiveness interaction revealed that, in the no-threat condition, perceived efficacy was higher in the effective condition than in the ineffective condition [$t(64)$ = 1.85, p = .07, β = .22]. This difference did not emerge in the threat condition, $t(67)$ = -1.34, p = .19.

Decomposing the effectiveness by aversion interaction revealed that participants high in aversion to unpredictability perceived greater efficacy in the effective condition than the ineffective condition, $t(133)$ = 2.48, p = .01, β = .30. Participants low in aversion to unpredictability perceived greater efficacy in the ineffective condition, $t(133)$ = -2.05, p = .04, β = .24.

effective condition. A study in which the effectiveness is emphasized more strongly, or

operationalized differently, is warranted.

General Discussion

In four studies, I demonstrated the role of need for control in fostering helping behavior. In Study 1, I directly threatened perceptions of personal control. When feelings of personal control were threatened, people espoused a greater willingness to donate blood the following week. In Study 2, I threatened the concept of an orderly world, and found that participants were more willing to help others as a result. In Study 3, I provided more direct evidence that people engage in helping as a means of restoring perceptions of control. When participants were first presented with an alternate, non-helping, route to restoring their perceptions of control, they were less likely to help following threat. In Study 4, I presented evidence suggesting that people engage in helping behavior to reduce the anxiety induced by reminders of randomness and loss of control. A reminder of randomness in the world caused participants to donate more rice to feed hungry people, but only for those participants who tend to feel anxious in contexts that lack predictability. For participants who do not find unpredictability aversive, the randomness manipulation did not engender any more helping behavior. In Study 5, I attempted to show that the effects were due to a desire to help, rather than to repair one's mood.

The current findings offer a new perspective on helping behavior. Like Cialdini and colleagues (1973; 1976; 1987), I suggest that helping behavior can reduce negative feelings. But whereas Cialdini and colleagues (1987) focused on the desire to reduce personal sadness that arises when confronted with a suffering victim, my findings suggest that people may also engage in helping behavior to curb the anxiety associated with perceiving the world as uncontrollable. Strikingly, this emotion need not arise from observations of a victim's suffering in order to influence helping behavior. Although the reminders of randomness employed in my studies were

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completely dissociated from any specific suffering, the reminders still motivated people to re-establish control, and the opportunity to help was a convenient means of achieving that goal.

This research also differs from much of the past work by not using an identifiable victim with whom participants were asked to empathize. Previous researchers have focused on manipulations of empathy with a victim to facilitate helping (e.g., Batson et al., 1981; 1988; Cialdini et al., 1987; Dovidio et al., 1990). I used a very different methodology by manipulating control at an abstract level and completely divorcing the manipulation from the helping context. It seems unlikely, then, that the current results can be explained by empathic concern. Even if control threats do evoke empathy, such an account would have to explain why participants in Study 3 were less willing to help after having their personal control affirmed. Empathy should have been equally high across conditions because all participants experienced control threat, and the control-restoration task should have done little to reduce empathic concern. A future area for research may be to understand the interactive effects of empathy and control needs on helping. Perhaps, when need for control is heightened, people may help regardless of whether they empathize with the victim.

Belief in a Just World and Helping Behavior

My perspective also differs from the BJW literature in several ways. First, that literature has focused on victims' innocence as a motivator of helping behavior (e.g., Haynes & Olson, 2006). In contrast, the compensatory control perspective suggests that control threats should increase helping, regardless of victims' innocence. The act of helping someone in need should satisfy control needs, regardless of why the person is in need. In fact, the recipient of help need not be a "victim" at all. The compensatory control perspective implies that the effects in this

thesis should replicate in helping scenarios that do not focus on individuals directly (e.g., donating to environmental causes). Future research could address this question directly.

Second, BJW would have a hard time explaining why reading about general randomness in the world would increase helping intentions. Threats to belief in a just world usually involve a violation of justice or deservingness. Admittedly, the manipulations in Studies 1 and 2 may have evoked deservingness concerns. Participants in Study 1, for example, may have interpreted the positive event as a good break. According to Gaucher and colleagues (2010), reminders of such an event may have increased helping as a means of compensating for the good break. However, the randomness manipulation in Studies 3-5 had no justice or deservingness overtones and was not linked to the helping situation. For participants, then, there was no threat to the belief in a just world, and so no need to repair it.

Perceived Efficacy and Helping Behavior

How do my findings align with previous work on perceptions of efficacy and helping? Research on efficacy indicates that people need to feel as though their efforts will make a difference before they will help. For example, Oliner and Oliner (1988) noted that individuals who did, versus did not, rescue Jews during the Holocaust tended to have a greater sense of self-efficacy. That feeling of self-efficacy (Bandura, 1977) allowed them to believe that their rescue efforts would be successful. Likewise, in a series of experiments, Kerr and Kaufman-Gilliland (1994; 1997) found that people were less likely to help their group in a social dilemma when they believed that their contribution would have little effect on the common good.

Note that the perceived-efficacy perspective, then, is an informational approach, in which people judge whether they should help based on whether they think their efforts will be worthwhile. My approach, on the other hand, is motivational: I argue that people are more likely

to help when they are more motivated to believe the world is controllable. This distinction raises an interesting question: Why, when I presented participants with information that the world is random, did participants respond with increased motivation to help, as predicted, rather than a decreased willingness to help, as would be predicted by the perceived-efficacy approach? Although I cannot definitively answer this question without more data, this distinction is theoretically reconcilable.

One explanation is that the helping opportunities provided in the perceived-efficacy research are often directly tied to the manipulation of the independent variables. Participants were explicitly told the likelihood their specific helping behavior would affect the common good (Kerr & Kaufman-Gilliland, 1994, 1997). Such a methodology – in sharp contrast to mine, which did not directly tie manipulations of randomness to the helping behavior the participants were asked to consider – likely generated a rational, deliberate mindset, in which participants decided whether or not they should help as a function of whether or not helping would be effective. This explicit, deliberative process account is consistent with other research demonstrating that, when people explain why they help, they often consciously draw on beliefs regarding perceived efficacy (Oliner & Oliner, 1988). In my studies, I purposely divorced the manipulations of control from the helping situation, making it much more likely that the effects of the control manipulation triggered unconscious, automatic motivational systems, rather than reason-based decision making processes. Such an interpretation is consistent with models of automatic goal pursuit.

This reasoning may explain at least some of the null results of Study 5. In that study, I pitted the control threat against the effectiveness manipulation. I expected the control threat to increase motivation to help, but only when participants used the information about effectiveness

of the website to conclude that their efforts would be worthwhile. The informational

manipulation may not have been strong enough to overwhelm the motivational manipulation.

The data on perceived efficacy of the website supports this contention. In the no-threat condition

(i.e., when control needs were low), the effectiveness manipulation did produce the expected

difference in perceptions of efficacy. That effect did not occur in the threat condition (i.e., when

control needs were high). Perhaps control needs were so high in the threat condition that the

informational manipulation was not strong enough to influence perceptions and behavior. Further

research with a stronger manipulation of effectiveness is needed to resolve this issue.

Compensatory Control and Helping Behavior

What is it about helping behavior that restores a sense of control? Helping behavior is an

effective means of restoring perceptions of control because it gives people the opportunity to

control an outcome. As Gray (2010) demonstrated, helping others confers a sense of agency.

This suggests that helping that more directly restores control, such as by solving a problem

(rather than just chipping away at a perennial issue), might be particularly potent for restoring a

sense of control. My studies provide some support for this idea. In Study 1, for example,

participants were presented with the opportunity to participate in a blood drive. Although the

need for blood donations is constant, I focused participants on the need for people to sign up for

a particular blood drive the following week. Presenting the blood drive as an isolated event might

have made it seem more appealing in terms of control-restoration because participants could

"solve" the problem by signing up to give blood. Similarly, in Studies 2 and 3, I asked questions

about participants' desires to help "when it will solve a problem." Thus, I directly assessed their

desire to help in ways that would restore a sense of control. Studies 4 and 5 are less clear with

respect to the control-restoring nature of the helping task. Participants recognized that world

hunger is an ongoing problem that will not be easily solved. Furthermore, their donation of a few

hundred grains of rice would constitute only a minor contribution. Participants, then, may have

felt that their behavior was not particularly effective. The information sheet about the website did

indicate, however, that "Somewhere in the world, a person is eating rice that you helped

provide." Thus, participants may have imagined an individual eating rice because of their

specific efforts. Finally, the mean endorsement of the efficacy of the website at alleviating world

hunger was relatively high, suggesting that participants thought it did contribute to solving the

problem.

The current findings also contribute to the understanding of compensatory control (Kay et

al., 2008). First, they suggest another route by which people can restore the belief that their

personal worlds are under control. Previous work has focused on endorsement of the

government, a belief in a controlling God, perceptions of patterns, and even the belief in

controlling enemies (Kay et al., 2008; Kay, et al., 2010; Laurin, et al., 2008; Sullivan, et al.,

2010; Whitson & Galinsky, 2008) as ways of compensating for a reduction in control. My

research provides evidence of a much more prosocial way through which people can restore

perceptions of control.

Second, this is the first evidence for behavioral consequences of compensatory control

processes. Previous work has focused on the cognitive gymnastics that people undertake to

believe that their worlds are under control, but never behavior or even behavioral intentions. In

Study 4, I showed that heightened control needs caused participants to actually donate more rice

to hungry people. Control needs, then, can be satisfied both cognitively and behaviorally. I also

demonstrated that compensatory control tendencies are moderated by individual differences that

are theoretically related to control needs. I expected individual differences in aversion to

unpredictability to moderate the effect of threat because this individual difference reflects how people cope with the ambiguities and randomness of life (Buhr & Dugas, 2002). In Study 4, only participants who were high in aversion to unpredictable situations responded to a reminder of randomness in the world with greater helping behavior. This type of theoretically-consistent moderation has not been previously demonstrated in the compensatory control literature.

Although the control threat tended to increase rice donation in Study 4, that main effect was not significant. As noted above, a possible explanation for this lack of effect is due to how participants may have construed the rice-donation task. In the pursuit of experimental control, I used an abstract control threat, which was unrelated to the helping context. To reduce social desirability concerns, I avoided drawing participants' attention to the fact that they were completing a dependent measure of helping behavior. In real life, however, people know when they are helping others. Although people may not recognize the motivation for their behavior, they know that writing cheques to the Red Cross, for example, will alleviate at least some suffering in the world. The perception that their actions affect others should be particularly potent for restoring perceptions of control. Future research, then, might try to strike a greater balance between experimental control and realism to understand how these processes occur outside of the laboratory.

Limitations

Before concluding, I note three limitations to the studies presented here. First, I did not provide direct evidence that the threats increased anxiety. Past research, however, has demonstrated that threats very similar to the ones employed here produce anxiety (Kay, et al., 2010; Laurin, et al., 2008), and, as observed in Study 4, only those individuals who find randomness emotionally aversive responded to the threat by trying to restore perceptions of

control. Lacking direct evidence for the proposed mediator of anxiety, however, raises the possibility that the effects can be explained by other mediators, including general negative affect. Although the manipulation used in Study 1 has been shown not to affect negative mood (Kay et al., 2008), it is possible that the manipulations in the latter studies did more than arouse anxiety. I did not conduct a mediational-chain study involving anxiety because assessments of these specific types of emotional reactions can be difficult to measure (see Proulx & Heine, 2009; Rosenblatt et al., 1989; Zanna & Cooper, 1974) and designs employing statistical mediation are subject to criticism (Spencer, Zanna, & Fong, 2005). However, a future study could attempt a traditional mediational-chain design, or a manipulation of anxiety, to obtain direct evidence of mechanism.

Second, the alternative explanation from Study 4 lingers because of the null results in Study 5. Did participants high in aversion to unpredictability donate more rice following threat because it helped restore a sense of control, or because it alleviated their negative mood? My current data cannot rule out the alternative explanation, but the pattern of data in the "ineffective" condition is informative. If the effects were due to a desire for mood repair, threat should cause an increase in rice donation, regardless of the efficacy of the website. In the "ineffective" condition, however, there was a trend for participants high in aversion to unpredictability to donate more in the no-threat condition. I cannot make too much of these non-significant effects, but they do suggest another study with a stronger manipulation of efficacy is warranted. Another way to address this concern about mood repair is to simply measure mood after the control threat to determine whether threat differentially impacts the moods of people high and low in aversion to unpredictability. Mood could also be measured after the donation

task to determine whether it is a more potent positive-mood induction for people high in aversion to unpredictability.

Finally, none of the studies included a completely neutral baseline condition. Thus, although I assume that the "threat" conditions increased people's helpfulness, it could be that the "no threat" conditions reduced desires to help. Although the theoretical point is unaffected by this ambiguity – regardless of whether affirmation reduces helping or threat increases helping, the effect would indicate a compensatory control process – I think it is much more likely the effect was driven by the threat conditions than the reverse. People tend to assume some level of orderliness, predictability, and personal control in their lives. As such, the no-threat conditions, which involved asking participants to think about something that was under their control or telling them the world operates according to orderly principles, was more likely just a reminder of their default assumptions. In addition, past research that has compared the effects of randomness primes to neutral conditions has demonstrated that exposure to randomness information drives compensatory control effects (Kay, et al., 2010).

Implications

I introduced the current research by reflecting on a multitude of recent natural disasters that evoked billions of dollars in donations, and countless hours of volunteerism. How does the current research inform an understanding of how people respond to natural disasters? To make the experimental tests as straightforward and conservative as possible, I chose not to embed randomness threats within natural disasters themselves, which naturally manipulate a slew of emotions and concerns. Nonetheless, the findings shed some light on why such disasters elicit such an outpouring of support. In the face of seemingly random tsunamis and unpredictable earthquakes, it can be difficult to maintain the perception that one's personal world is under

control. To maintain that perception, it is sometimes necessary to take matters into one's own hands, as many people did when they flew to Thailand or New Orleans to help rebuild. Given that natural disasters generally remind people of the capriciousness of nature, perhaps some proportion of the massive support they engender comes from the need to restore perceptions of order these disasters themselves activate, and the efficacy of helping behavior for satisfying this goal.

The current findings also have consequences for how charitable organizations can frame requests for help. It seems likely that requests that highlight the random, or unexpected, nature of a problem might be particularly effective in eliciting help. For example, the Red Cross might remind people that natural disasters, like the 2004 tsunami in Southeast Asia, can strike without any warning. The Heart and Stroke Foundation could profile a father who suddenly suffered a stroke while getting his children ready for school one morning. Furthermore, portraying helping in a way that restores control (e.g., building a house for Habitat for Humanity will solve homelessness for a family) might be more effective than helping that does not (e.g., building a house for Habitat for Humanity is a nice thing to do).

Concluding Remarks

Helping behavior, which seemingly has little benefit for the giver, has traditionally proved difficult for social scientists to explain and understand. Previous research has suggested that people may help others out of genuine empathic concern (e.g., Batson et al., 1981), concern for deservingness (Lerner, 1980), or a need to relieve their own sadness (e.g., Cialdini et al., 1987). Like most social phenomena, however, helping behavior is undoubtedly multiply-determined. The current set of studies is the first to explore how the broad motivation to maintain a belief in a controlled and orderly world can foster helping behavior. This research provides a

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novel means for explaining a still inadequately understood type of social behavior and for predicting when helping will be more and less likely to occur.

Appendix A: Full Text of Threat Passage used in Studies 3-5

Is Everything Under Control? A Harvard Conference Reveals the Answer

"The world really is a random place," said Thomas Cornwallis, a statistics professor at Oxford. Cornwallis made the comments at a conference hosted by Harvard University in January. The conference, titled "Understanding the World" was aimed at trying to understand the causes of events in the world. Cornwallis was one of several panellists who agreed that the world mostly operates in erratic, unpredictable ways.
At the same conference, Marten Keese, a professor at Utrecht University in the Netherlands, spoke about an article he published in the renowned journal *Science*. Keese claimed that people's behaviour does not have clear causes. Although people may believe that the world is orderly and non-random, Keese says our perceptions are flawed. "Unperceived factors determine what happens to us. Most people believe their outcomes are under control, but our data suggest that random fluctuations have greater effects."

Appendix B: Full Text of No-Threat Passage used in Studies 4-5

Is Everything Under Control? A Harvard Conference Reveals the Answer

"The world really is an orderly place," said Thomas Cornwallis, a statistics professor at Oxford. Cornwallis made the comments at a conference hosted by Harvard University in January. The conference, titled "Understanding the World" was aimed at trying to understand the causes of events in the world. Cornwallis was one of several panellists who agreed that the world mostly operates in stable, understandable patterns.
At the same conference, Marten Keese, a professor at Utrecht University in the Netherlands, spoke about an article he published in the renowned journal *Science*. Keese claimed that people's behaviour has clear causes. "There are good reasons for people to believe that the world is orderly and non-random," said Keese. "Most people believe their outcomes are under control, and our data support that belief."

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