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The Influence of Control on Belief in Conspiracy Theories: Conceptual and Applied Extensions

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Summary: Threats to control have been found to increase belief in conspiracy theories. We argue, however, that previous research observing this effect was limited in two ways. First, previous research did not exclude the possibility that affirming control might *reduce* conspiracy beliefs. Second, because of artificial lab procedures, previous findings provide little information about the external validity of the control threat–conspiracy belief relationship. In Study 1, we address the first limitation and find that affirming control indeed reduces belief in conspiracy theories as compared with a neutral baseline condition. In Study 2, we address the second limitation of the literature. In a large-scale US sample, we find that a societal threat to control, that citizens actually experienced, predicts belief in a range of common conspiracy theories. Taken together, these findings increase insight in the fundamental relationship between the human need for control and the tendency to believe in conspiracy theories. Copyright © 2015 John Wiley & Sons, Ltd.

INTRODUCTION

Against the background of economic and financial crises, global warming, wars, and epidemics, conspiracy theories have widespread appeal. The Internet is filled with examples of conspiracy theories, including allegations that 9–11 was an inside job, that the US government was involved in the assassination of John F. Kennedy, or that the US government has been withholding evidence for the existence of intelligent extraterrestrial life. Conspiracy theories can be defined as explanatory beliefs, involving multiple actors who join together in secret agreement and try to achieve a hidden goal that is perceived as unlawful or malevolent (Bale, 2007; see also Zonis & Joseph, 1994). Large numbers of ordinary citizens believe in conspiracy theories, and hence, most conspiracy beliefs cannot be dismissed as pathological (Oliver & Wood, 2014; Sunstein & Vermeule, 2009). Furthermore, accumulating research findings reveal a range of detrimental perceptions and behaviors that are associated with conspiracy beliefs, including health problems, decreased civic virtue, hostility, and radicalization (Inglehart, 1987; Jolley & Douglas, 2014; Swami et al., 2011; Thorburn & Bogart, 2005; Van Prooijen, Krouwel, & Pollet, 2015). As a consequence, there has been a surge in empirical research on this phenomenon in recent years.

Although conspiracy theories vary enormously in content, it has been noted that belief in such theories is grounded in similar underlying psychological processes. For instance, a good predictor of belief in one conspiracy theory is belief in a different, conceptually unrelated conspiracy theory (e.g., Douglas & Sutton, 2011; Goertzel, 1994; Lewandowski, Oberauer, & Gignac, 2013; Swami, Chamorro-Premuzic, & Furnham, 2010; Swami et al., 2011, 2013; Van Prooijen et al., 2015; Wood, Douglas, & Sutton, 2012). This suggests that people vary in the extent to which they have a conspiratorial mindset, prompting them to assume evil conspiracies as responsible for impactful societal events. The main psychological process that has been associated with this conspiratorial mindset is the human desire to make sense of their social environment. Early writings by Hofstadter (1966) already noted that conspiracy beliefs help citizens who feel powerless or voiceless to understand complex and distressing societal events (see also Bale, 2007). Consistently, empirical findings suggest that the motivation to make sense of events that potentially threaten one's community predicts belief in conspiracy theories (Van Prooijen & Van Dijk, 2014; see also Van Prooijen & Van Lange, 2014).

People's desire to make sense of the social world is closely coupled with the extent to which they experience control over their environment. Various complementary theoretical perspectives, on meaning-making (Heine, Proulx, & Vohs, 2006; Park, 2010; Van den Bos, 2009), paranoia (Kramer, 1998), and compensatory control (Kay, Whitson, Gaucher, & Galinsky, 2009; Rutjens, van Harreveld, & van der Pligt, 2013), assume that threats to control increase people's mental efforts to make sense of the social world, imbuing the world with meaning, purpose, and order. These insights may explain why conspiracy theories seem to gain momentum particularly following impactful societal events that are likely experienced as control threats by citizens (e.g., a terrorist strike, a war, or a natural disaster; see Pipes, 1997; Robins & Post, 1997; Shermer, 2011). Indeed, research reveals that people are more likely to attribute impactful, harmful societal events (e.g., a politician is assassinated) to conspiracies than societal events that are less impactful or harmful (e.g., someone tries to assassinate a politician but fails; see McCauley & Jacques, 1979), a finding that is attributable to people's sense-making motivation (Van Prooijen & Van Dijk, 2014).

In a similar vein, various operationalizations of control threats have been found to predict conspiracy beliefs. For instance, an external locus of control—that is, a dispositional tendency to believe that one's outcomes are controlled by external forces—is correlated with interpersonal mistrust and paranoia (Mirowsky & Ross, 1983) and belief in conspiracy theories (Hamsher, Geller, & Rotter, 1968).

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Furthermore, a seminal study by Whitson and Galinsky (2008) reveals that experimentally induced control threats increases the extent to which participants perceive patterns, such as images in random noise, patterns in stock market information, and conspiracies. Complementary findings indicate that control threats elicit responses that are widely associated with conspiracy belief, such as attributing increased power to one's enemies (Sullivan, Landau, & Rothschild, 2010), and scapegoating (Rothschild, Landau, Sullivan, & Keefer, 2012). Furthermore, constructs that are closely associated with control threats, such as death anxiety (Newheiser, Farias, & Tausch, 2011), uncertainty (Van Prooijen & Jostmann, 2013), and attitudinal ambivalence (van Harreveld, Rutjens, Schneider, Nohlen, & Keskinis, 2014), have been found to similarly influence conspiracy beliefs. In the following, we discuss how the present contribution is designed to expand on these insights.

THE CURRENT RESEARCH

The previously discussed studies are important because they empirically established a link between people's desire for control and people's tendency to believe in conspiracy theories. Yet, we propose that the empirical evidence reviewed earlier is limited in two ways. As a first limitation, empirical research manipulating control in the context of belief in conspiracy theories has typically used a design in which a control threat condition was compared with a condition where a sense of control was reaffirmed—for instance, by asking participants to remember an event from their own life in which they did have control—without including a neutral base-rate condition (Sullivan et al., 2010; see also Whitson & Galinsky, 2008). As such, the currently available empirical evidence does not exclude the alternative possibility that *reaffirming* a sense of control actually *reduces* conspiracy beliefs. Such an assertion would be in line with the same theoretical perspectives that predict control threats to increase conspiracy beliefs (Heine et al., 2006; Hofstadter, 1966; Kay et al., 2009; Kramer, 1998; Park, 2010): After all, reaffirming a sense of control reduces the need to find meaning in the environment through mental sense-making processes, attenuating the potential for conspiracy beliefs.

Consistent with this possibility, it has been noted that the trust that citizens have in politicians—who are frequently implicated actors in conspiracy theories—is structurally low and has been that way since at least the 1970s (Andeweg, 2014). Furthermore, people often hold negative stereotypes of politicians, portraying them as cold and unreliable in general (Fiske & Durante, 2014). Although these insights do not necessarily generalize to conspiracy beliefs, they do suggest a structurally suspicious perception of power holders among many citizens, also when control is not threatened. Furthermore, a methodological point is that people usually develop conspiracy beliefs in the context of events, institutions, or social groups that people subjectively perceive as threatening; hence, one might wonder how much an experimentally induced control threat adds to the feeling of distress people already experience when considering how plausible various conspiracy theories are. To establish whether affirmations of control might decrease conspiracy beliefs, one needs a balanced design where high and low control conditions are compared with a neutral base-rate condition.

As a second limitation, most of the previously discussed findings on control and conspiracy beliefs offer little information about the external validity of this relationship. For instance, conspiracy beliefs are frequently measured in the context of fictitious scenarios or events (McCauley & Jacques, 1979; Newheiser et al., 2011; van Harreveld et al., 2014; Van Prooijen & Van Dijk, 2014; Whitson & Galinsky, 2008), and control threats are often operationalized by means of an experimental priming procedure that people are unlikely to encounter in everyday life (e.g., asking participants to write down an event where they had or lacked control; e.g., Rothschild et al., 2012; Sullivan et al., 2010; see also Van Prooijen & Jostmann, 2013). Furthermore, although other research questions in the psychology of conspiracy beliefs have been tested in broader samples (e.g., Swami et al., 2011, 2013; Van Prooijen et al., 2015), most of the studies that focus specifically on the relation between control and conspiracy beliefs are based on student samples of convenience, raising questions about the generalizability of the findings to a broader population (Henrich, Heine, & Norenzayan, 2010). As such, theorizing on belief in conspiracy theories can, and should be, meaningfully extended by focusing on real-life control threats and their impact on widely endorsed conspiracy theories among a large and diverse sample of citizens.

In the present contribution, we conduct two studies that address these issues. In Study 1, we manipulate control by means of three conditions, namely a low control condition, a high control condition, and a neutral base-rate condition. Study 1 is hence designed to conceptually extend previous research by establishing if the effects of experimentally induced control manipulations on conspiracy beliefs are attributable to the threat, or instead to the affirmation, of control. Study 2 is a correlational study using a large-scale and diverse sample in the USA. This study extends Study 1 and previous research by focusing on a real-life control threat that people actually encountered, and its association with belief in a range of common conspiracy theories among ordinary citizens. This study is hence designed to test whether previous experimental findings on the control–conspiracy belief relationship will transfer to predict belief in conspiracy theories in the context of a real-life control threat.

STUDY 1

In Study 1, we examine conspiracy beliefs about public policy. It is often the case that citizens believe there has been some unfair favor shown to certain businesses by politicians. Belief in such pandering is related to the extent to which people have or lack control (McGraw, Lodge, & Jones, 2002), suggesting that it may be a forerunner to a full-blown conspiracy theory. The context for the first study was the building of a new underground metro line for the city of Amsterdam to connect the northern part of Amsterdam with the southern part (the 'North–south metro line'). This project

has been plagued by various problems, which were particularly salient among Dutch citizens at the time we conducted this study. It was over budget, behind schedule, and received little support from the citizens of Amsterdam. Moreover, at the time we collected the data of this study, the project was frequently in the Dutch news as various old houses were literally sinking into the ground due to damages to the foundations caused by the underground constructions. Consequentially, various residents had to be evacuated from their houses.

In our study, we first primed participants with either high or low control. In addition, we inserted a baseline condition that was unrelated to control. Based on our line of reasoning, and consistent with previous findings (e.g., Sullivan et al., 2010; Whitson & Galinsky, 2008), we predict that participants primed with low control would endorse stronger conspiracy beliefs about the Amsterdam metro line than participants primed with high control. With our neutral base-rate condition, we seek to find out whether this finding is attributable to increased conspiracy belief in the low control condition, or rather, by decreased conspiracy belief in the high control condition.

Method

Participants and design

We tested the impact of the control manipulation on conspiracy beliefs by inducing a design with three conditions (control: high control vs. low control vs. baseline).[1] The experiment had the form of a paper-and-pencil task. Participants were approached by a research assistant in the student cafeterias of VU University Amsterdam and were asked to participate in exchange for a candy bar. A total of 119 participants were recruited (39 men, 80 women; $M_{age} = 21.31$, $SD = 3.33$).

Materials and procedure

Participants were informed that the questionnaire consisted of two independent parts: a recall task and a study on attitudes toward the North–south Amsterdam metro line. Participants started with the recall task. This task entailed the manipulation of control (e.g., Whitson & Galinsky, 2008). In the high control condition, participants were asked to recall, and subsequently describe, a situation in which 'something happened and they were in complete control of the situation'. In the low control condition, participants received a similar instruction pertaining to a situation in which 'something happened and they had completely no control over the situation'. In the neutral baseline condition, participants were asked to recall and describe what they had for dinner last night.

After this task, participants continued with the study on attitudes toward the North–south Amsterdam metro line. Participants first read an article with some factual information about this project. Then, we measured participants' belief in conspiracy theories by assessing their agreement to the following nine statements (1 = *strongly disagree*, 7 = *strongly agree*): 'The city council did not act in the interest of citizens when making a decision upon the North–south metro line', 'The city council transferred parts of the budget to the bank accounts of others', 'The city council found the safety of the constructions less important than their agreements with the construction companies', 'The city council knew that the safety of residents would be jeopardized, but moved forward with this plan nevertheless', 'Members of the city council received money from construction companies to set this plan in motion', 'Members of the city council deliberately withheld information to avoid hampering the construction of the North–south metro line', 'Members of the city council deliberately ignored criticism on the project, in order not to harm previously made agreements', 'The city council acted with integrity during the construction of the North–south metro line' (recoded), and 'The city council acted morally during the construction of the North–south metro line' (recoded). These nine items were averaged into a reliable conspiracy beliefs scale ($\alpha = .84$). After completing the questionnaire, participants were thanked and provided with a candy bar of their choice.

Results

A one-way analysis of variance revealed a significant effect of the control manipulation on participants' conspiracy beliefs, $F(2, 116) = 4.98$, $p = .008$; $\eta^2 = .08$. According to a Least Significant Difference (LSD) test, participants in the low control condition reported significantly stronger conspiracy beliefs ($M = 4.14$, $SD = 0.59$) than participants in the high control condition ($M = 3.58$, $SD = 0.90$), $p = .002$. The observed difference between the high and low control conditions is consistent with previous research and underscores the robustness of this finding (e.g., Sullivan et al., 2010; Whitson & Galinsky, 2008). Participants in the neutral baseline condition ($M = 3.94$, $SD = 0.89$), then, did not differ significantly from participants in the low control condition ($p = .27$), but they had significantly stronger conspiracy beliefs than participants in the high control condition ($p = .046$). As such, the effects of the control manipulation were attributable to a reduction in conspiracy beliefs in the high control condition.

Discussion

Including a neutral baseline condition provides for a novel interpretation of the influence of control on conspiracy beliefs: At least in our study, the effect of the control manipulation is driven by the high control condition reducing conspiracy beliefs, more so than by the low control condition increasing conspiracy beliefs, as compared with a neutral baseline condition. This conclusion hinges on the assumption that our baseline condition is truly neutral, of course. If anything, recalling what one had for dinner last night might install some control, as it is unusual for healthy adults in modern societies to not have control over what to eat. This interpretation is unlikely, however, as the baseline condition differed significantly from the high control condition. It thus seems safe to assume that our baseline condition was sufficiently neutral with respect to control.

[1] The full design also included a manipulation of the morality of the Amsterdam municipality. However, this manipulation exerted no effect on a manipulation check asking whether participants considered the Amsterdam municipality a moral organization ($F < 1$; $M = 4.42$, $SD = 1.10$). We therefore dropped this manipulation from the analyses.

Of importance, these findings do not imply that control threats are unrelated to conspiracy beliefs—after all, it is well-known from everyday life observation, as well as from empirical research (McCauley & Jacques, 1979; Van Prooijen & Van Dijk, 2014), that threatening societal events elicit more conspiracy theorizing than non-threatening societal events. A more plausible interpretation of these findings is that experimentally inducing a control threat adds little above and beyond the distressed feelings that people already experience in the context of the present study. After all, participants responded to a questionnaire that (i) reminded them of threatening societal events (in the present study, the construction of the North–south metro line in Amsterdam) and (ii) asked them to consider the possibility that harmful conspiracies might exist. Be that as it may, the main conclusion of Study 1 is that affirming a sense of control can buffer people against conspiracy theorizing in the face of distressing societal events. This insight adds to the broader question of how belief in conspiracy theories can be attenuated.

STUDY 2

Study 1 conceptually extends previous research on feelings of control and belief in conspiracy theories, by addressing the first observed limitation in the research literature: That is, previously it was unclear whether affirming control might reduce conspiracy beliefs. Study 2 seeks to address the second observed limitation in the literature, which is that the external validity of the findings on control and belief in conspiracy theories cannot be guaranteed based on previous research (e.g., Sullivan et al., 2010; van Harreveld et al., 2014; Van Prooijen & Jostmann, 2013; Whitson & Galinsky, 2008). In Study 2, we investigate belief in a range of common conspiracy theories in the context of a genuine societal control threat rather than a manufactured one. Moreover, in Study 2, we test the relation between control and conspiracy beliefs in a large-scale sample of the US general population.

To test the influence of a genuine control threat on political conspiracy beliefs, in Study 2, we reanalyzed a yet unpublished dataset that was collected back in 1999. During that time, many people were facing the potential harmful societal event of the Y2K bug (also referred to as the millennium bug), which was the possibility that there would be major computer malfunctions when the year 2000 came around that would affect everyone's daily life. Much time, money, and energy were spent on getting the government and the population ready for the possible shutdown of all major computer systems. There was constant news coverage of the potential threat of the Y2K bug suggesting citizens could expect failures of banking systems, power plants, and water and food supplies. In the last 3 months of 1999, a study was undertaken with a large US sample that assessed citizens' perceptions of the Y2K bug, as well as various perceptions of the government, and a belief in a range of popular conspiracy beliefs (e.g., about the Kennedy assassination, about the cover-up of evidence for the existence of extraterrestrial life, and various others). Hence, the survey contained all the relevant measures for the present purposes. The survey also contained various additional measures that allowed us to statistically control for relevant variables.

In the analyses, we controlled for a range of demographics (gender, age, political orientation, and education level). Furthermore, we also controlled for two conceptual variables in the analyses. The first is participants' trust in the government. Independent from the extent to which the Y2K bug threatens people's sense of control, people may differ in the extent to which they trust the government; relatedly, people may blame the government for the Y2K situation. Hence, statistically accounting for trust in the government is important to establish the unique relationship between the experienced control threat over the Y2K bug and belief in conspiracy theories.

Second, we included a measure of the extent to which people believed the Y2K situation itself was caused by a conspiracy. Although the Y2K bug was regarded mostly as a technological problem at the time, one prominent conspiracy theory was that the Y2K situation was an evil scheme by computer programmers and businesses to make money. Specifically, the allegation was that these computer programmers sought to get paid for solving the problem (or hoax) that they deliberately created themselves. Ironically, this specific conspiracy theory is in all likelihood negatively related with the perception of control threat caused by the Y2K bug: After all, according to this conspiracy theory, the computer programmers are ultimately responsible for causing harm, not the bug itself. Nevertheless, it is important to statically account for belief in a Y2K-conspiracy theory in the analyses, to ensure that it is the experience of Y2K control threat, and not Y2K conspiracy theorizing, that predicts a range of conceptually unrelated conspiracy beliefs. We hypothesized that variations in the extent to which people experience a control threat due to the Y2K bug predicts belief in a range of common conspiracy theories.

Method

Participants

There were originally 1423 participants. After examining the data for potential duplicate cases and incomplete data, there were 1256 valid participants (771 men, 479 women, and 6 unknown). Participants came from all over the USA; median age was between 35 and 44 years old,[2] median education level was college degree, and median household income ranged between $40 000 and $59 000. Politically, participants were slightly conservative on average ($M = 4.83$, $SD = 1.60$; on a scale ranging from 1, *extremely liberal*, to 7, *extremely conservative*).

Procedure

Participants were solicited from a range of sites on the Internet including the online experiment pages of several psychological societies, university websites, Yahoo, and Y2K relevant websites. Participants could also find the survey

[2] Note that it is impossible to report a precise mean and standard deviation of participants' age, as we measured age through ranges on a 7-point scale (i.e., 1 = *under 18*; 2 = *18–24*; 3 = *25–34*; 4 = *35–44*; 5 = *45–54*; 6 = *55–64*; 7 = *65 and over*). Nevertheless, here we do report these statistics for the age scale: $M = 4.31$, $SD = 1.29$.

Table 1. Means, standard deviations, and inter-correlations of the measures in Study 2

	M	*SD*	1	2	3	4	5	6	7	8
1. Y2K control threat	3.57	0.84	—							
2. Trust in government	2.24	0.78	−.37***	—						
3. Y2K conspiracy belief	1.33	0.83	−.26***	.12***	—					
4. UFO conspiracy belief	2.73	1.26	.16***	−.18***	.07*	—				
5. Japanese conspiracy belief	2.06	0.96	.17***	−.19***	.10***	.33***	—			
6. Drugs conspiracy belief	2.21	1.22	.27***	−.31***	.03	.40***	.40***	—		
7. Kennedy conspiracy belief	3.44	1.21	.19***	−.23***	.05	.47***	.25***	.43***	—	
8. O.J. Simpson conspiracy belief	1.55	0.86	.00	.05	.09**	.11***	.12***	.19***	.09**	—

Note: N per correlation ranged from 1236 to 1254 participants. All variables were measured on five-point scales.
*$p < .05$;**$p < .01$;***$p < .001$, two-sided.

via a search engine or by learning the address in the media (e.g., television news programs). After providing informed consent, the participants completed an online survey that asked questions about the Y2K crisis (or the millennium bug) and about a wide variety of political and psychological attitudes. All participants completed the survey at the height of public awareness and interest between 31 October 1999 and 1 December 1999.

Measures

Control threat

We measured the degree of control threat that people perceived from the impending year 2000 by assessing their responses to the following five items: 'To what extent do you think you can personally control negative consequences due to the Y2K situation?' (1 = *little control*, 5 = *much control*) (recoded), 'How many people in the United States will be exposed to risks from the Y2K situation?' (1 = *few people*; 5 = *many people*) 'To what extent do you believe that you are personally at risk from the Y2K situation?' (1 = *not at risk*; 5 = *very much at risk*), 'To what extent does Y2K have the potential to cause catastrophic death and destruction around the world?' (1 = *very low catastrophic potential*, 5 = *very high catastrophic potential*) and 'How likely is Y2K to cause consequences that could be fatal?' (1 = *certain not to be fatal*; 5 = *certain to be fatal*). These five items were averaged into the control threat scale ($\alpha = .71$).

Trust in government

We measured trust with four items from the General Social Survey (Davis & Smith, 1996) (1 = *strongly disagree*, 5 = *strongly agree*): 'Those we elect to public office usually try to keep the promises they have made during the election', 'The people running the country don't really care what happens to you' (recoded), 'The people in Washington, D.C. are out of touch with the rest of the country' (recoded), and 'You can generally trust the people who run our government to do what is right'. These four items were averaged into a reliable measure of trust in government ($\alpha = .79$).

Belief in a Y2K conspiracy theory

We assessed the extent to which participants believed that the Y2K situation itself was a conspiracy with the following item: 'How likely is it that the Y2K situation is just a scheme by computer programmers and businesses to make money?' (1 = *very unlikely*, 5 = *very likely*).

Conspiracy beliefs

Our dependent measures were items assessing participants' belief in a total of five commonly known conspiracy theories. Participants were asked to indicate how likely each of the following statements was true or false (1 = *definitely false*, 5 = *definitely true*): 'The Air Force is hiding evidence that the United States has been visited by flying saucers (UFOs)', 'The Japanese are deliberately conspiring to destroy the American economy', 'The American government deliberately put drugs into inner city communities', 'President Kennedy was killed by an organized conspiracy, not a lone gunman', and 'O.J. Simpson was framed for the murders of his ex-wife and her friend'. It turned out that these five conspiracy theories were only moderately intercorrelated ($.10 < rs < .48$; see Table 1), and therefore, we chose to examine each conspiracy theory separately.

Results

The means, standard deviations, and correlations between the measured variables are displayed in Table 1. We analyzed the results with hierarchical regression analyses in which various demographics (i.e., gender, age, education level, and political orientation) were inserted as control variables in Step 1. In Step 2, we added trust in government, and belief in a Y2K conspiracy theory, to the regression model. The crucial control threat variable was added to the model in Step 3.

The results of the hierarchical regression analyses are displayed in Table 2.[3] As can be seen in the table, Step 1 was significant for all conspiracy theories. These effects were predominantly driven by education level, as lower education level was associated with stronger belief in four out of five conspiracy theories (UFO, Japanese, drugs, and Kennedy). Political orientation had inconsistent effects, as the political left was more inclined to endorse the UFO and O.J. Simpson conspiracy theories, and the political right was more inclined to endorse the Japanese conspiracy theory.

Step 2 was also significant for all five conspiracy theories: As displayed in Table 2, trust in government negatively

[3] Because of missing values, mostly on the demographics (Step 1), the degrees of freedom deviated from the full sample on all conspiracy theories. Differences in degrees of freedom between specific conspiracy theories are due to missing values on the conspiracy beliefs in question.

Table 2. Hierarchical regression results (Study 2)

	Conspiracy theory									
	UFO cover-up		Japanese conspiracy		Drugs conspiracy		Kennedy conspiracy		O.J. Simpson	
Step 1	β	$t(1168)$	β	$t(1165)$	β	$t(1163)$	β	$t(1164)$	β	$t(1165)$
Gender	−.06	−1.92	.01	0.35	−.07	−2.29*	−.07	−2.35*	−.01	−0.38
Age	.13	4.46***	−.02	−0.54	.05	1.75†	.06	2.06*	.02	0.77
Education level	−.21	−7.06***	−.11	−3.56***	−.13	−4.17***	−.16	−5.39***	.02	0.67
Political orientation	−.13	−4.52***	.07	2.17*	−.01	−0.43	.04	1.25	−.09	−2.96**
	$R^2 = .06$		$R^2 = .02$		$R^2 = .02$		$R^2 = .03$		$R^2 = .01$	
	$F_{4,\ 1168} = 18.06$***		$F_{4,\ 1165} = 4.83$***		$F_{4,\ 1163} = 5.59$***		$F_{4,\ 1164} = 9.73$***		$F_{4,\ 1165} = 2.40$*	
Step 2	β	$t(1166)$	β	$t(1163)$	β	$t(1161)$	β	$t(1162)$	β	$t(1163)$
Trust in government	−.21	−7.34***	−.20	−6.57***	−.34	−11.74***	−.23	−7.90***	.01	0.47
Y2K conspiracy belief	.09	3.10**	.12	4.16***	.05	1.86†	.09	3.21**	.08	2.75**
	$\Delta R^2 = .05$		$\Delta R^2 = .05$		$\Delta R^2 = .11$		$\Delta R^2 = .06$		$\Delta R^2 = .01$	
	$F_{2,\ 1166} = 30.55$***		$F_{2,\ 1163} = 28.65$***		$F_{2,\ 1161} = 69.53$***		$F_{2,\ 1162} = 34.98$***		$F_{2,\ 1163} = 3.99$*	
Step 3	β	$t(1165)$	β	$t(1162)$	β	$t(1160)$	β	$t(1161)$	β	$t(1162)$
Control threat	.14	4.67***	.16	4.98***	.22	7.42***	.13	4.03***	.06	1.71†
	$\Delta R^2 = .02$		$\Delta R^2 = .02$		$\Delta R^2 = .04$		$\Delta R^2 = .01$		$\Delta R^2 = .002$	
	$F_{1,\ 1165} = 21.83$***		$F_{1,\ 1162} = 24.77$***		$F_{1,\ 1160} = 54.98$***		$F_{1,\ 1161} = 16.27$***		$F_{1,\ 1162} = 2.94$†	

Note: Degrees of freedom vary per conspiracy theory because of missing values.
†$p < .10$;*$p < .05$;**$p < .01$;***$p < .001$, two-sided.

predicted belief in four out of five conspiracy theories (the only exception being the O.J. Simpson conspiracy theory), and belief in a Y2K conspiracy theory positively predicted belief in four out of five conspiracy theories (the only exception being the drugs conspiracy theory).

The crucial test of our Hypothesis was Step 3, in which control threat was added to the regression model. As can be seen in Table 2, this step was significant for four out of five conspiracy theories (UFO, Japanese, drugs, and Kennedy), and the regression coefficient was positive for all of these four conspiracy theories. These results support the hypotheses that a societal control threat—in this case, due to the millennium bug—predicts belief in a range of conceptually unrelated conspiracy theories.

The only exception was belief in the O.J. Simpson conspiracy theory, where Step 3 was nonsignificant. As can be seen in Table 1, belief in this conspiracy theory was overall quite low ($M = 1.55$, $SD = 0.86$). We suspect that this conspiracy theory is specific to the US African-American community. For instance, research suggests that particularly African-Americans believed O.J. Simpson to be innocent (Graham, Weiner, & Zucker, 1997). Furthermore, it has been noted that African-Americans are quite susceptible to conspiracy theories assuming a White plot designed to harm fellow African-Americans (Crocker, Luhtanen, Broadnax, & Blaine, 1999; see also Simmons & Parsons, 2005; Thorburn & Bogart, 2005). It might thus be possible that control threat predicts belief in an O.J. Simpson conspiracy theory only among African-Americans. It was impossible to test this line of reasoning in the present data, however, as we did not have a sufficient number of African-Americans in our sample to conduct meaningful analyses.

Discussion

These findings illuminate the applied implications of the control–conspiracy belief relationship. Whereas previous research investigated this relation using fictitious scenarios, or artificial operationalizations of control (e.g., McCauley & Jacques, 1979; Rothschild et al., 2012; Sullivan et al., 2010; Van Prooijen & Van Dijk, 2014; Whitson & Galinsky, 2008), the present study suggests that real-life threats to control can have meaningful and substantial psychological consequences for citizens. Specifically, our data reveal that the extent to which the millennium bug threatened people's sense of control during the last 3 months of 1999 predicted their belief in a range of common, and conceptually unrelated, conspiracy theories.

Unlike previous studies (e.g., Douglas & Sutton, 2011; Goertzel, 1994; Lewandowski et al., 2013; Swami et al., 2011; Van Prooijen et al., 2015), the five conspiracy beliefs under investigation were only moderately correlated in this study. We suspect that this is due to the rather different topics of conspiracy theorizing across the five items. For the present purposes, the finding that the predicted effect emerged for four out of five conspiracy theories despite their relatively low inter-correlations only underscores the robustness of the relationship between control threats and conspiracy beliefs.

GENERAL DISCUSSION

The present findings fit into a broad research domain designed to uncover the psychological processes underlying belief in conspiracy theories. Specifically, the extent to which people are able to exert control over their social environment is closely coupled with their desire to make sense of this environment (e.g., Park, 2010; van den Bos, 2009). Such sense-making motivation is a central ingredient of belief in conspiracy theories (Hofstadter, 1966; see also Bale, 2007; Van Prooijen & Van Dijk, 2014). These complementary insights stimulated a wealth of studies illuminating that

people are most likely to believe in conspiracy theories when they lack control (Hamsher et al., 1968; Newheiser et al., 2011; Sullivan et al., 2010; Van Prooijen & Jostmann, 2013; Whitson & Galinsky, 2008). The present research was designed to extend these insights in two ways. First, previous research typically investigated the impact of control on belief in conspiracy theories with incomplete research designs, raising questions about the additional possibility that affirmations of control might attenuate conspiracy beliefs. Study 1 of the current contribution addresses this issue and indeed reveals a reduction in conspiracy beliefs when people's sense of control is affirmed. Second, previous findings offered little indications of the external validity of the relation between control and belief in conspiracy theories. Our Study 2 findings, however, reveal that a real-life control threat predicts a range of conspiracy beliefs among a large number of citizens. Taken together, the studies presented here conceptually extend insights on the relation between control and belief in conspiracy theories.

Both studies independently hold a valuable insight for theorizing on belief in conspiracy theories. One main implication of Study 1 is that the human need for control is intimately related with belief in conspiracy theories in both directions of a control continuum. Although in our Study 1, the low control condition did not differ significantly from the neutral baseline condition, it stands to reason that the specific setting of the study was already threatening to control, also in the neutral condition (i.e., the study being situated in the context of controversial public policy, with observable harmful effects for many citizens). Hence, the relation between control and belief in conspiracy theories is in all likelihood bidirectional: Whereas threats to control might increase belief in conspiracy theories (e.g., McCauley & Jacques, 1979; Van Prooijen & Van Dijk, 2014; Whitson & Galinsky, 2008), our findings reveal that affirmations of control might just as well decrease belief in conspiracy theories. This latter point has not been recognized before in this research domain.

A main implication of Study 2 is that the relationship between the human need for control and belief in conspiracy theories is not confined to the lab. In popularized writings, it is frequently noted that conspiracy theories gain momentum when society faces uncertain times, such as economic crises, threats of terrorism, climate change, and the like (e.g., Pipes, 1997; Shermer, 2011). Empirical evidence had not yet established that a real-life control threat indeed predicts belief in conspiracy theories. Our reanalysis of the Y2K-bug data indicates that a genuine control threat predicts people's susceptibility to unrelated conspiracy theories, such as belief in a UFO cover-up, and the belief in a Kennedy conspiracy theory. Indeed, these relations hold up even after controlling for trust in the government, and the specific belief in a Y2K conspiracy theory. These findings underscore the external validity of the control–conspiracy belief relation and suggest that societal threats to control are associated with a generally suspicious, conspiratorial mindset.

The present research implies that societal developments may predict the waxing and waning of popular conspiracy beliefs over time. Citizens frequently are faced with threatening events or periods, such as intergroup conflict and riots, economic and financial crises, and wars. Based on the present research, it stands to reason that conspiracy beliefs are particularly likely to flourish in such times of societal turmoil. Indeed, it might be speculated that some of these conspiracy beliefs have the potential of further deteriorating these detrimental societal circumstances by undermining the legitimacy of public governance. These considerations suggest that, whenever society is facing a substantial control threat, political leaders have an increased responsibility to install a sense of trust among the public, and to overtly display signs of moral behavior, particularly if they want to avoid increases in perceived threat and the virulent spread of conspiracy beliefs. Although most of the time this will turn out to be easier said than done, some factors that may help political leaders to increase their moral authority are being transparent about their motivations for important decisions (Brockner, DeWitt, Grover, & Reed, 1990; Folger & Martin, 1986), and closely adhering to procedural justice principles (Leventhal, 1980), as these factors are known to support feelings of control. It may also be useful to consider how leaders can reinforce other areas where control is not threatened in order to ameliorate conspiratorial thinking.

Also other sources of evidence suggest that the relationship between threatening societal events and belief in conspiracy theories can have substantial macro-political implications. For instance, it has been noted that collective control threats in the form of societal crises—particularly if preceded by a short-lived period of prosperity—predict the rise of politically extremist regimes (Midlarsky, 2011). Empirical findings indeed underscore that fearful socio-economic circumstances are associated with politically extremist ideologies (Van Prooijen, Krouwel, Boiten, & Eendebak, 2015). These observations are relevant for the current purposes, because political extremism has been found to predict belief in conspiracy theories (Van Prooijen et al., 2015; see also Inglehart, 1987). It is yet unclear what the causal order is of the relation between belief in conspiracy theories and political extremism. What is clear, though, is that both phenomena fuel detrimental societal developments, such as fear, hostility, and intergroup conflict. Societal threats to control hence can have a major impact on the functioning of society, and this is at least partly due to the processes described in this contribution.

Both studies reported herein have their limitations. In keeping with previous studies, Study 1 focused on an experimenter-designed control threat, in a sample of undergraduate university students. A primary concern of Study 1 is therefore the question how meaningful these findings are to predict the influence of societal developments on belief in conspiracy theories. This main weakness of Study 1 is one of the main strengths of Study 2, however, which focused on a genuine control threat in a large sample of US citizens. Study 2, then, was a cross-sectional design that precludes conclusions about cause and effect. Based on Study 2 alone, we cannot be certain whether variations in control caused belief in conspiracy theories or instead that people with a conspiratorial mindset were more likely to perceive the Y2K situation

as a threat to control. This limitation, in turn, is addressed by the main strength of Study 1, showing evidence for a causal influence of variations in control on belief in conspiracy theories (cf. Sullivan et al., 2010; Whitson & Galinsky, 2008). Although this finding still leaves open the possibility of reverse-causation (i.e., a conspiratorial mindset might also contribute to the experience of control threat), it does install confidence in our interpretation of the findings observed in the studies presented here.

To conclude, the present studies add to an emerging body of literature on the psychological underpinnings of belief in conspiracy theories. Whereas it is well-established that large portions of ordinary citizens believe in conspiracy theories (Oliver & Wood, 2014), there is much that can still be learned about the question of *why* they do. The present studies sought to contribute to this issue by highlighting how having or lacking control influences the sense-making processes leading up to conspiracy beliefs. In doing so, the studies conceptually refine previous insights on the relationship between control and conspiracy beliefs. It is concluded that the human need for control is closely coupled with their tendency to believe in conspiracy theories, a relationship that can also be observed in applied settings.

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