

Green but not altruistic warm-glow predicts conservation behavior

Lili Jia¹ | Sander van der Linden² 

¹Department of Engineering, University of Cambridge, Cambridge, UK

²Department of Psychology, University of Cambridge, Cambridge, UK

Correspondence

Sander van der Linden, Department of Psychology, Downing Site, University of Cambridge, Cambridge, UK CB2 3EB.
Email: sander.vanderlinden@psychol.cam.ac.uk

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Abstract

Environmental policies frequently assume that people only act to help the environment if such behavior is in their self-interest. A growing amount of literature, however, shows that people also derive positive emotional benefits or “warm-glow from acting green. Yet, it remains unclear to what extent this motivation is derived from classical accounts of altruistic concern. In the current study, we leveraged a prospective design of a unique sample ($N_1 = 341$, $N_2 = 251$) of customers who subscribe to a local sustainable food store. We measured altruistic and green warm-glow at T_1 and predicted to what extent such prospective warm-glow predicted a range of self-reported conservation behaviors 4 weeks later (T_2). Results suggest that the anticipated warm-glow from helping other people did not significantly predict green intentions nor green behavior despite being highly correlated with green warm-glow. In fact, only green warm-glow significantly predicted conservation behavior over time. These findings are important because they elucidate a basic differential motivation between helping other people versus protecting the planet. This differentiation is critical to the design of effective conservation interventions.

KEYWORDS

altruism, behavior change, conservation policy, sustainability, warm-glow

1 | INTRODUCTION

The evolution of empathy in humans is an often cited mechanism for directed altruism, that is, altruism aimed at helping others in need (De Waal, 2008). Indeed, the capacity to be influenced by, understand, and feel the pain and distress of others often motivates prosocial behavior more generally (Batson, 1991; Krebs, 1975). Moreover, regardless of the extent to which there is a personal cost to the helper, or whether the altruistic motivation is “pure,” decades of research has shown that people derive positive internal emotional benefits or “warm-

glow” from helping others (Andreoni, 1990; Batson, 1987; Isen, 1970; Post, 2005).

Yet, a question that has been studied in much less detail is whether people derive a similar sense of warm-glow from helping the environment? Because large environmental issues are more psychologically distant for people (Gifford, 2011; van der Linden, Maibach, & Leiserowitz, 2015) and conservation often concerns non-human impacts, the role of empathic concern seems less clear. Moreover, alternative explanations have been suggested such as image motivation, for example, “acting green to be seen” (Brick, Sherman, & Kim, 2017;

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Griskevicius, Tybur, & Van den Bergh, 2010). Nonetheless, the answer to this question is pivotal because saving the environment is probably the largest, most complicated, and ultimate social dilemma (Brick & van der Linden, 2018), requiring the cooperation and coordination of billions of individuals. Although it is relatively well-known that people derive moral satisfaction from contributing to public environmental goods (Kahneman & Knetsch, 1992) research into the motivational foundations of conservation behavior has only recently started to focus on warm-glow.

For example, several experimental studies have suggested that appealing to “egoistic” self-serving motives (versus self-transcending “altruistic” motives) can be ineffectual or even backfire because it undermines people's desire to feel good about helping the environment (Asensio & Delmas, 2015; Bolderdijk, Steg, Geller, Lehman, & Postmes, 2013; Bowles, 2008; Evans et al., 2013; Jia, Evans, & van der Linden, 2019; Menges, Schroeder, & Traub, 2005; van der Linden, 2015). In fact, one study hypothesized that doing “good” (acting green) should lead to “feeling” good (warm-glow) and found that when participants acted green they not only felt more positive but actually perceived higher temperatures—a literal “warm-glow” (Taufik, Bolderdijk, & Steg, 2015).

Although these results are encouraging and suggest that people do care about the environment (Bouman & Steg, 2019), they do not fully elucidate the motivational foundations behind acting green. Do people actually anticipate that doing “good” will make them feel more positive? A number of recent studies indeed show that anticipating a future positive emotional state from acting green predicts greater pro-environmental behavior (Schneider, Zaval, Weber, & Markowitz, 2017; Taufik, 2018; Taufik, Bolderdijk, & Steg, 2016; van der Linden, 2018). Yet, the only study that used a truly prospective design was van der Linden (2018) who evaluated whether anticipating warm-glow from acting green actually predicted a wide range of green behaviors 4 weeks later.

Jointly, this emerging body of literature seems to suggest that people do derive positive warm-glow from helping the environment, perhaps in a similar sense to the way in which people experience warm-glow from helping other people. Yet, the current literature cannot distinguish between the underlying motivations, particularly to what extent “green” and “altruistic” warm-glow differentially guide conservation behavior. For example, the “altruistic warm-glow” hypothesis would suggest that people might feel good about acting green because they know they are indirectly helping other people by doing so. Conversely, the “green warm-glow” hypothesis would suggest that people might feel good about helping the environment for the sake of the well-being of the planet

itself, regardless of whether that also helps other people. In fact, although these values are often correlated, prior literature has conceptually and empirically distinguished biospheric values from altruistic values (De Groot & Steg, 2008). Moreover, general altruistic personality traits have shown to be less predictive of pro-environmental intentions than green warm-glow (Hartmann, Eisend, Apaolaza, & D'Souza, 2017). Thus, overall, it remains relatively unclear whether people distinguish between the *prospective* warm-glow they derive from helping other people versus the positive benefits they perceive from helping the environment. To our knowledge, no research has simultaneously investigated the role of anticipatory altruistic and green warm glow in predicting conservation intentions as well as behavior over time.

To do so, we replicate van der Linden's (2018) paradigm by surveying individuals on a wide range of conservation behaviors, measuring anticipated warm-glow at T_1 and actual self-reported green behavior at T_2 4 weeks later. This design helps reduce common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and allows for greater confidence in causal relationships. It reduces common method bias because not measuring the predictor and criterion variables in the same survey helps reduce artificial covariance (Podsakoff et al., 2003). In addition, most social science research is conducted on cross-sectional data despite the fact that causal processes are assumed to unfold over time (Maxwell & Cole, 2007). Because causality is difficult to establish without a temporal lag between the presumed *cause* (e.g., anticipated warm-glow) and its *effect* (e.g., green behavior), longitudinal research can enhance confidence in mediational models (Preacher, 2015).

In short, we extend prior work in two important ways: (a) we include altruistic warm-glow at T_1 to examine to which extent the anticipated “feel-good” from helping other people predicts green behavior at T_2 uniquely and above and beyond green warm-glow and (b) we selected a unique sample that scored high on both green and altruistic behavior. We recruited this sample because if there was a common underlying “warm-glow” motivation to help both other people *and* the environment, we hypothesized we would most likely detect it in a sample of “good samaritans,” i.e., those individuals who are generally more likely to contribute to moral causes.

2 | METHOD

2.1 | Sample and procedure

The dataset ($N = 341$) is based on a survey conducted with COFCO (<https://www.cofco.co.uk/>), a local and

organic food retail company in Cambridge, UK. We adopted the Cambridge Value Mapping Tools (Bocken, Rana, & Short, 2015) to design the survey through analyzing the social, environmental, and economic values of different stakeholders within and outside of the company, including the company owner, managers, other employees, and consumers. The survey theme, “How to live a sustainable life?” was chosen to maximize consumer participation and increase the response rate. The survey was conducted through web-based survey invitations by one of the company managers via emails. Following the General Data Protection Regulation (GDPR), only active consumers in the last 3 months (from the time of the survey) were invited. All the participants completed the survey voluntarily and could opt out at any stage of the survey. No reward was provided except for one local and organic vegetable box voucher that was issued to the first participant on the last day of the second wave survey.

The survey was conducted (longitudinally) in two waves. In the first wave ($N = 341$) responses were collected, and $N = 251$ (or 74%) of panel members responded in the second wave, 4 weeks later. The overall attrition (26%) rate was lower compared to van der Linden (2018). In total, about 85% of the sample was female, 14% male, and 1% preferred not to say. The modal age bracket was between 35 and 44 years (31%) with few individuals between 18 and 24 (1%) or over 64 (9%). About 23% of the sample had completed a bachelor's degree, 40% a master's degree, and 26% a doctoral degree. Modal annual income was over 60,000 pounds (37%). Importantly, however, unlike van der Linden's (2018) nationally representative sample, we aimed to recruit a profile of customers reflective of a local organic store in an affluent university town. Full demographics per wave are provided in Table S1.

2.2 | Measures

2.2.1 | Green warm-glow

On a 7-point scale (1 = strongly disagree, 7 = strongly agree) participants were asked to estimate how much positive affect (or “warm-glow”) they anticipate to derive from acting green with four items (“*Doing something good for the environment would make me feel positive about myself*,” “*I expect to feel good when I behave environmentally friendly*,” “*I anticipate that I would feel good when I do something to help the environment*,” “*I'd feel guilty if I did NOT behave environmentally friendly*” [reverse coded], $M = 5.64$, $SD = 0.90$, $\alpha = 0.87$).

2.2.2 | Altruistic warm-glow

Likewise, on a 7-point scale (1 = strongly disagree, 7 = strongly agree) anticipated warm-glow from helping other people was measured with four conceptually similar items (“*Doing something good for other people would make me feel positive about myself*,” “*I anticipate that I would feel good about helping other people*,” “*I expect to feel good when I help other people*,” “*I'd feel guilty if I did NOT help other people when they need it*” [reverse coded], $M = 5.89$, $SD = 0.77$, $\alpha = 0.83$).

2.2.3 | Green intention

Following van der Linden (2018), green intentions were measured by asking participants to what extent they intend to adopt each of the following 21 behaviors in the next 4 weeks (example items; “reduce my driving by using more public transportation,” “purchase home energy from a green source,” “buy more locally grown and produced foods”). Response format was on a 8-point scale (1 = very unlikely, 7 = very likely), the 8th scale point was added so that respondents could indicate that they are already engaging in the behavior. Intentions were averaged ($M = 6.11$, $SD = 0.86$) to form a reliable index ($\alpha = 0.72$).

2.2.4 | Green behavior

Four weeks later, respondents were re-contacted and presented with the same behavioral items and asked to report whether and how often they performed each of the behaviors (not at all – very frequently, $M = 4.94$, $SD = 0.94$, $\alpha = 0.78$). Descriptive statistics for the full list of behavioral items are available in the Supporting Information.

3 | RESULTS

As expected, anticipated green and altruistic warm-glow were both relatively high in the sample and differed significantly from one another so that respondents generally anticipated to derive more warm-glow from helping other people than from helping the environment, even among a sample of eco-friendly consumers ($M = 5.89$ vs. $M = 5.62$, $M_{\text{diff}} = 0.26$, 95% CI[0.19, 0.34], $p < .01$, $d = 0.36$). Following van der Linden (2018), the data was analyzed with a Structural Equation Modeling (SEM) approach using STATA 14.2 (StataCorp, 2017). To address panel attrition, a full information maximum likelihood (FIML)

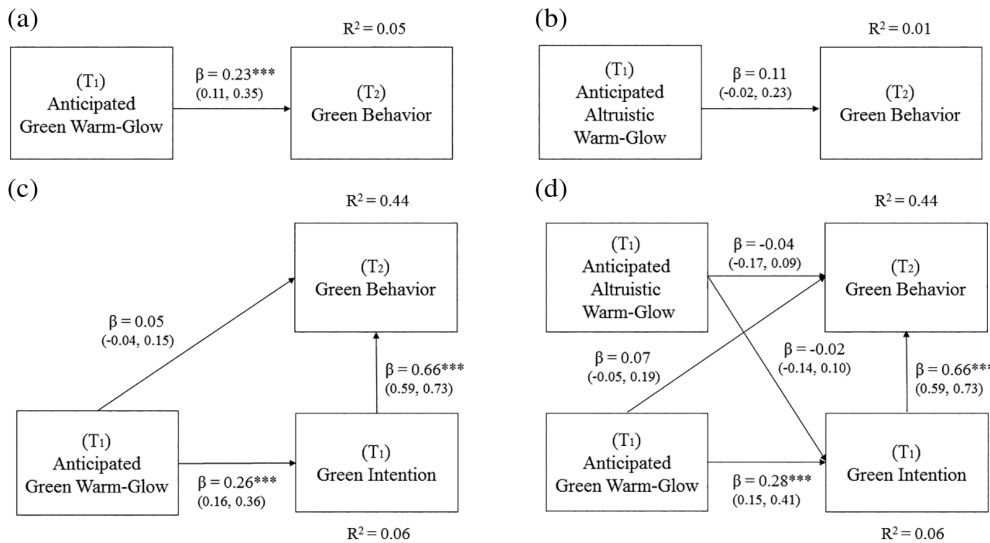


FIGURE 1 The influence of anticipated warm-glow on green behavior. Note: * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 341$. Coefficients are standardized. Bootstrapped 95% confidence intervals are provided in parentheses. $T_2 - T_1 = 4$ weeks. To address panel attrition, a full information maximum likelihood (FIML) procedure was used to estimate the mediation models

procedure was used to estimate the mediation models (Enders & Bandalos, 2001). Consistent with van der Linden (2018), results show that the anticipated “warm-glow” from helping the environment in Time 1 predicts a wide range of self-reported conservation behaviors 4 weeks later ($\beta = 0.23$, 95%CI; 0.11, 0.35, Figure 1a). Because intentions to engage in a specific behavior are often the most proximal determinant of behavior ($\beta = 0.66$, 95%CI; 0.59, 0.73, Figure 1c), the influence of warm-glow on green behavior is also examined while controlling for green intentions. Results reveal that the effect of warm-glow on green behavior is partially (75%) mediated by green intentions ($\beta_{\text{indirect}} = 0.17$, 95%CI; 0.10, 0.25). In contrast, anticipated altruistic warm-glow did neither significantly predict green behavior on its own ($\beta = 0.11$, 95%CI; -0.02 , 0.23, Figure 1b) nor green intentions ($\beta = -0.02$, 95%CI; -0.14 , 0.10, Figure 1d). Moreover, the association between green warm-glow and green behavior remains virtually unchanged when altruistic warm-glow is included in the model (Figure 1) and altruistic warm-glow did not have a significant indirect effect on green behavior through green intention ($\beta = -0.03$, $p = .58$).

Overall, these results suggest that even though people generally anticipate more warm-glow from helping other

people and the two forms of warm-glow are strongly inter-correlated ($r = 0.63$, $p < .01$), altruistic warm-glow does not significantly predict nor mediate conservation behavior, neither by itself nor jointly with green warm-glow.

To explore this relationship in the raw data, using a median split, we created two warm-glow groups, “high” and “low” for both green and altruistic warm-glow. As can be seen from Figure 2, mean green behavior does not differ between high vs. low altruistic warm glow ($M = 5.05$ vs. $M = 4.88$, $M_{\text{diff}} = 0.17$, 95%CI; -0.41 , 0.07, $d = 0.18$, $p = .17$, panel b). In contrast, there is a significant difference in green behavior between those who anticipate high vs. low green warm glow ($M = 5.13$ vs. $M = 4.77$, $M_{\text{diff}} = 0.36$, 95%CI; 0.13, 0.59, $d = 0.39$, $p = .002$, panel a).

4 | DISCUSSION

A burgeoning literature has started to explore whether people derive positive emotions or a sense of “warm-glow” from helping the environment (Schneider et al., 2017; Taufik, 2018; Taufik et al., 2016; van der

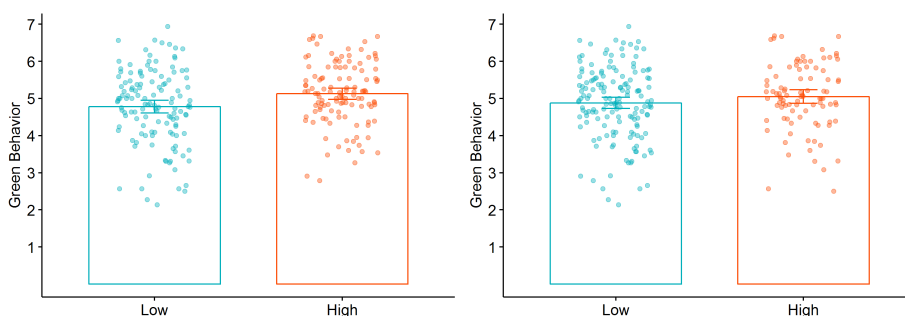


FIGURE 2 (a) Green warm-glow and (b) altruistic warm-glow by green behavior. Jitter represents the underlying data distribution. Error bars are 95% confidence intervals

Linden, 2018), yet little research to date has differentiated the underlying motives that lead people to anticipate to feel good from engaging in positive moral behaviors (van der Linden, 2017). In the current study, we find evidence that the anticipated warm-glow from acting green does indeed predict a wide range of conservation intentions and behaviors over a four-week period consistent with prior research (van der Linden, 2018). In contrast, the anticipated warm-glow from helping other people in general did not predict conservation intentions nor behavior 4 weeks later despite being highly correlated ($r = 0.63$), suggesting that people's motives for acting green likely arise from a specific warm-glow about helping the planet as an entity in its own right. This finding is consistent with research which finds that although biospheric and altruistic values are correlated, they are conceptually distinct value orientations, especially when they conflict with one another (De Groot & Steg, 2008).

Funder and Ozer (2019) would classify the effect ($r = 0.23$) as moderate with potential for practical implications. Indeed, if people anticipate that helping the environment will make them feel good without any extrinsic incentive this could potentially be a low-cost lever for behavior change (Jia et al., 2019). Such interventions could be considered "wise" (Walton, 2014) as they may initiate a positive feedback loop such that the anticipation of warm-glow would be reinforced by the actual experience of (positive) warm-glow when the behavior is performed (Taufik et al., 2015; van der Linden, 2015, 2018) leading in turn to a self-sustaining increase in the anticipation of future warm-glow.

Our results therefore have important implications for the effective design of conservation policies and interventions. The mainstream economic assumption that an individual only considers self-interest in decision-making often dominates conservation and environmental policy design—implying that motivating sustainable behavior can only be achieved through extrinsic incentives, such as monetary compensations. Yet, extrinsic incentives are costly to implement and their effectiveness is not guaranteed (Asensio & Delmas, 2015; Bolderdijk et al., 2013; Bowles, 2008; Evans et al., 2013; Jia et al., 2019; Menges et al., 2005; van der Linden, 2015). We suggest that intrinsic incentives, such as green warm-glow, may provide a more cost-effective alternative to motivate conservation behavior and conservation policies should therefore help diffuse environmental warm glow. For example, conservation interventions in national parks and nature reserves could highlight the positive emotional benefits that people experience from connecting with nature and engaging in pro-environmental behavior (Capaldi, Dopko, & Zelenski, 2014; Zelenski, Dopko, & Capaldi, 2015). In general, policies should not only target

the perceived costs (e.g., a charge for plastic bags) but also pay attention to perceived benefits, such as green warm glow from helping to save the planet (Jia et al., 2019), as financial incentives alone are unlikely to spark larger-scale behavior change.

Of course, our design is not without limitations. Although we leverage a prospective design, we rely on self-reports and causality remains elusive. Accordingly, future research could measure warm-glow via physiological indicators or experimentally manipulate behavioral choice scenarios in which people need to make a trade-off between helping other people versus the environment. For example, in the current study, we compared "green warm-glow" against "altruistic warm-glow" but the green warm-glow items arguably have a closer conceptual connection to the behavioral items. Accordingly, future research may therefore want to disentangle this potential confound, for example, by asking whether people engage in green behavior *because* they assume it will benefit other people (versus the environment).

There are also alternative explanations for our data that deserve consideration. For example, we cannot rule out cognitive dissonance as a potential mechanism: perhaps people indicate they expect to feel good because they already act sustainably and want to align their attitudes with their behavior. Our green intention measure also included the response option "already doing this," which reflects current behavior. Because this item correlates with future green behavior ($\beta = 0.11$, $p < .01$) and warm-glow ($\beta = 0.14$, $p = .04$), we included it in the SEM as a robustness check but the frequency with which people endorsed this item did not alter any of the reported model estimates. Finally, it is important to note that our results are not representative of the population and so our findings may not generalize beyond those already engaged with sustainability issues, yet we note that prior research using representative samples has found similar results at least with respect to green warm-glow (van der Linden, 2018).

Notwithstanding these limitations, this study is the first to report that altruistic warm-glow which typically motivates empathic concern for other people is not always a significant driver of intentions and behaviors that help protect and sustain the natural environment.

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CONFLICT OF INTEREST

The authors report no conflicts of interest, financial or otherwise.

AUTHOR CONTRIBUTIONS

Lili Jia and Sander van der Linden designed the study, Lili Jia collected the data, Sander van der Linden and Lili Jia analyzed the data. Sander van der Linden and Lili Jia both wrote and contributed to the final paper.

DATA AVAILABILITY STATEMENT

Customer data are confidential and were collected directly by the company (COFCO). Due to the General Data Protection Regulation (GDPR), we are therefore not able to make the data openly available online but questions about data sharing can be directed to the corresponding author.

ETHICS STATEMENT

The authors confirm that participants were treated in accordance with the guidelines of the American Psychological Association (APA).

ORCID

Sander van der Linden  <https://orcid.org/0000-0002-0269-1744>

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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