



# Which is the greater good? A social dilemma paradigm disentangling environmentalism and cooperation



Sina A. Klein <sup>a,\*</sup>, Benjamin E. Hilbig <sup>a,b</sup>, Daniel W. Heck <sup>c</sup>

<sup>a</sup> University of Koblenz-Landau, Fortstraße 7, 76826 Landau, Germany

<sup>b</sup> Max Planck Institute for Research on Collective Goods, Kurt-Schumacher-Straße 10, 53113 Bonn, Germany

<sup>c</sup> University of Mannheim, Schloss, 68131 Mannheim, Germany

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## ABSTRACT

In previous research, pro-environmental behavior (PEB) was almost exclusively aligned with in-group cooperation. However, PEB and in-group cooperation can also be mutually exclusive or directly conflict. To provide first evidence on behavior in these situations, the present work develops the *Greater Good Game* (GGG), a social dilemma paradigm with a selfish, a cooperative, and a pro-environmental choice option. In Study 1, the GGG and a corresponding measurement model were experimentally validated using different payoff structures. Results show that in-group cooperation is the dominant behavior in a situation of mutual exclusiveness, whereas selfish behavior becomes more dominant in a situation of conflict. Study 2 examined personality influences on choices in the GGG. High Honesty-Humility was associated with less selfishness, whereas Openness was not associated with more PEB. Results corroborate the paradigm as a valid instrument for investigating the conflict between in-group cooperation and PEB and provide first insights into personality influences.

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## 1. Introduction

In September 2015, the Volkswagen emissions scandal, also known as “dieselgate”, became public. Illegal software decreasing emissions during laboratory test phases was installed in several million cars worldwide. While manipulated cars meet emission standards during tests, they emit much more pollutants during real world driving and thereby severely harm the environment. Now imagine the dilemma faced by the Volkswagen engineers who were instructed to install this software: They could be cooperative to their in-group, remain silent, and benefit their co-workers and company but damage the environment; alternatively, they could refuse or even go public, leak the information, and behave pro-environmentally but harm their in-group. As this recent example vividly demonstrates, pro-environmental behavior may require uncooperative actions towards others.

Scientifically, there is now little doubt that environmental issues such as climate change, loss of biodiversity, deforestation, overfishing, pollution, and overpopulation pose a global threat. As such challenges grow, *environmentally significant behavior* (Stern, 2000)

of every single individual becomes increasingly important. Environmentally significant behavior can be defined as “the extent to which it changes the availability of materials or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere” (Stern, 2000, p. 408). In accordance to this impact-orientated definition, *pro-environmental behavior* (PEB) is defined as environmentally significant behavior with a positive effect on the environment. Thus, PEB includes behaviors both in a private (e.g., choosing the bike over the car) and in a societal context (e.g., governmental agreements to combat climate change such as the Paris Agreement).

### 1.1. Environmentalism as a social dilemma

The decision whether to engage in PEB or not is often framed as a social dilemma (Brekke & Johansson-Stenman, 2008; Joireman, 2005; van Lange, Joireman, Parks, & van Dijk, 2013) in which individual interests oppose collective interests. Overfishing, for instance, can be seen as a classic common resource dilemma (Hardin, 1968; Kaiser & Byrka, 2011; van Dijk & Wilke, 1995) in which the individual interest of maximizing personal gains conflicts with the collective interest of long-term preservation of the resource (e.g., by means of fishing quotas). Furthermore, the effort

\* Corresponding author.

E-mail address: [klein@uni-landau.de](mailto:klein@uni-landau.de) (S.A. Klein).

of slowing down climate change is, in essence, a global public goods dilemma (Hasson, Löfgren, & Visser, 2010; Kollock, 1998; Nordhaus, 1993; van Dijk & Wilke, 1995), in which the public good (here: climate) can only be maintained if enough individuals or countries contribute (e.g., by reducing emissions). However, the individual is always best off by not contributing and merely profiting from others' contributions. In the above cases, behaving pro-environmentally always means acting in the collective interest and thus "requires a substantial willingness to cooperate" (Hilbig, Zettler, Moshagen, & Heydasch, 2013, p. 319). Correspondingly, the default theoretical view in previous research on PEB is that behaving pro-environmentally means cooperating with others.

Although this view applies to many situations, it ignores the fact that cooperation can refer to different entities or "levels". Cooperation can, for instance, occur within a dyad, team, or community, between different teams within an organization, between different organizations, between countries, or – on the highest level – between all humans. In the standard theoretical view, PEB mirrors cooperation on the highest level, because preserving the environment always profits humanity as a whole (Reese, 2016). Corroborating this notion, the trait-like attitude "identification with all humanity" (McFarland, Webb, & Brown, 2012) is not only associated with higher pro-social tendencies (Buchan et al., 2011, 2009; Reese & Kohlmann, 2015; Reese, Proch, & Finn, 2015) but also with higher pro-environmental intentions, concerns, and behavior (Reese, 2016; Reysen & Katzarska-Miller, 2013; Rosenmann, Reese, & Cameron, 2016).

Theoretically, in-group cooperation can be equal to cooperation on the highest level and thus PEB, namely when the in-group's interests match the interests of the larger collective, that is, humanity. Most previous research dilemmas were modeled for this situation. By contrast, in the dieselgate example above, organizational in-group cooperation and cooperation on the highest level (humanity) are at odds. Specifically, behaving pro-environmentally mirrors cooperation on the highest, societal level but actually implies defection on the organizational in-group level. In turn, cooperation on the organizational in-group level leads to negative externalities for the environment (thus defection on a societal level).

Consequently, PEB and in-group cooperation can actually conflict which will mostly occur in the form of negative externalities. However, PEB and in-group cooperation can also be mutually exclusive without imposing direct harm on each other, for instance when facing the choice between organic and fair trade products. One could either act pro-environmentally by buying the organic product or pro-socially<sup>1</sup> by buying the fair trade product (Steg, Perlaviciute, van der Werff, & Lurvink, 2012). However, given that one can only select one of these options, it is impossible to maximize both pro-environmental and pro-social outcomes with the same action.

## 1.2. Disentangling environmentalism and cooperation

In any case, these examples show that the joint maximization of PEB and in-group cooperation is not always possible. In some instances, the two may be mutually exclusive and in others they may even directly conflict such that maximizing one incurs negative externalities for the other. However, as sketched above, previous research has almost exclusively focused on the case of joint

maximization, thus equating PEB and in-group cooperation while neglecting situations of mutual exclusiveness and direct conflict. In line with these arguments, Zelenski, Dopko, and Capaldi (2015) recently highlighted the necessity of deconfounding in-group cooperation and sustainability; however, they did not provide direct empirical evidence on situations such as those outlined above.

To the best of our knowledge, the only study providing such direct insight stems from de Groot and Steg (2008). In their Study 3, participants decided whether to donate to a humanitarian or to an environmental organization, rendering pro-environmental and pro-social motives mutually exclusive. In this situation, participants tended to donate more often to humanitarian than to environmental organizations. Furthermore, whereas altruistic and biospheric values were both positively associated with pro-social and pro-environmental behavior, they predicted the two behaviors uniquely once the latter were mutually exclusive. This finding hints that in a situation of mutual exclusiveness, individuals value pro-social tendencies more than pro-environmental tendencies.

Apart from the implications of de Groot and Steg (2008), there are neither specific studies nor general approaches to systematically investigate mutual exclusiveness of PEB and in-group cooperation (not merely pro-social behavior), let alone situations involving direct conflict. Therefore, the first aim of this paper (Study 1) is to develop and validate a paradigm that disentangles PEB and in-group cooperation such that the two cannot be maximized jointly – from a situation of mutual exclusiveness to the extreme situation in which maximizing one actually invokes negative externalities for the other, thereby creating direct conflict. To this end, we adapt a social dilemma paradigm because it measures actual, consequential behavior and allows for specific manipulations through changes in the explicit payoff structure of the game.

The public goods dilemma (Kollock, 1998; van Dijk & Wilke, 1995), in the variant of nested public good dilemmas (Buchan et al., 2011, 2009; Polzer, Stewart, & Simmons, 1999; Wit & Kerr, 2002), provides a basis for differentiating between varying levels of cooperation and thus served as the basis for our paradigm. In a nested public goods game, players can either cooperate with their in-group by contributing to a "group public good" or cooperate with the overall collective by contributing to a "collective public good". The collective consists of all subgroups, ranging from experimentally assigned groups in a lab session (Polzer et al., 1999; Wit & Kerr, 2002) to a "world" group with participants from different countries (Buchan et al., 2009, 2011). In the extreme, contributing to the collective account could be seen as acting pro-environmentally, as PEB typically benefits the largest collective, namely humanity. However, it is impossible to directly implement a "collective" public goods game with all humanity as actual participants. Therefore, we use contributions to conservation via donations to an environmental organization as a means to model PEB. Similar approaches used the dictator game (Ben-Ner & Kramer, 2011; Forsythe, Horowitz, Savin, & Sefton, 1994) with a collective such as a charity organization as recipient (Engel, 2011). By using an environmental organization as recipient, giving behavior essentially measures PEB and, by implication, cooperation on the highest level (humanity).

## 1.3. The Greater Good Game

As hinted above, we specified the *Greater Good Game* (GGG, see Fig. 1 for an illustration) as a variant of a nested public goods game: In the GGG, participants play in groups of three (anonymous) players to which they are randomly assigned. Each player receives the same initial endowment and chooses one out of three options: (a) Keep the endowment, (b) contribute it to a public goods account

<sup>1</sup> Note that pro-social behavior and cooperation are not exactly the same: Whereas prosocial behavior is defined as a behavior that benefits another person, cooperation additionally benefits oneself. Therefore, cooperation can be seen as a special case of pro-social behavior (Eisenberg & Miller, 1987).

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