

# Reducing the gap between pro-environmental disposition and behavior: The role of feeling power

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## Abstract

Environmental issues are some of the most pressing threats the world is facing nowadays. In this context, motivating individual pro-environmental behavior becomes highly relevant. One strategy is to harness people's pro-environmental dispositions (e.g., biospheric values, pro-environmental attitudes). Although acknowledging the need to behave pro-environmentally lies at the core of these dispositions, the extent to which they are reflected in day-to-day pro-environmental practices fluctuates to a great extent. How to bridge this gap between dispositions and behaviors in pro-environmentalism? This research tests a novel psychological solution, that is, to heighten subjective feelings of power. Power depicts people's control over their own and others' outcomes. Two studies (total  $N = 338$ , with  $n = 200$  in Study 1 and  $n = 138$  in Study 2) manipulated people's situational sense of high versus low power (by recalling and writing about relevant incidents), measured pro-environmental dispositions (biospheric values in Studies 1 and 2; attitude toward a specific environmental cause in Study 2), and examined their effects on pro-environmental behaviors (spending time on environmental persuasion in Study 1 and spending money on environmental donation in Study 2). Overall, both studies revealed that pro-environmental dispositions predicted pro-environmental behaviors, but only when the actors were prompted to experience a high instead of a low sense of power. The findings illuminate power as an important and viable communication tactic—to orient people toward their dispositions and practice what they preach in pro-environmentalism.

## 1 | INTRODUCTION

Environmental sustainability is a priority area in the agenda for Sustainable Development adopted by the United Nations (UN) (2015). In this context, research on individual-level factors that may motivate environmental-friendly lifestyles, and importantly, when and in which situations these factors may work best, becomes highly relevant to inform green policy-making (Steg & Vlek, 2009). The extant literature on pro-environmental behaviors has highlighted a number of internal dispositions that might motivate people to behave in a pro-environmental manner (Steg et al., 2013; Steg &

Vlek, 2009; Vlek & Steg, 2007), such as the endorsement of biospheric values (Bouman et al., 2018; Stern et al., 1999), environmental concern (Fransson & Gärling, 1999), and pro-environmental attitudes (Kollmuss & Agyeman, 2002), to name a few. However, the extent to which these “green” dispositions are able to translate into pro-environmental behaviors has been questioned (Bamberg, 2003). For instance, though the vast majority agrees that protecting the environment is important (Eurobarometer, 2017), only a relatively small percentage of Europeans have actually practiced pro-environmental behaviors (e.g., cutting down their energy consumption, and avoiding single-use plastic goods).

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The disposition–behavior gap in pro-environmentalism, and ways to overcome it, have puzzled researchers during the past few decades (Kollmuss & Agyeman, 2002), and nowadays continues to do so (Bamberg, 2003; Bamberg & Möser, 2007; Siegel et al., 2018). To bridge this gap, previous literature has explored the role of different social and psychological mechanisms such as self-control (Redondo & Puelles, 2017), perceived values and risks (Park & Lin, 2018), and self-identity (Valaei & Nikhashemi, 2017). In the present research, we explore the effect of another potential bridging mechanism: a subjective sense of power. Previous research implies that power endows autonomy, and orients individuals toward dispositions and salient goals. Based on this idea, we reason that experiencing power should alleviate the pro-environmental disposition–behavior gap. Therefore, pro-environmental dispositions should positively predict pro-environmental behaviors particularly when people are prompted to experience a high instead of a low sense of power. By illuminating the role of power-based prompts in behavioral commitment to pro-environmentalism, the current research can have practical implications to improve the effectiveness of environmental messages and communications, especially among those who are already leaning to pro-environmental lifestyles due to individual differences in pro-environmental dispositions. Below, we elaborate on the core concepts and our line of reasoning in more detail.

### 1.1 | The gap between pro-environmental dispositions and behaviors

Following a widely acknowledged definition, the current research conceptualizes pro-environmental behavior as “behavior that consciously seeks to minimize the negative impact of one’s actions on the natural and built world” (Kollmuss & Agyeman, 2002, p. 240). An essential component of pro-environmental behavior is that it has real interaction with, and direct positive impact on, the external world, especially in contrast to dispositional tendencies like environmental values and attitudes toward a pro-environmental cause. We define pro-environmental dispositions broadly as personal and psychological constructs including overarching pro-environmental values (in Studies 1 and 2), and as specific attitudes and intentions toward a particular environmental cause (in Study 2; Corraliza & Berenguer, 2000; Dietz et al., 1998; Newell et al., 2014), which are moderately to highly correlated according to previous research (Corraliza & Berenguer, 2000; Steg et al., 2014). As both are antecedents that elicit behavior in a specific context, dispositions play an internal role within the person(s) while the environment is a relatively external factor of influence.

The gap emerges across various measures of pro-environmental dispositions versus behaviors. Meta-analytical evidence shows that the correlation between pro-environmental attitudes and behaviors is only small to medium (Bamberg & Möser, 2007), and that the same goes for the correlation between biospheric values and beliefs in environmental problems like climate change (Hornsey et al., 2016). Moreover, other research indicates that environmental concern

is only weakly associated to specific pro-environmental behaviors (Bamberg, 2003). Indeed, global figures show that although most people declare to be highly concerned about the current state of the environment (Leiserowitz et al., 2006)—a trend that has continued to rise during the past few years (Capstick et al., 2015; Lampert et al., 2019), actual pro-environmental behaviors are not so widespread as global levels of environmental concern would suggest. Dispositions (e.g., values) explain a substantial variance of behaviors (Bardi & Schwartz, 2003). In particular, values refer to beliefs and desirable goals that motivate actions across different social contexts (Bardi & Schwartz, 2003; Schwartz, 2012). The values to which people give priorities also guide them through vulnerable and uncertain times of, for example, feelings threats by death-related thoughts (Burke et al., 2010). Then, considering pro-environmental dispositions as goals to actualize for both individuals and human societies, what can better facilitate people to practice what they believe and preach?

### 1.2 | Feeling power and goal pursuit

In common resources dilemmas such as general environmental protection and climate change mitigation (Van Lange et al., 2013), humans are both powerful agents in influencing the natural environment and powerless victims when (human induced) natural catastrophes happen (Milinski et al., 2008). Here, we address the implications of power in the context of environmental behavior, mainly based on its influences on (1) personal control and autonomy and (2) inward orientation toward personal goals—specifically as pro-environmental dispositions in the current research.

Power originates from one’s asymmetrical control over valued resources (e.g., possession of a higher position in an organization; Magee & Galinsky, 2008). Subjective experiences of power can have both interpersonal/social and intrapersonal/personal consequences (Cislak et al., 2018; Lammers et al., 2009). At the interpersonal/social level, control over important resources confers people with stronger influences on others and the external environment (Galinsky et al., 2003). Consequences of having power at the interpersonal/social level are usually described as negative as, for example, inducing more social distance with others (Magee & Smith, 2013), reducing compassion (Van Kleef et al., 2008) and perspective taking (Galinsky et al., 2006). As such, as compared to their low-power counterparts, high-power holders can behave more selfishly, aggressively, and exploitatively in social interactions with others (Blader & Chen, 2012; Cislak et al., 2018; Dubois et al., 2015). At the intrapersonal/personal level, however, increasing evidence suggests positive underpinnings of experiencing power. For example, power endows people with subjective feelings of control and autonomy (Inesi et al., 2011; Lammers et al., 2016), refrains them from the influences of others (Galinsky et al., 2008; Guinote, 2007), and ultimately promotes authenticity and individual well-being (Kifer et al., 2013; Weinstein & Ryan, 2010). Although feelings of autonomy and influence are often correlated and cofounded, recent research suggests that feelings of personal autonomy—rather than social influence—play a dominant

role in people's desires for, and experiences of, power (Lammers et al., 2016).

Drawing on the implications of power on personal feelings of control and autonomy, the current research examines how power influences personal goal pursuits in pro-environmentalism. Experiences of power elicit selective focus on the salient goal and execution of the goal regardless of situational confounds (e.g., potential behavioral consequences; Galinsky et al., 2003); power can thus increase goal-directed behavior (Magee & Smith, 2013; Ryan & Deci, 2000; Weinstein & Ryan, 2010). Supporting this theorizing, previous research on metacognition (Petty et al., 2002) has also shown that feelings of power can validate individuals' reliance on currently activated thoughts and increase their influence on behavioral intentions (DeMarree et al., 2014). Without situational induction of salient goals, people's chronic dispositions also actively guide their behavior (Guinote, 2007; Magee & Smith, 2013). In other words, sense of power prompts behavioral demonstrations of people's inherent tendencies (DeMarree et al., 2012; Kifer et al., 2013; Kraus et al., 2011), via the validation of individuals' true opinions and protection from external interferences (e.g., conformity pressures; Galinsky et al., 2008). For instance, feelings of power facilitate behavioral expressions of chronic relationship orientation, such that experiences of high-power facilitate self-interested behavior for those with an exchange orientation but stimulate social responsible behavior for those with a communal orientation (Chen et al., 2001). Of particular relevance to the current research question, DeCelles et al. (2012) found that, though situational experiences of high (vs. low) power leads to less moral behavior among people with a weak moral identity, feelings of power increase moral behavior among people with a strong moral identity. DeCelles and colleagues (2012) examined the moderating effect of power on moral rather than on environmental behavior. Nonetheless, the very understanding of environmental sustainability supposes its moral roots as conflicting interests between the self and the collective, and contemporary environmental discourses are largely based on moral grounds (Feinberg & Willer, 2013). Therefore, we argue that induced feelings of power can bridge a gap between pro-environmental dispositions and behaviors, mimicking power-moderated outcomes of moral identity on moral behavior (DeCelles et al., 2012). Specifically, for those who have relatively strong instead of weak pro-environmental dispositions, prompts of high (vs. low) power should amplify pro-environmental behaviors. To the best of our knowledge, no research has explored this idea on altruistic environmental actions such as donations to a pro-environmental charity.

## 2 | THE CURRENT RESEARCH

In the current research, across two studies, we examined how powerful (vs. powerless) feelings would influence the relation between people's pro-environmental dispositions and actual pro-environmental behavior. The current research construes power as an episodic state (e.g., Galinsky et al., 2003, 2008) while acknowledging

that it can be alternatively experienced as a stable disposition (Anderson et al., 2012). The purpose of this construal is to examine power as a viable tactic to practically guide pro-environmental propaganda. The idea has already been prevalently deployed in product marketing and public campaigns, to facilitate positive outcomes for individuals like improvement of self-esteem, subjective status, and psychological well-being (Knight & Haslam, 2010; Rucker & Galinsky, 2009; Sivanathan & Pettit, 2010). Based on our line of reasoning, we predict that experience of power facilitates people to feel autonomy and control, and thus demonstrate their intrinsic environmental values and attitudes. Specifically, those with strong (vs. weak) pro-environmental dispositions should increase their pro-environmental behavior when experiencing high rather than low power. To test our hypothesis, we manipulated situational powerful versus powerless feelings and examined their effects on behavioral domains of environmental persuasion (Study 1) and environmental donation (Study 2).

## 3 | STUDY 1

Study 1 examined people's willingness to write a persuasion message to encourage others' pro-environmental behavior, as a function of power feelings and personal environmental values.

### 3.1 | Method

#### 3.1.1 | Participants

We intended and recruited 200 American participants from the online crowdsourcing platform Prolific Academic. The sample size was determined by a priori power analysis, which yielded  $N = 191$  to detect a power by value interaction effect ( $\eta_p^2 = 0.04$ , according to DeCelles et al., 2012) with 80% power at an alpha level of 0.05. Two hundred and five participants completed our survey. After excluding five participants who clearly indicated that they could not retrieve an incident about high or low power as required in our power manipulation, the final sample size was 200 participants (84 males;  $M_{\text{age}} = 33.8$  years,  $SD = 11.2$ ; 43.0% having bachelor's degree; 35.0% Republicans).

#### 3.1.2 | Design and procedure

We employed a high versus low power between-subjects design. After informed consent, basic demographic information (age, gender, educational level, and political orientation) and measured environmental values, participants were randomly assigned to either recall a high-power or a low-power experience, and were eventually invited to an ostensibly unrelated task—writing a message to encourage others' pro-environmental behavior.

To examine people's environmental values, we employed the Biospheric subscale (four items; e.g., "It is important to [him/her] to prevent environmental pollution";  $\alpha = 0.90$ ) of the Environmental Portrait Value Questionnaire (below as Environmental-PVQ; Bouman et al., 2018), and additionally included the Altruistic subscale (five items; e.g., "It is important to [him/her] to be helpful to others";  $\alpha = 0.86$ ) as a covariate. The Environmental-PVQ was adapted from an environment-oriented Schwartz Value Survey (De Groot & Steg, 2008), and identified Biospheric, Altruistic, Egoistic, and Hedonic values as four fundamental value types in predicting environmental behaviors. To eliminate potential social desirability bias, the Environmental-PVQ asked participants to evaluate how much the person in the description (gender matched with participants' own indicated gender; i.e., "him" if participants were male and "her" if participants were female) was similar to themselves (on a 7-point scale from 1 = *not like me at all* to 7 = *very much like me*).

To manipulate situational feelings of power, participants were then asked to write a 120-word essay about a particular incident (as in Galinsky et al., 2003, 2008), in which "you [participants] controlled the ability of another person or persons to get something they wanted, or were in a position to evaluate those individuals" (in the high-power condition;  $n = 104$ ) or "someone had control over your [participants'] ability to get something you wanted, or was in a position to evaluate you" (in the low-power condition;  $n = 97$ ). As manipulation check, a research assistant who was blind to the study design and purpose evaluated the essays on the extent to which the person was in charge in the described situation (on a 5-point scale from 1 = *not at all in charge* to 5 = *totally in charge*; as in DeCelles et al., 2012; Galinsky et al., 2003).

To measure participants' environmental behavior, they were given an opportunity to (1) write a persuasion message about environmental protection, or (2) end the survey directly. We explained that their message would be used for a future large-scale intervention study aiming at improving other people's daily pro-environmental practices by regularly receiving persuasion messages. At the end of the survey, participants were thanked and debriefed.

## 3.2 | Results

### 3.2.1 | Manipulation check

As intended, an independent  $t$  test revealed that participants in the high-power condition had significantly more power ( $M = 3.58$ ,  $SD = 0.76$ ) in their essays than those in the low-power condition ( $M = 2.61$ ,  $SD = 1.08$ ),  $t(199) = 7.41$ ,  $p < .001$ ,  $d = 1.04$ .

### 3.2.2 | Power, values, and behavior

Twenty participants (10%) volunteered to write a persuasion message about environmental protection (i.e., environmental behavior = 1; vs. 0). We included (1) power (high power = 1, low power =

-1), mean-centered biospheric values ( $M = 5.35$ ,  $SD = 1.25$ ), and (2) their two-way interaction in two steps of a binary logistic regression analysis. Although nonsignificant, we found a tendency that power (Wald's  $\chi^2 = 3.14$ ,  $Exp(B) = 2.49$ ,  $p = .08$ , 95% CI [0.91, 6.84]), but not biospheric values (Wald's  $\chi^2 = 2.32$ ,  $Exp(B) = 1.40$ ,  $p = .13$ , 95% CI [0.91, 2.17]), increased people's engagement in environmental persuasion. More importantly though, a significant power by biospheric values interaction effect (Wald's  $\chi^2 = 4.11$ ,  $Exp(B) = 2.48$ ,  $p = .04$ , 95% CI [1.03, 5.95]) revealed that feelings of high (vs. low) power increased people's likelihood to write an environmental persuasion message, while only for those who strongly (+ 1 SD) endorsed biospheric values (Wald's  $\chi^2 = 6.22$ ,  $Exp(B) = 6.08$ ,  $p = .01$ , 95% CI [1.47, 25.09]) and not for those who reported relatively weak (-1 SD) endorsement of such values (Wald's  $\chi^2 = 0.30$ ,  $Exp(B) = 0.63$ ,  $p = .58$ , 95% CI [0.12, 3.26]). Put differently, biospheric values predicted people's environmental persuasion message writing, while only when they felt a sense of high power (= 1; Wald's  $\chi^2 = 4.88$ ,  $Exp(B) = 2.02$ ,  $p = .03$ , 95% CI [1.08, 3.76]) and not when they felt a sense of low power (= -1; Wald's  $\chi^2 = 0.42$ ,  $Exp(B) = 0.82$ ,  $p = .52$ , 95% CI [0.44, 1.51]).

An alternative logistic regression analysis was conducted, including the demographic information and altruistic values ( $M = 5.72$ ,  $SD = 1.05$ ) as covariates. The interaction effect described above between power and biospheric values remained significant regardless of whether to control for altruistic values ( $p = .19$ ) or any other demographic information ( $ps > .18$ ).

## 3.3 | Discussion

While only a small number of participants volunteered extra time to write a persuasion message to encourage others' pro-environmental behavior, we found support for the predicted interaction effect between endorsement of pro-environmental values (i.e., biospheric values) and power on environmental behavior. Specifically, power magnified the positive association between biospheric values and pro-environmental behavior, such that stronger biospheric values predicted a higher likelihood of environmental persuasion only when the actors experienced a high but not low sense of power. The effect of biospheric values was not accounted for by altruistic values, which excluded the alternative explanation that participants wrote the message for the consideration of helping researchers in the future study.

Study 1 examined pro-environmental behavior as voluntary engagement in persuasion of others' pro-environmental practices. Although we depicted the persuasion behavior as environmental-oriented, the enactment of persuasion in itself can reflect a dominance (as contrary to submissiveness; Magee & Galinsky, 2008) behavioral style in response to powerful (vs. powerless) feelings. Study 2 then examines the interactive effect between power and pro-environmental dispositions on a more direct indicator of environmental behavior—donation to an environmental charity (Clements et al., 2015; Lange & Dewitte, 2019).

## 4 | STUDY 2

Study 2 aimed to replicate the power by biospheric values interaction effect on pro-environmental behavior, here conceptualized as environmental donations. Furthermore, we extended the measurement of pro-environmental dispositions as both overarching environmental values and specific attitude toward the targeted environmental charity. We administered the attitudinal and behavioral measures with a 7-day interval to eliminate any possible demand effect.

We additionally explored an alternative mechanism of power effects on pro-environmental behaviors. Both pro-environmental actions (vs. inactions) of persuasion and donation can be attributed to the activation of the Behavioral Approach System (BAS) and the suppression of Behavioral Inhibition System (BIS). It is possible that power activates action orientations (i.e., BAS) regardless of whether the actions have pro-environmental or un-environmental consequences (Galinsky et al., 2003; Keltner et al., 2003). We therefore included an emotional measure of BAS/BIS, to examine whether the effects of power would maintain after controlling for approach/inhibition motivations as a function of power.

### 4.1 | Method

#### 4.1.1 | Participants

We intended 200 American participants from Prolific Academic as in Study 1. Two hundred and two participants completed our Phase-1 survey, and 70% of them (i.e., 140 participants; 53 males;  $M_{\text{age}} = 34.6$  years,  $SD = 11.3$ ; 34.1% having bachelor's degree; 26.8% Republicans) completed our Phase-2 survey after 7 days. We excluded two participants who failed to recall a power-related incident, and included the remaining 138 participants who completed both phases of the study in further analysis

#### 4.1.2 | Design and procedure

We again employed a high versus low power between-subjects design. The Phase-1 survey started with informed consent, and assessment of basic demographic information (age, gender, educational level, and political orientation). Participants were then asked to complete the measures concerning their endorsement of biospheric values, and their attitude toward an environmental charity. With a 1-week interval, participants who completed the Phase-1 survey received an invitation to complete the Phase-2 survey, which included the power manipulation and measurement of environmental behavior.

To measure environmental values, Study 2 used the Biospheric subscale as in Study 1 (Bouman et al., 2018;  $\alpha = 0.89$ ), and also included the Altruistic values subscale as a covariate ( $\alpha = 0.87$ ). To measure specific environmental attitude, we investigated people's *hypothetical* donation intention to an environmental organization

(i.e., World Wide Fund for Nature; WWF). Together with participants' actual donation to the same organization, their hypothetical versus actual donated amount of money comprised a validated measure of environmental attitude-behavior gap (Clements et al., 2015). Specifically, participants were asked to imagine a hypothetical donation situation, to "help researchers get some preliminary data about how much bonus future respondents may donate to an organization." They imagined to have received a \$0.5 bonus and have a chance to donate some of the bonus to WWF—an international conservation organization. We emphasized that they would receive the entire reward of the Phase-1 survey regardless of their answers to the hypothetical donation scenario. Participants indicated their intended amount of donation on a slider ranging from 0 to 50 cents.

After 1 week, participants were recruited again to first recall and write about a power-related incident as in Study 1, randomly assigned to either a high-power ( $n = 67$ ) or a low-power condition ( $n = 71$ ). Different from Study 1, as manipulation check, participants were asked to evaluate their own power feelings in the situation (on a 5-point scale from 1 = *not at all in charge* to 5 = *totally in charge*). We then measured participants' approach/inhibition emotions (Crowe & Higgins, 1997; Higgins et al., 1997) as covariates. Participants evaluated 12 mood descriptions based on how they felt at the moment (on a 5-point scale ranging from 1 = *not at all* to 5 = *very much*), including three items in each dimension of cheerfulness (e.g., satisfied;  $\alpha = 0.94$ ), dejection (e.g., disappointed;  $\alpha = 0.93$ ), agitation (e.g., tense;  $\alpha = 0.91$ ), and quiescence (e.g., calm;  $\alpha = 0.89$ ).

Following the power manipulation, we measured participants' environmental behavior. Participants were told that they would earn a bonus of \$0.5 for completing both Phases of surveys, and have a real chance to donate some of the bonus to WWF. We emphasized that their indicated amount would be deducted from their \$0.5 bonus and donated to WWF. Participants then indicated the actual amount of donation on a slider ranging from 0 to 50 cents, thanked and debriefed at the end of the survey, and received the amount of bonus excluding the deducted portion of donation.

### 4.2 | Results

#### 4.2.1 | Manipulation check

The power manipulation worked as intended. Participants in the high-power condition ( $M = 3.99$ ,  $SD = 0.77$ ) felt that they were more in charge than those in the low-power condition ( $M = 1.75$ ,  $SD = 0.95$ ),  $t(137) = 15.15$ ,  $p < .001$ ,  $d = 2.59$ .

#### 4.2.2 | Power, values, and behavior

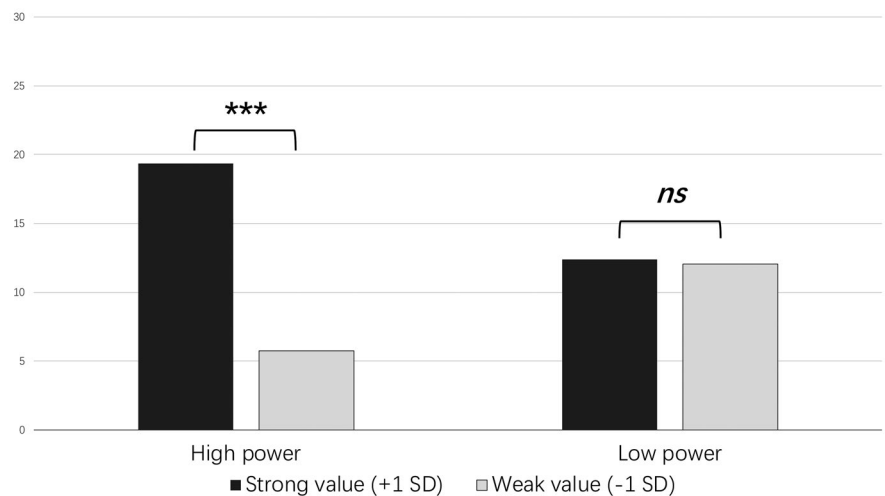
The descriptive information and correlations of main variables can be found in Table 1. We conducted a linear regression analysis, entering (1) power (high power = 1, low power = -1) and mean-centered

**TABLE 1** Means, standard deviations, and correlations of main variables in Study 2

	M (SD)	1	2	3	4	5	6	7	8
1. Power	-	-							
2. Environmental value	5.41 (1.22)	0.014	-						
3. Altruistic value	5.77 (1.09)	0.014	0.586**	-					
4. Environmental attitude	22.79 (19.16)	-0.144	0.285**	0.261**	-				
5. Cheerfulness	9.27 (3.54)	0.103	-0.088	0.018	0.027	-			
6. Dejection	6.91 (3.66)	-0.275**	-0.007	0.007	0.034	-0.694**	-		
7. Agitation	7.05 (3.64)	-0.273**	0.057	0.002	0.023	-0.619**	0.807**	-	
8. Quiescence	9.25 (3.24)	0.085	-0.041	0.039	0.099	0.715**	-0.626**	-0.686**	-
9. Environmental donation	12.43 (15.60)	0.014	0.212*	0.278**	0.625**	-0.042	0.057	0.093	0.034

Note: Power was dichotomous with low power = -1 and high power = 1. Environmental value and altruistic value ranged from 1 to 7. Environmental attitude and behavior ranged from 0 to 50 cents. Emotions of cheerfulness, dejection, agitation, and quiescence all ranged from 1 to 15.

\*\* $p < .01$ ; \* $p < .05$ .

**FIGURE 1** The interaction effect of power and biospheric value on environmental donation (unit: cent) in Study 2. *ns.*  $p > .10$ . \*\*\* $p < .001$ 

biospheric values ( $M = 5.41$ ,  $SD = 1.22$ ), and (2) their two-way interaction into a two-step regression model. Results revealed a main effect of the biospheric values,  $B = 2.70$ ,  $SE = 1.07$ ,  $t = 2.52$ ,  $p = .01$ ,  $\eta_p^2 = 0.04$ , 95% CI [0.58, 4.82], but not of power,  $B = 0.18$ ,  $SE = 1.31$ ,  $t = 0.13$ ,  $p = .89$ , on the amount of environmental donation. Moreover, as in Study 1, we found a significant interaction between power and biospheric values,  $B = 2.70$ ,  $SE = 1.05$ ,  $t = 2.57$ ,  $p = .01$ ,  $\eta_p^2 = 0.05$ , 95% CI [0.62, 4.78]. Further analyses (see Figure 1) suggested that participants' biospheric values positively predicted the amount of donation to environmental causes, only when the actors felt themselves as powerful ( $= 1$ ;  $B = 5.55$ ,  $SE = 1.40$ ,  $t = 3.96$ ,  $p < .001$ ,  $\eta_p^2 = 0.20$ , 95% CI [2.75, 8.35]); when participants experienced low power ( $= -1$ ) instead, the biospheric value-behavior association became nonsignificant ( $B = 0.15$ ,  $SE = 1.55$ ,  $t = 0.10$ ,  $p = .92$ ,  $\eta_p^2 = 0.01$ , 95% CI [2.75, 8.35]).

After integrating mood items in each dimension (with a total score ranging from 1 to 15; as in Crowe & Higgins, 1997), we found in independent sample  $t$  tests that participants in the high-power condition felt less dejection- ( $M_{\text{high}} = 5.88$ ,  $SD = 3.32$ ; vs.  $M_{\text{low}} = 7.89$ ,  $SD = 3.73$ ;  $t(137) = 3.33$ ,  $p = .001$ ,  $d = 0.57$ , 95% CI [0.82, 3.20]) and agitation-related ( $M_{\text{high}} = 6.03$ ,  $SD = 3.42$ ; vs.  $M_{\text{low}} = 8.01$ ,  $SD = 3.60$ ;  $t(137) = 3.31$ ,  $p = .001$ ,  $d = 0.56$ , 95% CI [0.80, 3.17]) emotions than those in the low-power condition, but did not differ in cheerfulness ( $p = .23$ ) or quiescence ( $p = .32$ ). An alternative regression analysis was carried out including the demographic information (i.e., age, gender, educational level, and political orientation), altruistic values, and emotions as covariates. We only found significant main effects of political orientation ( $-1 =$  Republicans and  $1 =$  Democrats,  $B = 3.55$ ,  $SE = 1.50$ ,  $t = 2.37$ ,  $p = .02$ ,  $\eta_p^2 = 0.04$ , 95% CI [0.58, 6.51]) and altruistic values

( $B = 3.24$ ,  $SE = 1.24$ ,  $t = 2.61$ ,  $p = .01$ ,  $\eta_p^2 = 0.05$ , 95% CI [0.78, 5.70]) such that Democrats and people who highly endorse altruistic values donated more to the environmental organization, while the interaction effect between power and biospheric values remained significant ( $B = 2.75$ ,  $SE = 1.04$ ,  $t = 2.65$ ,  $p = .01$ ,  $\eta_p^2 = 0.05$ , 95% CI [0.69, 4.81]) after controlling for the covariates.

#### 4.2.3 | Power, attitude, and behavior

To examine how power influenced environmental behavior depending on the preceding attitude toward the same cause, a linear regression analysis was conducted, including (1) power and mean-centered environmental attitude, and (2) their two-way interaction in two steps of the model. Results again revealed a significant effect of environmental attitude,  $B = 0.52$ ,  $SE = 0.06$ ,  $t = 9.51$ ,  $p < .001$ ,  $\eta_p^2 = 0.39$ , 95% CI [0.41, 0.63], but not power,  $B = 1.65$ ,  $SE = 1.05$ ,  $t = 1.58$ ,  $p = .12$ ,  $\eta_p^2 = 0.02$ , 95% CI [-0.42, 3.72]. Crucial to our main research question, despite non-significance, power inclined to interact with environmental attitude in their effects on environmental behavior (see Figure 2),  $B = 0.10$ ,  $SE = 0.06$ ,  $t = 1.75$ ,  $p = .08$ ,  $\eta_p^2 = 0.02$ , 95% CI [-0.01, 0.21]. Although the amount of actual donation ( $M = 12.43$ ,  $SD = 15.60$ ) largely deviated from that of attitudinal intention ( $M = 22.79$ ,  $SD = 19.16$ ), paired sample  $t(137) = 7.91$ ,  $p < .001$ ,  $d = 0.67$ , environmental attitude was still a rather robust predictor of actual environmental behavior. However, the positive attitude-behavior link was more prominent when the actors were situationally primed with a high ( $B = 0.63$ ,  $SE = 0.07$ ,  $t = 8.81$ ,  $p < .001$ ,  $\eta_p^2 = 0.54$ , 95% CI [0.49, 0.78]) rather than a low ( $B = 0.44$ ,  $SE = 0.08$ ,  $t = 5.48$ ,  $p < .001$ ,  $\eta_p^2 = 0.30$ , 95% CI [0.28, 0.60]) sense of power.

As in the analyses of participants' biospheric values, we additionally included the covariates in an alternative regression. Similarly, none of the significant effects of political orientation, altruistic values, or other covariates attenuated the power by attitude interaction effect on environmental donation ( $B = 0.11$ ,  $SE = 0.06$ ,  $t = 1.96$ ,  $p = .05$ ,  $\eta_p^2 = 0.03$ , 95% CI [-0.001, 0.22]).

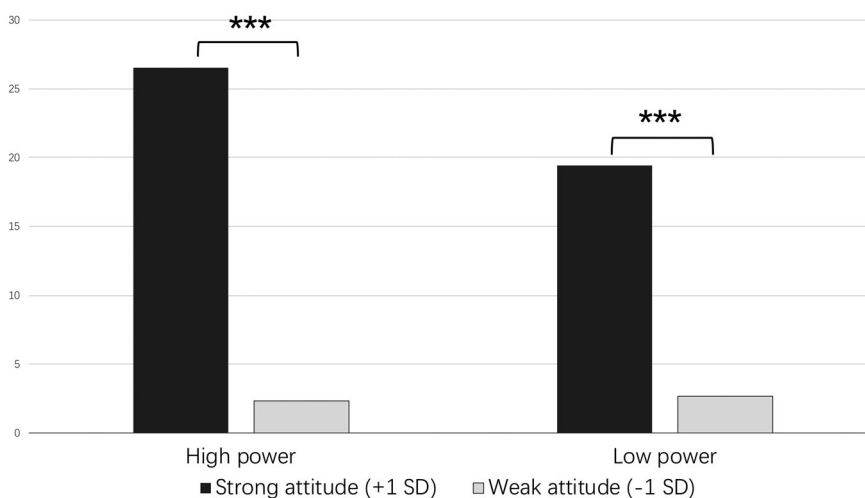
#### 4.3 | Discussion

Study 2 replicated the moderating role of power in the pro-environmental disposition-behavior association. In particular, people with strong biospheric values tended to donate more but only when they felt powerful and autonomous. While this interaction effect did not emerge among people with a stronger attitude toward the environmental cause, the effects was in the same direction. Power indeed caused changes in approach-/inhibition-oriented emotions. However, none of the emotions suppressed the anticipated power effects on the pro-environmental disposition-behavior link.

### 5 | GENERAL DISCUSSION

Despite a steady rise in global environmental concerns during the past few years (Capstick et al., 2015; Lampert et al., 2019), persistent individual pro-environmental behaviors are still the exception rather than the norm in many places (Eurobarometer, 2017). Previous literature has questioned the extents to which pro-environmental dispositions such as environmental attitudes and biospheric values predict environmentally significant behaviors (Bamberg, 2003), and more importantly in which conditions they do so.

In this paper, we tested the role of feelings of power as a potential bridge between pro-environmental dispositions and actual pro-environmental behavior. In particular, two studies examined the moderating role of power feelings in the association between pro-environmental dispositions and behaviors. Although previous research has shown that power tends to corrupt prosocial behavior (e.g., Blader & Chen, 2012; Dubois et al., 2015; Rucker et al., 2010), the extant literature has also suggested that power endows personal feelings of control and autonomy, and thus promotes authentic expressions of dispositions (e.g., Guinote, 2007; Kifer et al., 2013; Lammers et al., 2016). Based on this idea, we proposed that feelings of power would prompt people to act on their pro-environmental dispositions (e.g., biospheric values, environmental attitudes),



**FIGURE 2** The interaction effect of power and environmental attitude on environmental donation (unit: cent) in Study 2. \*\*\* $p < .001$

strengthening the link between pro-environmental dispositions and behaviors.

Two studies consistently substantiated our hypothesis—at least when it came to biospheric values as predictors of pro-environmental behaviors. Strong endorsement of biospheric values enhanced people's willingness to spend extra time (Study 1) and money (Study 2) on an environmental cause but only when they felt high (vs. low) sense of power. Moreover, these interaction effects of power and biospheric values on pro-environmental behavior were not explained by a general altruistic tendency (measured as altruistic values; in both Studies 1 and 2) or an overall action orientation (measured as emotions; in Study 2) regardless of targeted behavioral domains.

The moderating role of power in the relation between pro-environmental dispositions and behaviors was generally consistent with its role in the association between moral identity and moral behavior (DeCelles et al., 2012). Indeed, environmental behavior and moral behavior share some psychological mechanisms (Bernardes et al., 2018; Mazar & Zhong, 2010; Meijers et al., 2015); however, they differ in essential aspects. While people within a cultural group widely share an unequivocal consensus on certain behaviors as right (e.g., helping) or wrong (e.g., killing), their attitudes toward environmental issues (e.g., climate change) can be more diverse and even polarized (Feinberg & Willer, 2013). The differences between moral and environmental behavior may also illuminate the inconsistency in the overall effect of power on pro-environmental behavior. Although previous studies have shown that powerful (vs. powerless) feelings generally decreased moral or morally approved behaviors (Blader & Chen, 2012; Dubois et al., 2015; Rucker et al., 2010), especially for those with self-oriented orientations (Chen et al., 2001; DeCelles et al., 2012), the current research did not yield consistent findings concerning the main effect of power on pro-environmental behavior—with Study 1 suggesting a positive effect, and Study 2 failing to find a significant effect. Moreover, our studies revealed overall effects of pro-environmental dispositions on behaviors. The findings were consistent with previous studies showing that the predictions of pro-environmental attitudes (Bamberg & Möser, 2007) and environmental concerns (Bamberg, 2003) on environmentally significant behaviors are rather modest—at least when tested in the absence of potential moderators. While in Study 1 biospheric values failed to predict willingness to spend some time on creating a persuasive environmental message, they had a small-to-medium effect on actual donations in Study 2.

Although our results consistently showed the moderating role of power in the relation between biospheric values and pro-environmental behaviors, Study 2 failed to find an equivalent power-related moderating effect regarding the relationship between environmental attitudes and donations. One potential explanation for this finding is that object-specific attitudes such as attitudes toward an environmental charity are simply better predictors of object-related environmentally significant outcomes (i.e., donations to such an environmental charity) than more general and abstract beliefs like values. Relatedly, our analyses showed that environmental attitudes

toward the environmental charity positively correlated with donations regardless of people's feelings of high or low power. On the contrary, although biospheric values guide behaviors and shape perceptions across different contexts (Schwartz, 2012; Steg & De Groot, 2012), their relatively abstract and object-unspecific nature might have determined that biospheric values need situational cues (e.g., feelings of power) to exert an influence on pro-environmental behavior.

## 5.1 | Future directions and practical implications

It can be challenging to measure actual pro-environmental behaviors in experimental settings; previous research thus often used self-reported pro-environmental tendencies without actual behavioral components or actual costs to participants. To address this problem, the current research conceptualized pro-environmental behaviors as environmental persuasion (Study 1) and environmental donation (Study 2), which incur either costs of time (Study 1) or money (Study 2) as in many real-life pro-environmental decisions. However, these two indicators may not be among the most representative pro-environmental behaviors in people's daily life (e.g., recycling, reducing plastic waste, saving carbon footprint, etc.). To consolidate our tentative findings, future research may test more common pro-environmental behaviors through, for example, longitudinal pro-environmental interventions. Moreover, both environmental persuasion (Study 1) and environmental donation (Study 2) were by nature action-oriented "give-some" dilemmas (Van Dijk & Wilke, 2000). Despite the prevalence of "give-some" dilemmas in real-life environmental decisions, some other environmentally significant behaviors are better captured as "take-some" dilemmas (e.g., fishing and forest management; Fritsche et al., 2010; Lange & Dewitte, 2019). Power could influence "give-some" pro-environmental behaviors by activating the action-oriented Behavior Approach System (Galinsky et al., 2003; Keltner et al., 2003). Whereas Study 2 validated the power effect of magnifying attitude-behavior consistency independent from the emotional outcomes of BAS activation, future research may further explore whether power has a similar effect on attitude-behavior consistency in "take-some" environmental dilemmas where action orientations can potentially yield un-environmental outcomes.

Future research may further elucidate when and why power-related feelings have an effect on environmentally significant behaviors. First, the current work examined power as a malleable state rather than a static trait. As opposed to situational induction of powerful versus powerless feelings, endorsement of power composes an important part of self-enhancement values (Bardi & Schwartz, 2003; Schwartz, 2012), and may counteract self-transcendent values (e.g., biospheric values) in their influences on pro-environmental behaviors. Future studies could explore such possibilities by using difference scores of biospheric and power values (e.g., see Van den Broek et al., 2017). Similarly, future research may investigate the biospheric value-behavior association, as a function of individual differences



on the pursuit of power-related goals, endorsement of power-related values, and the intertwined power dynamics depending on the potential fit between dispositional power beliefs and situational power endowment (Chen et al., 2009). Moreover, the current research primed powerful and powerless feelings with the incidental recalling paradigm; with common psychological mechanisms, previous literature also demonstrated that a sense of power can be retrieved from semantic cues (e.g., Chen et al., 2001; Galinsky et al., 2003, 2008). Replication research on the latter form of power stimuli can have practical implications on the development of environmental communication strategies and policy-making. Environmental communications frequently deploy framing schemes to encourage active participation in environmental activities. For example, people had more positive attitudes toward climate change mitigation activities when the activities were presented in a gain frame emphasizing positive outcomes of actions rather than in a loss frame stressing negative outcomes of inactions (Spence & Pidgeon, 2010). A potential mechanism was that a gain framing suppressed fear-related emotions, and endowed people with subjective feelings of power and autonomy (Spence & Pidgeon, 2010). Despite the widespread propaganda of environmental protection, it is worth noting that such pro-environmental ideologies may only motivate people to undertake pro-environmental behaviors when people perceive themselves as powerful and proactive in creating positive environmental changes. More successful environmental communications may give priorities to the audiences' psychological empowerment over their environmental awareness, and strategically combine the two, to facilitate behavioral commitment to pro-environmentalism.

To summarize, in this paper, we showed that a subjective sense of power empowers those who strongly endorse biospheric values to practice what they preach. These findings could help improve the effectiveness and efficiency of environmental communication tactics by motivating "green-minded" individuals to reduce the gap between their pro-environmental dispositions and actual actions.

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## DATA AVAILABILITY STATEMENT

The data that support the findings of the studies are openly available in Open Science Framework at <https://doi.org/10.17605/OSF.IO/7JH6Z>, Dong (2020).

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