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System Justification, the Denial of Global Warming, and the Possibility of "System-Sanctioned Change"

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Abstract

Despite extensive evidence of climate change and environmental destruction, polls continue to reveal widespread denial and resistance to helping the environment. It is posited here that these responses are linked to the motivational tendency to defend and justify the societal status quo in the face of the threat posed by environmental problems. The present research finds that system justification tendencies are associated with greater denial of environmental realities and less commitment to pro-environmental action. Moreover, the effects of political conservatism, national identification, and gender on denial of environmental problems are explained by variability in system justification tendencies. However, this research finds that it is possible to eliminate the negative effect of system justification on environmentalism by encouraging people to regard pro-environmental change as patriotic and consistent with protecting the status quo (i.e., as a case of "system-sanctioned change"). Theoretical and practical implications of these findings are discussed.

Keywords

system justification, denial, environmental attitudes, conservation behavior, ideology

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> I can tell you, our grandchildren will laugh at those who predicted global warming. We'll be in global cooling by then, if the Lord hasn't returned. I don't believe a moment of it. The whole thing is created to destroy America's free enterprise system and our economic stability.
>
> —Reverend Jerry Falwell, 2002

One of the most pressing concerns of our time—the impact of which spans the entire planet—is that of environmental destruction and global warming (e.g., Weart, 2004). Yet, despite extensive scientific evidence that the environment is suffering from ever-increasing industrial production and that global climate change is rapidly occurring, is caused by human activities, and poses numerous threats to the earth's ecosystems (Hansen, 2004; Oreskes, 2004; Scheffer, Carpenter, Foley, Fokes, & Walker, 2001; Weart, 2004; Webster, Holland, Curry, & Chang, 2005), many people continue to deny the severity of the problem and resist efforts to address it. Public opinion surveys indicate that the majority of U.S. respondents fail to accord great importance to the problem of global warming and do not believe that it will affect them or their way of life (Carroll, 2007; Gallup Poll, 2009). Approximately one third of respondents overall—including 59% of Republicans—believe that global warming claims are exaggerated (Dunlap, 2008; Gallup Poll, 2009). Psychological research similarly reveals that people frequently fail to acknowledge or take responsibility for ecological problems (Stoll-Kleeman, O'Riordan, & Jaeger, 2001; Takacs-Santa, 2007).

According to most experts it is not possible to stop global climate change at this point, but there are opportunities to slow its progression and to prevent its most dire consequences. However, helping the environment requires changing the long-standing status quo of indifference and inaction toward the environment that is evident among the public, as well as among political elites, many of whom have exhibited denial and resistance to scientific and public policy information suggesting there are impending environmental problems that need to be urgently addressed (Begley, 2007; McCright & Dunlap, 2003). Overcoming the apathy, denial, and resistance among people who are faced with evidence of environmental problems is imperative if we are ever to increase public willingness to act in ways that help rather than harm the environment

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and to bear personal costs for preventing further destruction. What is it that stands in the way of attitudinal and behavioral change?

Many different obstacles have been identified in the vast research literature concerning environmental attitudes and behavior. These include difficulties in obtaining and processing accurate information about environmental problems; appraising the likelihood, severity, and causes of threatening events; overcoming selfish, short-term, and individualistic interests; and building a shared sense of efficacy when it comes to solving ecological problems (e.g., Gardner & Stern, 2002; Opotow & Weiss, 2000; Takacs-Santa, 2007; Van Vugt, 2009). In this article we focus on the relatively widespread tendency to rationalize "the way things are" and, in so doing, deny environmental problems and resist meaningful attempts to create and implement a new, more sustainable status quo.

Several lines of work indicate that this is a promising avenue for understanding environmental attitudes. For instance, research on individual differences shows that there is a connection between attitudes toward authorities and social hierarchy, on one hand, and environmental attitudes, on the other. More specifically, there is a negative impact of right-wing authoritarianism (Peterson, Doty, & Winter; 1993; Sabbagh, 2005; Schultz & Stone, 1994; Son Hing, Bobocel, Zanna, & McBride, 2007) and social dominance orientation (Pratto, Sidanius, Stallworth, & Malle, 1994; Son Hing et al., 2007) on environmentalism. Furthermore, people who hold culturally and economically conservative attitudes (e.g., support for laissez-faire approaches to regulating markets) and who generally subscribe to what researchers have referred to as the "dominant social paradigm" are less likely than others to support pro-environmental causes (Dunlap & Van Liere, 1984; Kilbourne, Beckmann, & Thelen, 2002; Pirages & Ehrlich, 1974). Taken in conjunction, these findings suggest that environmental attitudes are influenced by general ideological stances that are protective of the societal status quo (see also Jost, Glaser, Kruglanski, & Sulloway, 2003; Jost & Hunyady, 2005). This prior work also points to the theoretical and practical significance of understanding just how and why these ideological stances come into opposition with environmentalism.

We address these thorny issues in the present article by confronting a previously unacknowledged factor that may contribute to the perpetuation of environmental apathy and inaction, namely, the motivated tendency to justify the status quo, especially in the face of threat (e.g., Jost, Liviatan, et al., 2009; Jost, Pietrzak, Liviatan, Mandisodza, & Napier, 2007). Confronting global warming and environmental destruction requires facing up to serious threat, not only because of the scope and unpredictability of the projected disasters but also because they pose a challenge to the very foundations of our socioeconomic system. This threat may stimulate defensive, system-justifying responses and, therefore, continued indifference and exploitation with respect to the natural environment, rather than commitment to recognizing and remedying the problem (see also Feygina, Goldsmith, & Jost, in press). More specifically, the motivation to see industrial corporations and market-based practices, national governments and leaders, and cultural and economic institutions as legitimate and purely benign may inhibit a realistic assessment of the seriousness of the impending disaster and the inadequacy of current reactions to this problem (e.g., see Jost, Blount, Pfeffer, & Hunyady, 2003).

System Justification Theory

Motivation in Service of the Status Quo

According to system justification theory, our evaluations of social systems and institutions are influenced by epistemic needs to maintain a sense of certainty and stability, existential needs to feel safety and reassurance, and relational needs to affiliate with others who are part of the same social systems (Jost & Hunyady, 2005; Jost, Ledgerwood, & Hardin, 2008). These needs give rise to a motivation to perceive the system as fair, legitimate, beneficial, and stable, as well as the desire to maintain and protect the status quo (Jost, Liviatan, et al., 2009). System justification can have positive effects in the short term, such as alleviating the anxiety, uncertainty, and fear elicited by threats to the societal status quo (e.g., Jost & Hunyady, 2002; Jost, Wakslak, & Tyler, 2008). However, the long-term implications of pursuing the system justification goal can be negative, especially for members of disadvantaged groups (e.g., Jost & Thompson, 2000; O'Brien & Major, 2005; Rankin, Jost, & Wakslak, 2009). Although system justification can stimulate a process of rationalization of the way things are, helping people cope with unwelcome realities (Kay, Jimenez, & Jost, 2002), it can also interfere with forming intentions or taking action to correct injustices or system-level problems (Wakslak, Jost, Tyler, & Chen, 2007). Consistent with self-interest, those who are advantaged by the system typically engage in system justification more enthusiastically than those who are disadvantaged. However, system justification needs may lead people to support and rationalize the social system even in situations in which they are harmed by it (Henry & Saul, 2006; Jost, Pelham, Sheldon, & Sullivan, 2003).

System Justification and Environmental Attitudes

We suggest that system justification tendencies may have adverse consequences for attitudes and behaviors that benefit the environment. The tendency to justify the system may interfere with a clear evaluation of environmentally damaging aspects of the socioeconomic status quo and prevent a person from becoming dissatisfied and from taking action to correct environmental problems or stop destructive cycles (cf. Feygina et al., in press; Jost, Blount, et al., 2003; Wakslak

et al., 2007). The subjective sense of security gained by engaging in system justification can result in ignoring or denying environmental problems and perpetuating harmful behaviors. The crux of our argument, then, is that system justification motivation is a significant obstacle to attaining pro-environmental change. Because current environmental problems are in many ways the result of our prevailing socioeconomic practices and institutions (Axelrod & Suedfeld, 1995; Shrivastava, 1995; White, 1967), to acknowledge such problems is to admit that the status quo may not be entirely legitimate or beneficial. Such an admission directly contradicts system justification needs and tendencies. Thus, the more people are motivated to defend and bolster the existing system, the more likely they will be to deny environmental problems, insofar as these challenge the system's legitimacy as well as its stability (i.e., sustainability).

Forty years ago, Hardin (1968) observed that many people perceive an opposition between economic growth and environmental protection. Indeed, ecologically beneficial solutions demand extensive changes to the industrial process, such as switching to environmentally friendly means of production and altering pervasive practices of consumption that are associated with capitalism. They require rethinking the practices of dominating the environment and bringing the forces of nature under control through technology and human ingenuity—ideas on which much of modern Western civilization is predicated. Environmental problems also make evident the need for political change by highlighting the failures of political leaders, especially conservative leaders, who have largely promulgated attitudes of indifference and inaction with respect to the environment, consistently neglecting environmental issues in favor of relatively narrow national and economic interests (e.g., Begley, 2007; McCright & Dunlap, 2003).

In sum, for many people, acknowledging and addressing environmental problems appears to be threatening to the very foundations of the social, economic, and political status quo. When the social system is threatened by an external (or exogenous) source, such as a foreign military or terrorist attack, the need to justify the system generally manifests itself in terms of increased attention and commitment to defeating the source of the threat (e.g., Bonanno & Jost, 2006; Ullrich & Cohrs, 2007). By contrast, the threat posed by environmental destruction is the result of the status quo itself; the practices of our socioeconomic system have brought about the current crisis and thus constitute a threat that is internal (or endogenous) to the system. Facing up to this kind of threat involves (a) acknowledging the shortcomings of the current system and established practices, (b) accepting both systemic and individual responsibility for the current state of the environment, and (c) admitting that the status quo must change if we are to prevent ecological disaster. We propose that people are prone to defend the system against endogenous threats by minimizing or even denying systemic problems, thereby obviating the need to ask challenging questions and implement changes. Napier, Mandisodza, Andersen, and Jost (2006) suggested that many people engaged in a denial of structural inequalities and injustices that were exposed by the inadequate governmental response to the humanitarian crisis brought on by Hurricane Katrina. However, empirical research has yet to document the relationship between system justification motivation and denial; the current research is aimed at establishing just such a connection in the environmental domain.

Does System Justification Account for Known Differences in Environmental Attitudes?

Based on the foregoing analysis of the relationship between system justification and the denial of environmental problems, we propose that variability in system justification motivation could help explain several known group differences in environmental attitudes and behaviors. Specifically, we suggest that differences in support for environmentalism between liberals and conservatives and between women and men could be explained, at least in part, by differences in system justification tendencies. Similarly, we expect that strong national identification with the United States would inhibit support for environmental change because of its connection to system justification.

Political Orientation

Liberals and conservatives differ at both mass and elite levels in terms of their support for pro-environmental change. Specifically, liberal respondents show significantly greater concern for the environment and support for pro-environmental legislation and regulation, and they are more likely to engage in environmentally friendly behavior (Allen, Castano, & Allen, 2007; Cottrell, 2003; Dietz, Stern, & Guagnano, 1998; Dunlap & Van Liere, 1984; Samdahl & Robertson, 1989; Van Liere & Dunlap, 1980). Similarly, public opinion surveys demonstrate that Republicans are far less concerned than Democrats about various forms of environmental destruction, including global warming, damage to the ozone layer, water pollution, and species extinction, and are less committed to addressing these problems (Begley, 2007; Carroll, 2006; Saad, 2007). Republicans are also more likely than Democrats to deny that human activity is a major contributor to global warming (Pew Research Center for the People & the Press, 2006). We hypothesize that these differences in partisanship and political orientation are due, in part, to differences in system justification motivation, which has been found to be greater among conservatives than liberals (see also Jost, Blount, et al., 2003; Jost, Glaser, et al., 2003; Jost, Nosek, & Gosling, 2008).

Gender Differences

A robust gender effect also exists: Women display greater concern and willingness than men to take action to help the environment, and these differences hold across age groups and countries (Cottrell, 2003; Dietz, Kalof, & Stern, 2002; Zelezny, Chua, & Aldrich, 2000). Several explanations have been proposed for gender differences in environmentalism. Zelezny et al. (2000) found that women display more empathy, perspective taking, and a stronger "ethic of care" and that all of these are related to the expression of concern for the environment. Similarly, Dietz et al. (2002) suggested that women's valuing of altruistic behavior may account for their greater commitment to environmentalism. We propose that in addition to these factors, system justification may play a significant role. As mentioned earlier, system justification is typically (but not always) higher among members of groups that are advantaged by the system; accordingly, men do score significantly higher than women on measures of general system justification (Jost & Kay, 2005). Based on these considerations, we hypothesize that gender differences in pro-environmental attitudes may be partially explained by group differences in system justification tendencies.

National Identification

All other things being equal, we expect that being highly identified with one's country would be positively associated with feeling connected to and dependent on the system, and therefore with the motivation to perceive prevailing institutions and arrangements as legitimate, stable, and generally benevolent (e.g., Banfield, Kay, Cutright, Wu, & Fitzsimons, 2009; Laurin, Kay, & Shepherd, 2009; O'Brien & Major, 2005; Shayo, 2009; Van der Toorn, Tyler, & Jost, 2009). Thus, we hypothesize that national identification would predict a heightened motivation to justify the system, which would, in turn, predict greater denial of environmental problems and less willingness to take pro-environmental action. In sum, then, we predict that system justification will at least partially account for the relationship between national identification and denial of environmental problems.

Can the Negative Effect of System Justification on Environmentalism Be Overcome?

Thus far, we have suggested that system justification motivation should exert a negative effect on the individual's willingness to help the environment (see also Wakslak et al., 2007) insofar as some people perceive environmentalism as a threat to (if not an indictment of) cultural and economic practices and institutions. However, it may be possible to devise persuasive communications that will not only avoid triggering defensive responses on behalf of the system but may even harness the power of system justification motivation and channel it in a pro-environmental direction. Specifically, reframing pro-environmental change as preserving, rather than challenging, the social system (e.g., the "American way of life") may encourage those who are motivated to protect the system to take greater personal responsibility, form constructive intentions, and engage in behaviors that are beneficial to the environment.

Overview of Current Research

In this program of research, we propose that system justification motivation will be associated with (a) denying or minimizing environmental problems, (b) holding attitudes that are harmful to the environment, and (c) failing to take steps that would contribute to alleviating environmental problems. Moreover, we hypothesize that individual differences in system justification tendencies help explain variability in the denial of environmental problems associated with political orientation, gender, and national identification. Finally, we suggest that reframing pro-environmental change as enabling the preservation of the social system can eliminate the negative effect of system justification on support for the environment. These possibilities were addressed in the three studies reported here.

Study 1

The purpose of the first study was to demonstrate the connection between system justification tendencies and environmental attitudes, including opinions about environmental crises, human exemption from environmental catastrophe, limitations with respect to the earth's resources, and the need to maintain environmental balance. It was hypothesized that people who are chronically higher in system justification would report greater denial of environmental problems and vulnerabilities. Moreover, we predicted that system justification could help explain commonly observed differences in environmental attitudes between women and men (Zelezny et al., 2000).

Method

Participants. Three hundred and forty University of Oregon undergraduates (234 females, 103 males, and 3 who declined to report their gender) participated in this study. The mean age of the sample was 19.1 years ($SD = 3.22$).

Materials and procedure. As part of a larger survey, students completed Kay and Jost's (2003) eight-item measure of general system justification ($\alpha = .80$), which includes questions such as "Most policies serve the greater good"; "Society is set up so that people usually get what they deserve"; "In general, the American political system

operates as it should"; and "American society needs to be radically restructured" (reverse coded).

Environmental attitudes were assessed using the New Environmental Paradigm (NEP) scale (Dunlap, Van Liere, Mertig, & Jones, 2000), a frequently used measure of environmental attitudes. For the purposes of the current study we drew on the four facets of the NEP identified by Clark, Kotchen, and Moorea (2003) that focused most directly on the problem of denial. Each subscale was composed of three items and used a 5-point scale of agreement. The facets were: (a) denial of the possibility of an ecological crisis (e.g. "If things continue on their present course, we will soon experience a major environmental catastrophe"; reverse scored), (b) denial of limits to growth (e.g. "The earth has plenty of natural resources if we just learn how to develop them"), (c) denial of the need to abide by the constraints of nature (e.g. "Humans will eventually learn enough about how nature works to be able to control it"), and (d) denial of the danger of disrupting balance in nature (e.g. "The balance of nature is strong enough to cope with the impacts of modern industrial nations"). Studies using the NEP (Dunlap et al., 2000) have obtained high internal reliability and provide support for combining these items into an overall index of denial of environmental problems ($\alpha = .81$ for this sample).

Results and Discussion

We used hierarchical linear regression to investigate our hypotheses with respect to each dependent variable, adjusting for gender and age in each model. As hypothesized, system justification was strongly associated with increased denial of environmental problems, $b = .22$, $SE = .02$, $\beta = .49$, $p < .001$. This model accounted for 27.1% of variance in environmental denial.

We also investigated the effect of system justification on scores for each facet of the NEP (see Table 1). People who scored higher on system justification were more likely to deny (a) the possibility of an ecological crisis, $b = .31$, $SE = .03$, $\beta = .49$, $p < .001$; (b) limits to natural resources and the earth's sustainability, $b = .15$, $SE = .03$, $\beta = .26$, $p < .001$; (c) the necessity to abide by the constraints of nature, $b = .22$, $SE = .03$, $\beta = .40$, $p < .001$; and (d) the danger of disrupting balance in nature, $b = .18$, $SE = .03$, $\beta = .33$, $p < .001$. In sum, stronger system justification tendencies were associated with greater denial of various environmental concerns.

Consistent with prior findings, gender was a significant predictor of environmental attitudes and system justification. Compared to women, men exhibited greater denial of environmental realities, as gauged by overall scores on the NEP ($b = .24$, $SE = .07$, $\beta = .19$, $p < .01$), and greater engagement in system justification ($b = .45$, $SE = .15$, $\beta = .16$, $p < .01$). To determine whether the gender difference in denial was attributable in part to variability in system justification tendencies, we conducted a mediational analysis recommended by Baron and Kenny (1986). Results revealed that system justification partially accounted for the effect of gender on denial of environmental problems, significantly reducing the relationship between gender and denial to $b = .14$, $SE = .06$, $\beta = .10$, $p < .05$ (Sobel statistic = 2.90, $p < .005$). Thus, men were more likely than women to engage in denial of environmental problems, and this difference was partially explained by gender differences in system justification tendencies.

Table 1. Effects of System Justification on Denial of Environmental Problems, Adjusted for Demographic Variables (Study 1)

	System justification			
	b	*SE*	β	*t*
Overall denial of environmental problems	.23	.02	.49	10.15***
Denial of the possibility of an ecological crisis	.31	.03	.49	9.88***
Denial of limits to earth's resources	.18	.04	.26	4.79***
Denial of need to abide by the constraints of nature	.22	.03	.40	7.89***
Denial of danger of disrupting balance in nature	.18	.03	.33	6.25***

***$p < .001$.

The first study provides preliminary evidence that system justification is associated with denial of environmental problems and realities. In the second study we sought to replicate and extend these findings by administering several different measures of system-justifying attitudes, assessing political orientation and national identification, and examining effects on environmental behaviors.

Study 2

To the extent that ecological problems challenge both cultural and economic practices, we expect that (a) system justification in general (i.e., with respect to American society as a whole) and (b) system justification in the economic sphere (i.e., with respect to the capitalist system) would each contribute to denial and failure to help the environment. Thus, in Study 2 we included a measure of economic system justification (Jost & Thompson, 2000) as well as a measure of general system justification, as in Study 1. In addition, we investigated the hypotheses that variability in system justification tendencies would explain (at least in part) the effects of political orientation and national identification on environmental attitudes. Finally, given the urgent need to take action on behalf of the environment, it is crucial to understand not only attitudes, which often fail to translate into meaningful action (Ajzen & Fishbein, 1977), but also environmentally significant behaviors. Thus, we included measures of behavioral

self-report to examine whether system justification and denial hinder pro-environmental action.

Method

Participants. Participants were 563 (369 female) New York University undergraduates who completed a series of questionnaires as part of a mass testing session.

Materials and procedure. Participants completed the Kay and Jost (2003) 8-item measure of general system justification (α = .81; see Study 1 for items), as well as Jost and Thompson's (2000) 16-item economic system justification scale (α = .80), which includes items such as "If people work hard, they almost always get what they want"; "Laws of nature are responsible for differences in wealth in society"; and "It is unfair to have an economic system which produces extreme wealth and extreme poverty at the same time" (reverse coded).

Participants reported their political orientation using a single ideological self-placement item ranging from 1 (*extremely liberal*) to 11 (*extremely conservative*). The survey also included a four-item measure of strength of national identification (adapted from Luhtanen & Crocker, 1992; α = .84). Sample items included: "Being an American is an important reflection of who I am" and "Overall, being an American has little to do with how I feel about myself" (reverse coded).

In another, ostensibly unrelated, section of the questionnaire, participants indicated their strength of (dis)agreement with three items that comprised the "possibility of an ecological crisis" subscale of the NEP, which is the subscale that is most indicative of the *denial* of environmental problems (α = .69): (a) "Humans are severely abusing the earth" (reverse coded); (b) "The so-called 'ecological crisis' facing humankind has been greatly exaggerated"; and (c) "If things continue on their present course, we will soon experience a major environmental catastrophe" (reverse coded).

Participants also completed five items gauging their self-reported behavior with respect to the environment (α = .73): (a) "How often do you recycle paper and bottles/cans?" (b) "How often do your purchases and food choices reflect environmental concerns?" (c) "How often do you give money to organizations that help the environment?" (d) "How often do you encourage government representatives to adopt policies that are good for the environment?" and (e) "How often do you try to learn more about environmental issues and global warming?"

Results

Structural equation modeling was used to examine the pattern of relations among political orientation, national identification, general and economic forms of system justification, denial of environmental problems, and environmental behavior. National identification with the United States was a latent construct composed of the four indicators mentioned previously. For general and economic system justification, questions from each scale were combined into three parcels, following Coffman and MacCullum (2005), and these were used as indicators of the latent constructs. The three NEP items were used as indicators of the latent factor of denial, and the five self-reported behavioral items were used as indicators of the latent factor of environmental behavior. Correlations among the latent factors are summarized in Table 2.

Table 2. Table of Correlations Among Latent Variables (Study 2)

Variable	1	2	3	4	5
1. Political orientation	—				
2. National identification	.276**	—			
3. General system justification	.455**	.298**	—		
4. Economic system justification	.399**	.266**	.520**	—	
5. Environmental denial	.397**	.159**	.394**	.324**	—
6. Environmental behavior	–.135**	–.101*	–.142**	–.212**	–.372**

*$p < .05$. **$p < .01$.

We assessed a hybrid structural model (see Figure 1), in which (a) political orientation and national identification predicted both general and economic system justification; (b) political orientation, national identification, and both forms of system justification predicted environmental denial; and (c) environmental denial predicted environmental behavior. The two exogenous variables—political orientation and national identification—were allowed to covary, as were the two system justification factors. Overall, the fit indices suggested that this model fit the data well, $\chi^2/df = 332.28/142$, comparative fit index (CFI) = .94, goodness-of-fit index (GFI)= .92, root mean square error of approximation (RMSEA) = .056.[1]

To determine whether an alternative model would provide a better fit to the data, we conducted an additional model that allowed political orientation, national identification, and both forms of system justification to predict environmental behavior directly. However, none of the four direct paths included in this model were significantly different from zero, and this alternative model did not improve the fit of the structural model, $\Delta\chi^2(4) = 6.47$, *ns*.

An examination of the path coefficients in the model illustrated in Figure 1 provides evidence consistent with our predictions. Holding a more conservative political orientation was associated with greater system justification both in general ($b = .27$, $SE = .03$, $\beta = .44$, $p < .05$) and with respect to economic matters in particular ($b = .17$, $SE = .02$, $\beta = .38$, $p < .05$). Similarly, national identification was associated

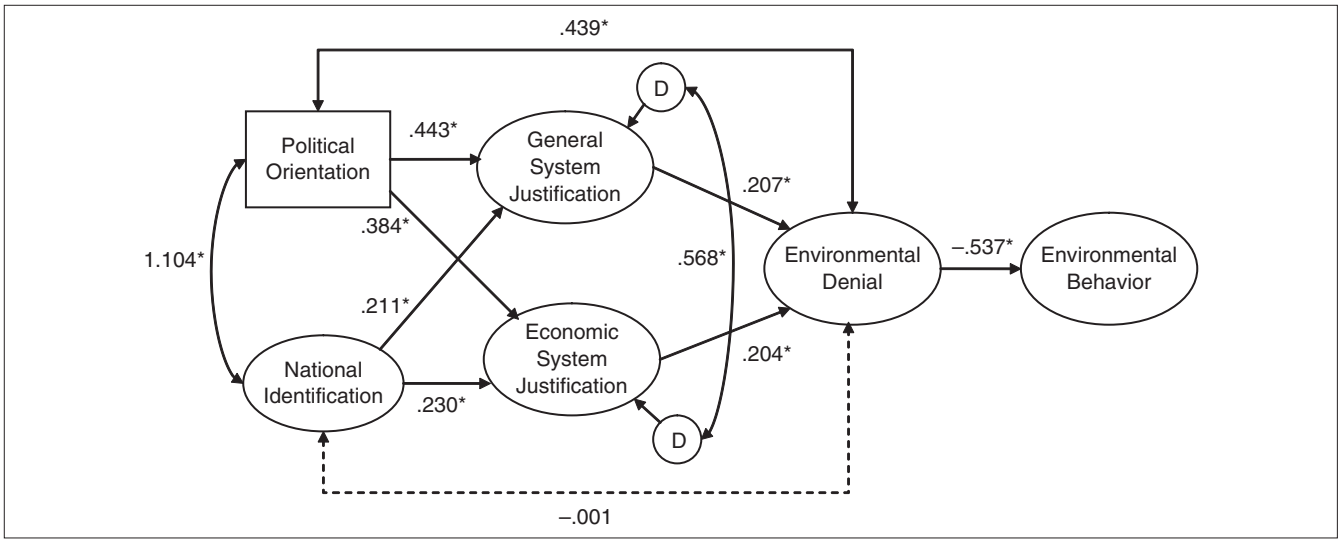

Figure 1. Hybrid structural model illustrating the effects of political orientation and national identification on general and economic system justification, denial of environmental realities, and environmental behavior (Study 2)
NOTE: Path coefficients are standardized. Asterisks indicate significant coefficients.

with increased general system justification ($b = .19$, $SE = .05$, $\beta = .211$, $p < .05$) and increased economic system justification ($b = .15$, $SE = .04$, $\beta = .23$, $p < .05$). Replicating and extending findings from the first study, engaging in both general and economic system justification predicted increased denial of environmental problems ($b = .14$, $SE = .06$, $\beta = .21$, $p < .05$, and $b = .18$, $SE = .08$, $\beta = .20$, $p < .05$, respectively). Finally, denial of environmental problems was associated with a decreased willingness to engage in behavior that is helpful to the environment ($b = -.53$, $SE = .07$, $\beta = -.54$, $p < .05$).

Following Baron and Kenny (1986), subsequent analyses revealed that general system justification accounted for a significant amount of the variance between political orientation and denial of environmental realities (Sobel statistic = 5.41, $p < .01$), as well as between national identification and denial (Sobel = 5.90, $p < .01$). Similarly, economic system justification accounted for a significant amount of the variance between political orientation and environmental denial (Sobel = 5.19, $p < .01$) and between national identification and denial (Sobel = 4.75, $p < .01$). The indirect paths from political orientation to denial ($b = .07$, $SE = .01$, $\beta = .170$, $p < .05$) and from national identification to denial ($b = .05$, $SE = .02$, $\beta = .090$, $p < .05$) were also significant. The direct path from political orientation to environmental denial remained statistically significant ($b = .11$, $SE = .02$, $\beta = .44$, $p < .05$), even after adjusting for both forms of system justification, although the path was significantly reduced. The effect of national identification was explained entirely by system justification ($b = -.001$, $SE = .03$, $\beta = -.001$, *ns*, for the direct path). The denial of environmental problems fully explained the effect of general system justification on pro-environmental behavior (Sobel = −6.42, $p < .01$; indirect path: $b = -.07$, $SE = .03$, $\beta = -.11$, $p < .05$), as well as the effect of economic system justification on pro-environmental behavior (Sobel = −5.54, $p < .01$; indirect path: $b = -.10$, $SE = .05$, $\beta = -.11$, $p < .05$).

Discussion

Our first two studies provide clear evidence that system justification tendencies are associated with greater denial of ecological problems and less willingness to take pro-environmental actions. Moreover, taking system justification into account helps explain why political orientation and national identification are related to environmental attitudes and behaviors. At the same time, the cross-sectional design of these studies and the correlational nature of the statistical analyses prevent us from concluding that a causal relationship exists between system justification and environmental attitudes or behaviors. Moreover, the results of the first two studies are somewhat discouraging from the perspective of what can be done for the environment. Given the prevalence of system justification tendencies, it is useful to ask whether they can be harnessed to promote environmentally beneficial outcomes. In our last study, we tackle these issues.

Study 3

The purpose of our final study was to provide direct experimental evidence for the connection between system justification motivation and behaviors aimed at helping versus harming the environment. To the extent that some people are reluctant to acknowledge environmental problems because they threaten the legitimacy (and perhaps

stability) of current cultural and economic practices, it may be possible to reframe environmental messages so that they work *with* rather than against system justification motivation. In other words, what is needed is a call to environmentalism that does not set off the system justification "alarm" but rather avoids (or even reverses) the negative association between protecting the social system and protecting the environment. More specifically, we hypothesized that reframing pro-environmental change as a means of preserving the "American way of life," and emphasizing that acting on behalf of the natural environment is therefore patriotic (rather than challenging to the system), would make it possible to draw on system justification motivation to inspire pro-environmental behavior. We expected that such messages would override the negative effect of system justification tendencies on pro-environmental intentions and behaviors. That is, people who are chronically high (vs. low) in terms of system justification tendencies should report stronger behavioral intentions to help the environment and engage in more pro-environmental behaviors when the message is framed as preserving of the societal status quo than when it is not.

Method

Participants. Forty-one New York University undergraduates (30 women, 11 men) participated in this study for course credit.

Materials and procedure. All experimental materials were administered on computers in a controlled laboratory setting. Following a procedure developed by Laurin et al. (2009), we first exposed all participants to a general passage emphasizing the fact that people are dependent on the country in which they live, to make their relationship to the socioeconomic system salient. Participants also read a brief introductory passage about scientific interest in the relationship between people and the environment. It read: "Researchers have always been interested in the state of the natural environment, and have paid attention to how it has changed over the years. Today, researchers are especially interested in the relationship between people and the environment."

Participants who were randomly assigned to the "system preservation" condition then read the following message: "Being pro-environmental allows us to protect and preserve the American way of life. It is patriotic to conserve he country's natural resources." Participants assigned to the control condition were not exposed to these last two sentences. Following the experimental manipulation, participants in both conditions answered four short questions about the clarity of the passage they had read to bolster the cover story.

Next, participants reported on their behavioral intentions with respect to the environment, including their willingness to change individual behaviors and support for collective action aimed at helping the environment ($\alpha = .93$). Specifically, they indicated their level of agreement or disagreement (on a 9-point scale) with each of 10 statements, such as: "I intend to use only recyclable and reusable products from now on"; "I intend to join and provide financial support to pro-environmental organizations in the near future"; "I intend to cut down on using electricity and driving by at least 50%"; and "I intend to actively participate in initiatives that help develop alternative energy sources."

To avoid raising suspicion concerning the goals of the study, we administered the Kay and Jost (2003) system justification scale ($\alpha = .77$) at the end of the experiment, along with some questions asking about basic demographic information. There was no significant difference between the two experimental conditions in terms of system justification scores, $b = -.74$, $SE = .38$, $\beta = -.29$, *ns*.

After completing the preceding materials, participants were given an opportunity to sign pro-environmental petitions that were allegedly linked to a campaign by an on-campus environmental organization. There were seven petitions available for participants to choose from on topics such as encouraging the governor to promote the development of "green jobs," urging Congress to permanently protect the Arctic Refuge, cutting emissions through cap and trade, and preventing oil spills caused by off-shore drilling. Textual material was drawn from actual online petitions (http://www.thepetitionsite.com). Participants were given total privacy to choose whether to sign any of the seven petitions and instructed simply to deposit any signed petitions into a closed box in their cubicle.

Because of the ordinal nature of the variable of interest (number of petitions signed), we computed a 3-point measure to denote whether the participant signed none, a few, or most of the petitions. This variable was coded such that 0 = *no petitions signed* (34.1% of the sample), 1 = *a few petitions signed* (i.e., the participant signed one, two, or three petitions; 29.3% of the sample), and 2 = *most petitions signed* (i.e., the participant signed four or more petitions; 36.6% of the sample).

Results and Discussion

Based on the results of our first two studies we expected to find a negative relationship overall between system justification and environmental intentions and behaviors. However, we hypothesized that reframing pro-environmental change as consistent with system preservation would attenuate, and possibly even reverse, this negative relationship. To test these hypotheses, we conducted (a) a hierarchical linear regression analysis that examined the effects of system justification (as a continuous measure), experimental condition (1 = *system preservation framing* vs. 0 = *control*), and the interaction between system justification and experimental condition on pro-environmental intentions, and (b) an ordered logistic

regression with the same independent variables predicting the behavioral measure of petition signing.

The first set of analyses focused on environmental intentions as the dependent variable. System justification marginally predicted environmental intentions in the expected direction, $b = -.46$, $SE = .26$, $\beta = -.36$, $t(37) = 1.75$, $p < .09$. No main effect of experimental condition was observed, $b = .20$, $SE = .52$, $\beta = .06$, *ns*. The analysis did yield a significant interaction between system justification and experimental condition, $b = .95$, $SE = .41$, $\beta = .49$, $t(37) = 2.29$, $p = .03$, as hypothesized.

To probe the interaction, we compared the effect of reframing pro-environmental change in terms of system preservation separately for people scoring high versus low on system justification (i.e., 1 *SD* above and below the mean). For high system justifiers, behavioral intentions were indeed more pro-environmental in the reframing condition than in the control condition, $b = 1.40$, $SE = .82$, $\beta = .44$, $t(37) = 1.72$, $p = .09$. For low system justifiers, by contrast, support for the environment was not reliably different in the reframing condition as compared to the control condition, $b = -1.00$, $SE = .65$, $\beta = -.32$, $t(37) = -1.53$, $p > .10$.

Putting it another way, in the control condition we found a negative (albeit marginal) relationship between system justification and environmental intentions, $b = -.46$, $SE = .26$, $\beta = -.36$, $t(37) = 1.75$, $p < .09$. Thus, the control condition replicated the results from our first two studies. When the pro-environmental message was reframed as system preserving, however, this negative relationship was eliminated. That is, in the experimental condition, there was no reliable relationship between system justification and environmental intentions, $b = .49$, $SE = .32$, $\beta = .39$, $t(37) = 1.53$, $p = .14$. The overall pattern of results is illustrated in Figure 2.

The second set of analyses focused on behavioral outcomes (i.e., the likelihood of signing pro-environmental petitions). We conducted an ordered logistic regression using experimental condition, system justification, and their interaction to predict whether participants signed no petitions, a few petitions, or most of the petitions. The analysis yielded a marginal main effect of system justification, indicating that this variable was inversely related to the likelihood of signing a pro-environmental petition, $b = -.64$, $SE = .38$, Wald = 2.84, $p = .09$. There was no reliable main effect of experimental condition, $b = .58$, $SE = .65$, Wald = .82, *ns*. As hypothesized, the analysis yielded a two-way interaction between system justification and experimental condition, $b = 1.26$, $SE = .57$, Wald = 5.01, $p = .03$. These results indicate that in the control condition there was a marginal negative effect of system justification on the probability of signing petitions, as noted previously. However, when the message was reframed as system preserving, there was no longer a reliable relationship between system justification and petition signing, $b = .63$, $SE = .41$, Wald = 2.33, *ns.*

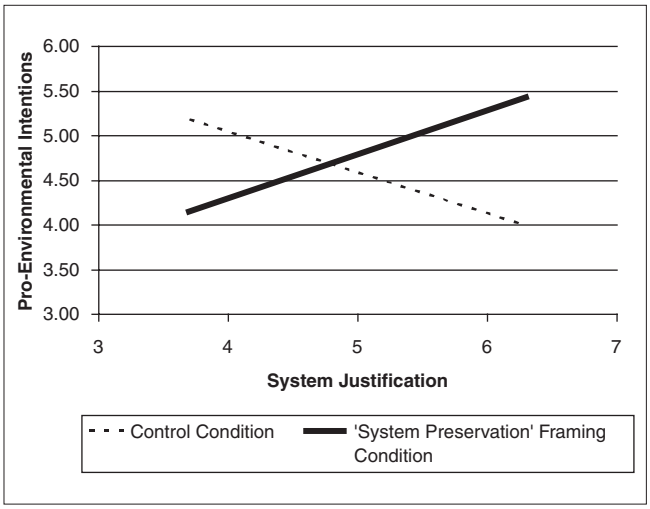

Figure 2. Effects of system justification on pro-environmental behavioral intentions as a function of experimental condition

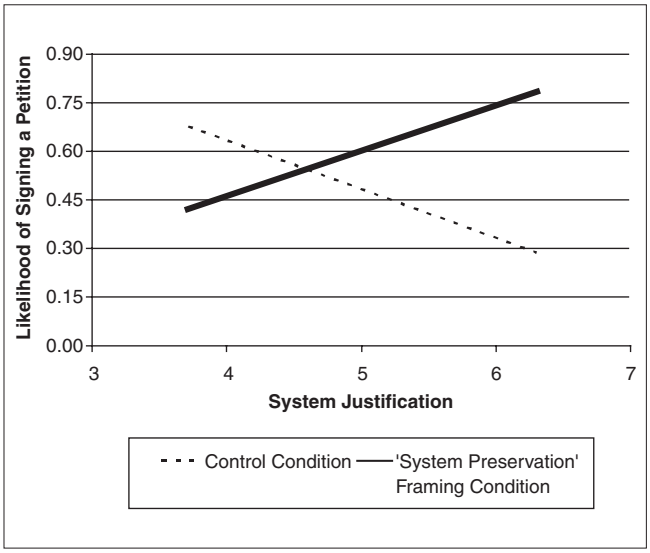

Figure 3. Effects of system justification on the likelihood of signing a pro-environmental petition as a function of experimental condition

In Figure 3 we have illustrated the likelihood that a participant signed at least one of the petitions as a function of his or her score on system justification (1 *SD* above or below the mean) and assignment to the "system preservation" (vs. control) condition. In sum, reframing environmentalism as supporting (rather than undermining) the American way or life eliminates the negative effect of system justification on pro-environmental behavior.

General Discussion

The research summarized in this article represents one attempt to answer Clayton and Brook's (2005) call to harness social psychological knowledge in the service of resolving the current environmental crisis. It also advances our theoretical understanding of ideological dynamics in general and the role of system justification motivation in particular—not only in hampering social change efforts (see also Wakslak et al., 2007) but also (and for the first time) circumstances in which system justification tendencies can *facilitate* constructive social change.

System Justification and Denial

In Studies 1 and 2 (and in the control condition in Study 3), we obtained clear evidence linking system justification tendencies to the denial of environmental problems and failure to engage in pro-environmental behavior. These findings are the first to provide direct empirical evidence that system justification is associated with denial in the face of problems that are endogenous to the social system; they also highlight the important role that denial (alongside rationalization) plays in the perpetuation of a problematic status quo. This evidence may well constitute the most dramatic demonstration of the social costs associated with system justification insofar as people seem willing to sacrifice not only their own long-term self-interest but also the well-being of others and perhaps even the planet as a whole. Such findings portend a destructive situation in which the psychological motivation to defend the socioeconomic system paradoxically leads people to ignore and therefore increase their vulnerability to events that threaten that very system. By engaging in a denial of problems that are endemic to the system, rather than striving for clarity, understanding, and a change of course, negative cycles are perpetuated, and genuine change is stifled.

Our results therefore substantiate prior observations that denial is a powerful barrier to environmentalism (e.g., Stoll-Kleeman et al., 2001; Takacs-Santa, 2007). In the present research, we sought to uncover the motivational and ideological underpinnings of the denial of global warming. Given what we have learned, it seems unlikely that direct and widespread confrontation of environmental problems will occur unless psychological attachments to the status quo are addressed and appeased. To the extent that failure to protect the environment arises in part from a perceived incompatibility between taking care of the natural world and upholding current social and economic practices and institutions, environmentalism is likely to provoke resistance and ideological defensiveness. Importantly, much of the problem concerns the *perception* of incompatibility, and our findings from Study 3 provide some evidence that this perception is potentially subject to revision. Reframing environmentalism as patriotic and a means of protecting our "way of life" eliminates the negative association between system justification and the desire to help the environment.

Individual Differences in Environmental Attitudes and Behaviors

The results of our first two studies also suggest that commonly observed differences between demographic and ideological groups with respect to environmental attitudes can be explained in part by system justification tendencies. Specifically, political conservatives scored higher than liberals on measures of system justification (see also Jost, Nosek, et al., 2008), and this partially accounted for their propensity to minimize or deny environmental problems and their reluctance to bear personal responsibility for alleviating the causes of environmental problems. These findings shed light on the oft-noted tendency of political conservatives to express less concern about environmental problems compared to liberals (e.g., Begley, 2007; Carroll, 2007; Dunlap, 2008). However, system justification did not fully account for the effect of political orientation on environmental attitudes. It seems likely that "top-down" institutional factors are also at work, including differences in the official platforms of the Republican and Democratic parties (Begley, 2007; McCright & Dunlap, 2003).

The current research also provides one of the first investigations into the nature of the relationship between national identification and system justification, as well as the relationship between national identification and attitudes concerning the natural environment. Not too surprisingly, people who are more highly identified with their country and are more invested in its success are especially motivated to perceive the socioeconomic system of that country as fair and legitimate (cf. Shayo, 2009; Laurin et al., 2009). However, system justification motivation, as we have seen, also carries with it potentially negative consequences, such as resisting efforts to improve the status quo, which ultimately hurts the very system in which one is psychologically invested (see also Jost, Blount, et al., 2003; Wakslak et al., 2007). More optimistically, our third study suggests that by emphasizing the fact that the "American way of life" depends on a healthy natural environment, it is possible to motivate those who are otherwise personally or ideologically inclined to dismiss environmental problems to confront those problems openly and to take constructive action.

The Possibility of "System-Sanctioned Change"

Our third and final study provides encouraging evidence that system justification tendencies need not hinder the formation of pro-environmental intentions and behaviors. To the extent that we can encourage people to perceive environmentalism as a way of upholding (rather than threatening) cherished societal institutions and practices, it may be possible to transform resistance and inaction into constructive engagement. The

key, it seems, is to characterize pro-environmental change as "system sanctioned," that is, as a desired, perhaps necessary, means of preserving the American way of life, and to communicate that it is, among other things, patriotic to defend and protect natural resources. Under such circumstances, it is conceivable that many more citizens (including more of those who are presently skeptical) will embrace and begin to justify a new, more environmentally sound regime. Along these lines, Kay et al. (2002) found that people engage in anticipatory rationalization of the status quo so that as the perceived likelihood of an event increases, it is judged to be increasingly desirable. This aspect of system justification motivation may well give rise to stronger support for change in the face of pro-environmental legislation and economic initiatives, once they are perceived to be inevitable.

The communication of information about environmental problems leaves much room for interpretational ambiguity, partly because of the novelty and complexity of the issues. Although this ambiguity has often contributed to confusion and misinterpretation, our findings suggest that it can also be used constructively. The philosophy that assumes an inherent opposition between the well-being of our social and especially economic systems and the natural environment is deeply flawed, at least in terms of its behavioral consequences. Our research suggests that people may be more open to pro-environmental initiatives than is commonly assumed. If including a brief message suggesting that environmentalism is patriotic and helps preserve our way of life can eliminate the negative effect of system justification, there is reason to hope that a more concerted campaign can succeed in creating the perception that caring about one's country (and its socioeconomic institutions) is compatible with a concern for the natural world.

There are some signs that change of this type is already taking place. For instance, in addressing the need for comprehensive energy reform, President Obama stated:

> This investment will not only help us reduce our dependence on foreign oil, making the United States more secure. And it will not only help us bring about a clean energy future, saving our planet. It will also help us transform our industries and steer our country out of this economic crisis by generating five million new green jobs that pay well and can't be outsourced. (Obama, 2008)

Thus, it seems that political leaders are beginning to acknowledge and embrace environmental challenges in certain terms and to represent environmental problems not as a threat to the status quo but rather as an opportunity to strengthen and otherwise maintain our socioeconomic system. Rather than relentlessly pitting the system against the environment, it appears that it may be possible—both in the laboratory and in society at large—to overcome at least one significant social psychological obstacle to bringing about much-needed change with respect to environmental policies and practices.

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Note

1. As a preliminary step to calculating the structural model, we constructed a measurement model in which all of the variables were permitted to covary. This model fit the data well: $\chi^2/df = 325.842/138$, comparative fit index = .939, goodness-of-fit index = .926, root mean square error of approximation = .056. More importantly, we found that the structural model fit the data just as well as the measurement model: $\Delta\chi^2(4) = 6.436$, *ns*.

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