

The relationship between Corporate Environmental Responsibility, employees' biospheric values and pro-environmental behaviour at work



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ABSTRACT

Many organizations strive for Corporate Environmental Responsibility (CER). This can make organizational processes and procedures more pro-environmental, but does it also promote employees' pro-environmental behaviour? We reason that CER can encourage employees to act pro-environmentally at work by increasing the likelihood that they consider the environmental consequences of their behaviour. In two studies, we test to what extent CER affects pro-environmental behaviour at work, and whether this depends on the extent to which employees value nature and the environment (i.e., endorse biospheric values). Both studies show that stronger biospheric values and perceived CER are related to more self-reported pro-environmental behaviour at work. Interestingly, the relationship between perceived CER and self-reported pro-environmental behaviour was stronger among those with moderate to weak biospheric values. These results suggest that relative weak biospheric values are less likely to inhibit pro-environmental behaviour at work when employees believe that their organization aims to realize CER.

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1. Introduction

The world is facing serious environmental problems due to greenhouse gas emissions and pollution (DuNann Winter & Koger, 2004; Steg & Vlek, 2009; Vlek & Steg, 2007). Organizations contribute to such environmental problems by using natural resources, raw materials and energy (Robertson & Barling, 2015, pp. 3–11; Z. Wang, Zhang, & Guan, 2016). Many organizations aim to reduce their environmental impact (Flammer, 2013; Tebini, M'Zali, Lang, & Perez-Gladish, 2015), and profile themselves as environmentally responsible. A web search of the 25 companies on the AEX index (Amsterdam Exchange index: <https://www.aex.nl/koersen/aandelen-amsterdam>) reveals that all these companies make some reference to sustainability goals on their website and that the majority of them have web pages describing their pro-environmental goals, strategies and practices. This indicates a trend towards an increase in Corporate Environmental

Responsibility (CER). Importantly, CER not only implies that pro-environmental goals are explicated in the mission of the organization, but also that adequate strategies are implemented to realize these goals and that environmental performance outcomes are monitored (Steg et al., 2003).

To increase environmental performance successfully, organizations may not only reduce the environmental impact of their production and organizational processes, but also encourage pro-environmental behaviour among their employees (e.g., Dixon, Deline, McComas, Chambliss, & Hoffmann, 2015; Paillé, Chen, Boiral, & Jin, 2014; Ramus & Steger, 2000). Pro-environmental behaviour reflects behaviour that harms the environment as little as possible or even benefits it (Steg & Vlek, 2009). Thus far, most studies on pro-environmental behaviour focus on private sphere behaviours, such as recycling or energy conservation at home (Abrahamse, Steg, Vlek, & Rothengatter, 2005; Steg, Perlaviciute, & Van der Werff, 2015), but less research has been conducted on pro-environmental behaviour at work (Andrews & Johnson, 2016; H.; Wang, Tong, Takeuchi, & George, 2016). There is some evidence to suggest that employees engage in pro-environmental behaviour at work to meet organizational expectations (Y. Zhang, Wang, & Zhou, 2013), while management makes pro-environmental decisions to

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meet societal and industry expectation or challenges (B. Zhang, Wang, & Lai, 2015). We aim to extend this work. More specifically, we aim to test the integrated framework for encouraging pro-environmental behaviour (IFEP: Steg, Bolderdijk, Keizer, & Perlaviciute, 2014a).

The IFEP proposes that people are more likely to engage in pro-environmental actions when they are focused on benefiting the environment. The extent to which people are focused on the environment depends on the values (i.e., general goals that serve as a guiding principle in their life) people endorse as well as on contextual factors. CER can be an important contextual factor in this respect. More specifically, based on the IFEP model, we argue that pro-environmental behaviour at work is based on the extent to which an organization aims to realize CER and on the strength of employees' biospheric values, as both factors determine the extent to which people focus on benefitting the environment.

1.1. Corporate Environmental Responsibility and pro-environmental behaviour at work

Pro-environmental behaviour, whether at home or at work, oftentimes implies a conflict between immediate gratification or financial gains to realize long-term benefits for the environmental (Joireman, 2005). For example, riding a bicycle to work instead of driving in when it rains means doing the right thing for the environment, but also incurring personal costs in the form of comfort and effort. People are more likely to act pro-environmentally, even when it is somewhat costly, when they are focused on protecting the environment (Ruepert, Steg, & Keizer, 2015; Steg et al., 2014a), in which case they are less focused and influenced by the convenience and financial costs related to pro-environmental behaviours (Lindenberg & Steg, 2007; Steg et al., 2014a). An important question for encouraging pro-environmental behaviour in organizations is thus: what determines the extent to which people are focused on benefiting the environment, and therefore to act pro-environmentally?

The IFEP model (Steg, Lindenberg, & Keizer, 2016; Steg et al., 2014a) proposes that people are more likely to act pro-environmentally when contextual factors make them focus on environmental aspects. For example, clearly visible recycling bins in the company restaurant, or colleagues with hybrid or electrical vehicles can steer peoples' attention towards environmental consequences of choices and increase the likelihood that they base their decision on these environmental consequences. Similarly, when an organization expresses the ambition to reduce their environmental impact in a mission statement and implemented procedures to realize this ambition, people's attention may be steered towards what is the right thing to do for the environment, which is likely to promote their pro-environmental actions at work. In contrast, when an organization merely has the mission to generate profits, employees may not strongly focus on and consider environmental consequences of their behaviour, which is likely to inhibit pro-environmental actions at work.

We thus propose that CER can increase the likelihood that employees engage in pro-environmental behaviour at work, while the opposite is expected when an organization merely has the ambition to increase profit making. Yet, organizations may differ in their reason to strive for CER, and the conditions under which they will do so. Some organizations might have explicated their ambition to realize CER in their mission and implemented specific strategies to realize CER even if this is not profitable, and therefore be truly committed to environmental responsibility. Other organizations might have explicated their CER ambition in their mission, but only implement practices to realize CER under specific conditions, for example as far as this is profitable in the short term. Would this

affect the likelihood that employees will behave pro-environmentally at work? On the one hand, employees might not perceive their organization as truly aiming to realize CER when CER practices are only implemented when it is profitable in the short term. On the other hand, given that organizations need to make a profit to survive, people may acknowledge that organizations need to balance their environmental performance and economic profitability, and only implement CER practices when this is financially beneficial as well. We will explore whether the conditions under which an organization translates their ambition to realize CER into practice affects the likelihood of pro-environmental behaviour at work, and explore whether it matters if an organization aims to realize CER only when it is profitable or aims to realize CER even if it is not profitable in the short term.

We not only examine the effects of explicit statements of an organization's CER on pro-environmental behaviour at work, but also examine the association between perceptions of CER and pro-environmental behaviour at work. We propose that people's perceptions of CER, as reflected in the extent to which people believe the organization has explicated CER in their mission and implemented adequate policy and strategies to realize CER, may matter more than 'objective' statements of CER. As in the end, people's perception of what organizations intend to do may matter most, regardless of the organization's actual intentions (e.g., De Vries, Terwel, Ellemers, & Daamen, 2015).

1.2. Personal values

The IFEP model proposes that next to contextual factors, such as CER, the extent to which people are focused on benefiting the environment and the likelihood of pro-environmental behaviour depends on the values people endorse (Steg, 2016; Steg et al., 2014a). Values are defined as general desirable goals varying in importance, which serve as a guiding principle in people's life (Schwartz, 1992). Values transcend situations and are relatively stable over time (Stern, 2000), and can therefore influence a wide range of environmental behaviours in various contexts (Steg, Perlaviciute, Van der Werff, & Lurvink, 2014b). Research has shown that especially biospheric values are consistently and positively related to pro-environmental behaviour in the private sphere (see Steg & De Groot, 2012 for a review). The question remains whether values are also related to pro-environmental behaviour at work. People with strong biospheric values have a key concern with the quality of nature and the environment for its own sake, and base their behavioural decisions on the costs and benefits for the environment (Steg et al., 2014b). Hence, we expect that employees who strongly endorse biospheric values are more likely to be focused on benefiting the environment (i.e., consider and base their decisions on the consequences of their behaviour at work for the quality of nature and the environment) than people with weak biospheric values, which increases the likelihood that they engage in pro-environmental behaviour at work.

1.3. Interactions between CER and biospheric value strength

Importantly, research suggests that people do not always act upon the values they strongly endorse, and that contextual factors do not influence everyone in the same way (De Groot & Steg, 2008; Verplanken & Holland, 2002). In line with this, the IFEP model proposes that values and contextual factors may interact: the effects of contextual factors on environmental behaviour (at work) may depend on the extent to which people endorse biospheric values. There is some initial evidence to suggest that such interaction effects affect the likelihood of pro-environmental behaviour. On the one hand, biospheric values particularly encouraged pro-

environmental actions when these values are activated by contextual factors that make people focus on environmental consequences (such as CER), because they reminded them of what they find important in life (i.e., the quality of nature and the environment: Hahnel, Ortmann, Korcaj, & Spada, 2014; Verplanken & Holland, 2002). Following this line of reasoning, we would expect that CER particularly encourages pro-environmental actions among those who strongly value the environment in the first place, that is, people who strongly endorse biospheric values. In a similar vein, other scholars have proposed that contextual factors that reduce people's focus on doing the right thing for the environment particularly affect those with relative weak biospheric values. Implying that when an organization's has the mere ambition to increase profit making especially those with weak biospheric values will behave less pro-environmentally (e.g., Steg et al., 2014b). Following this reasoning, we would expect that contextual factors that make people focus on the environment particularly affect choices of people who strongly endorse biospheric values, while contextual factors that reduce people's focus on the environment would particularly affect choices of those with relatively weak biospheric values.

Alternatively, it has been argued that people with strong biospheric values are a priori more strongly focused on doing the right thing for the environment and therefore can counteract influences of contextual factors that reduce their focus on the environment (Biel, Dahlstrand, & Grankvist, 2005; Kleingeld, 2015). Following this reasoning, we might expect that CER, as a contextual factor that can strengthen people's focus on benefiting the environment, would particularly encourage pro-environmental actions among those with relatively weak biospheric values, who are a priori less likely to focus on environmental consequences of their choices. People with stronger biospheric values are a priori more strongly focused on benefiting the environment and therefore more likely to act pro-environmentally in many different situations. Strong biospheric values can serve as a buffer against the weakening effect of contextual factors making people less focused on benefiting the environment. Although both lines of reasoning suggest that the effects of contextual factors such as the organization's ambition to realize CER depend on the extent to which people endorse biospheric values, they differ in for whom effects of contextual factors on behaviour would be most significant.

1.4. The present research

We report results of two studies aimed to test to what extent biospheric values and reading or believing that the organization in which employees work aims to realize CER affect the likelihood of pro-environmental behaviour at work. In Study 1, a lab experiment, we manipulated CER and measured perceptions of CER, and examined to what extent each of them is related to pro-environmental intentions and if this relationship depends on biospheric values. Study 2, a correlational study among employees of a large scale organization, aimed to examine the relationships between employees' perceptions of their organization's CER, biospheric values strength and pro-environmental intentions as well as self-reported pro-environmental behaviour at work. We hypothesized that stronger CER is positively related to pro-environmental behaviour at work (Hypothesis 1). Furthermore, we hypothesized that people more strongly intend to act pro-environmentally at work when they strongly endorse biospheric values (Hypothesis 2). Next, we explored the interaction between CER and biospheric values (see Fig. 1).

2. Study 1

We conducted an experimental study in which we manipulated the organization's ambition to realize CER ('CER even when not directly profitable' vs. 'CER only when directly profitable' vs. 'No CER but focus on profit making' vs. 'Control') and measured biospheric values as an individual difference variable. Additionally, we measured respondents' perception of CER and pro-environmental intentions at work.¹

2.1. Method

2.1.1. Participants and procedure

First year psychology undergraduate students (N = 192) completed the study at the start of the academic year in exchange for partial course credit (27% men, 73% women); age varied from 17 to 31 ($M = 19.9$, $SD = 2.38$). Before completing the study on a computer in an individual cubicle, participants provided informed consent.

We first measured biospheric values to reduce the likelihood that the measurement of values influenced respondents' interpretation and responses in the experiment, we next included an unrelated filler task, in which respondents indicated the extent to which they thought different geometrical figures were similar. Next, we included the manipulation of CER, followed by a comprehension check, a measure of pro-environmental intentions at work, and a measure of the extent to which participants believed that the organization presented aims to realize CER. Next, participants were debriefed.

2.1.2. Corporate Environmental Responsibility (CER) manipulation

Respondents read a description of a fictional organization (i.e., "organization X") that delivered various products and services. They were asked to imagine working for this organization. We varied the extent to which this organization has the mission to decrease its negative impact on the environment, and the conditions under which the organization strives to decrease its negative environmental impact. Participants were randomly assigned to one of the four conditions.

In the 'CER even when not profitable' condition (N = 47), respondents read that the organization has stated in its mission statement that the organization finds the environment important and aims to decrease its negative impact on the environment, and that the organization has implemented consistent policy and procedures to decrease its negative environmental impact even when doing so has no direct financial benefits. In the 'CER only when profitable' condition (N = 49), respondents read that the organization stated in its mission that the organization finds the environment important and strives to decrease its negative environmental impact, and that the organization has implemented policy and procedures to decrease their negative environmental impact, but only when doing so has direct financial benefits. In the 'No CER but focus on profit' condition (N = 47), respondents read that the organization has stated in its mission that the organization strives to maximize its profit and has not implemented policy and procedure to decrease its negative environmental impact. In the 'Control' condition (N = 49), no information on pro-environmental nor profit generation mission and policy was provided (see Appendix A for the complete descriptions per condition).

¹ In addition, the study included measures for environmental self-identity and personal norms. These results are not reported, as they are not relevant for the goal of the current paper.

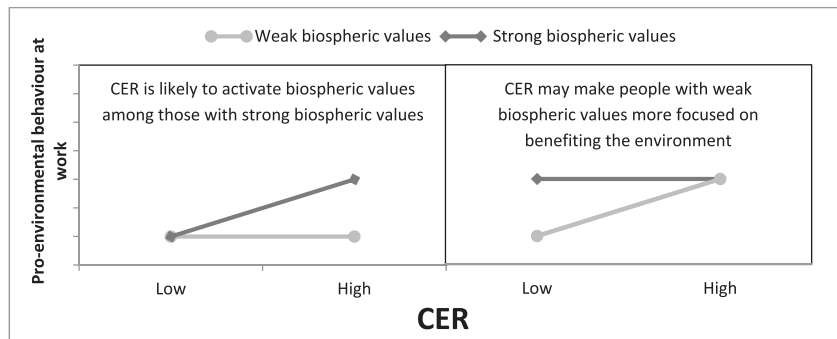


Fig. 1. Possible interaction effects between CER and biospheric values.

2.1.3. Measures

Comprehension check. To check if respondents read and understood the descriptions, and to motivate participants to process the information thoroughly, participants answered a control question: “Please read the answers carefully and indicate which description of organization X fits best the text you read”. We included one incorrect option (“Organization X has stated in its mission that growing is important, because it guarantees the continuity of the organization”) and four options that matched the four conditions. In total 88% of the participants provided the correct answer on the comprehension check. Answering the comprehension check correctly or not did not affect the results, therefore we included all participants in the analyses.

Biospheric values were measured with a validated value questionnaire (Steg et al., 2014b) comprising 16 items representing hedonic, egoistic, altruistic and biospheric values. Participants rated the importance of each value as a guiding principle in their life, on a 9-point scale ranging from –1 (opposed to my values) up to 7 (extremely important). Biospheric values were measured with four items: respecting the earth, unity with nature, protecting the environment, and preventing pollution. We computed mean scores on these 4 items ($M = 4.02$, $SD = 1.57$, $\alpha = 0.91$) and centred biospheric values for the analyses.

Perceived CER. Participants next indicated to what extent they believed that the organization aims to realize CER. Two items were included: “Organization X finds taking care of the environment important and strives to minimize its negative environmental impact” and “Organization X has implemented policy and procedures to reduce its negative environmental impact”. Items were scored on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). Both items were strongly correlated ($r = 0.89$, $p < 0.001$). Therefore, we computed the mean score on these two items ($M = 3.94$, $SD = 1.95$), and centred this variable before including it in the regression analyses.

Perceived CER differed across the four conditions ($F(3, 188) = 73.59$, $p < 0.001$), again suggesting that they understood the manipulation. Post hoc multiple comparisons tests (Bonferroni) were conducted on all pairwise contrasts. Perceived CER was highest for the ‘CER even when not profitable’ condition, followed by the ‘Control’ condition and the ‘CER only when profitable’ condition (no statistically significant differences were found between these two conditions), and was lowest for the ‘No CER but focus on profit’ condition (see Table 1).

Pro-environmental investment decisions. Respondents made five hypothetical investment decisions in which they had to weigh environmental benefits against financial or convenience costs; we label this variable as pro-environmental investment decisions. Response scales for all investment decisions could vary from 1 (much harm to the environment, but low [financial or convenience]

Table 1

Comprehension check: Mean scores on perceived CER per condition.

| | <i>M</i> | <i>SD</i> |
|------------------------------|------------------|-----------|
| CER even when not profitable | 5.8 ^a | 0.94 |
| CER only when profitable | 3.7 ^b | 1.55 |
| No CER but focus on profit | 1.8 ^c | 1.23 |
| Control | 4.4 ^b | 1.49 |

Note: Means with unequal superscripts differ at $p < 0.05$ using Bonferroni corrected pairwise comparisons.

costs) to 5 (little harm to the environment, but high [financial or convenience] costs). Two decisions implied that choosing the pro-environmental option involved costs for organization X, while three items implied that choosing the pro-environmental option involved personal costs (financial or convenience) for the participant (see Appendix B for a full description). Scores on these five investment decisions formed a reliable scale ($\alpha = 0.75$). Therefore, we computed mean scores across investment decisions ($M = 3.70$, $SD = 0.66$).

2.2. Results

2.2.1. Relationship CER manipulation and biospheric values with investment decisions

To test the effect of the manipulation of CER on pro-environmental intentions we conducted a two-step regression analysis. In Step 1 we examined to what extent the manipulation of CER and biospheric values were related to investment decisions, while in Step 2 we also included the interaction between the manipulation of CER and biospheric values. We computed dummy variables with the ‘Control’ condition as the reference group (scored 0; the other conditions scored as 1).

For step 1, we included both the manipulation of CER and biospheric values in a regression analysis. The regression revealed, against our expectations (Hypothesis 1), that the manipulation of CER was not significantly related to pro-environmental investment decisions. No significant differences were found between the ‘Control’ conditions and the other conditions in the extent to which participants made pro-environmental investment decisions (see Table 2). The regression analysis revealed that, in line with our expectations (Hypothesis 2), stronger biospheric values were related to more hypothetical pro-environmental investment decisions (see Table 2). In step 2, no significant interaction effect was found of the manipulation of CER and biospheric values (see Table 2).

Table 2
Regression of manipulation of CER and biospheric values on pro-environmental investment decisions.

| | β | t | p | R^2 | F | df | p |
|--------------------------------------|---------|-------|--------|-------|-------|--------|--------|
| Step 1 | | | | 0.22 | 13.35 | 4, 187 | <0.001 |
| Biospheric values | 0.43 | 6.62 | <0.001 | | | | |
| CER Dummy 1 | 0.11 | 1.45 | 0.15 | | | | |
| CER Dummy 2 | 0.07 | 0.94 | 0.35 | | | | |
| CER Dummy 3 | -0.12 | -1.50 | 0.14 | | | | |
| Step 2 (Interactions added to model) | | | | 0.23 | 7.85 | 7, 184 | <0.001 |
| Biospheric values | 0.36 | 3.05 | <0.01 | | | | |
| CER Dummy 1 | 0.17 | 0.74 | 0.46 | | | | |
| CER Dummy 2 | -0.08 | -0.34 | 0.73 | | | | |
| CER Dummy 3 | -0.30 | -1.52 | 0.13 | | | | |
| Bio values x CER Dummy 1 | -0.06 | -0.27 | 0.79 | | | | |
| Bio values x CER Dummy 2 | 0.16 | 0.70 | 0.48 | | | | |
| Bio values x CER Dummy 3 | 0.20 | 1.01 | 0.31 | | | | |
| ΔR^2 and ΔF | | | | 0.01 | 0.63 | 3, 187 | 0.60 |

Note: CER Dummy 1 = 'Control' vs. 'CER even when not profitable'.
CER Dummy 2 = 'Control' vs. 'CER only when profitable'.
CER Dummy 3 = 'Control' vs. 'No CER but focus on profit'.

Table 3
Regression of perceived CER and biospheric values on pro-environmental investment decisions.

| | β | t | p | R^2 | F | df | p |
|-------------------------------------|---------|-------|--------|-------|-------|--------|--------|
| Step 1 | | | | 0.25 | 32.16 | 2, 189 | <0.001 |
| Perceived CER | 0.27 | 4.30 | <0.001 | | | | |
| Biospheric values | 0.41 | 6.43 | <0.001 | | | | |
| Step 2 (Interaction added to model) | | | | 0.28 | 24.88 | 3, 188 | <0.001 |
| Perceived CER | 0.30 | 4.76 | <0.001 | | | | |
| Biospheric values | 0.37 | 5.87 | <0.001 | | | | |
| Perceived CER x Biospheric values | -0.18 | -2.82 | 0.005 | | | | |
| ΔR^2 and ΔF | | | | 0.03 | 7.96 | 1, 189 | <0.01 |

2.2.2. Relationship perceived CER and biospheric values with investment decisions

We next conducted a similar two-step regression analysis with perceptions of CER and biospheric values as the predictor variables and pro-environmental investment decisions as the dependent variable (see Table 3). As expected (Hypothesis 1), perceived CER was significantly positively associated with pro-environmental investment decisions: participants made more pro-environmental investment decisions the more they believed the organizations has the ambition to realize CER. Also, in line with our expectations (Hypothesis 2), stronger biospheric values were related with more pro-environmental investment decisions. Furthermore, we found a significant negative interaction effect between perceived CER and biospheric values on pro-environmental investment decisions.²

We used the Johnson-Neyman technique in the Hayes PROCESS macro (Model 1: Hayes, 2012) to identify for which levels of biospheric values perceived CER is significantly related to pro-environmental investment decisions at work. Perceived CER was positively related to pro-environmental investment decisions for participants with weak to moderate biospheric values (i.e., score below 5.36; the 90th percentile), while perceived CER was not significantly related to pro-environmental investment decisions for participants with relatively strong biospheric values (i.e., score above 5.36). Fig. 2 plots the bandwidth graph with the effect size of perceived CER in predicting pro-environmental investment decisions at work for different levels of biospheric values by using the floodlight technique (Spiller, Fitzsimons, Lynch Jr, & McClelland,

2013). The levels of biospheric values at which the “band” (area between lower and upper bound confidence intervals) representing the effect size of the relationship between perceived CER and pro-environmental investment decisions does not comprise with zero means a statistically significant relationship. The levels of biospheric values at which the “band” comprises with zero means that the relationship between perceived CER and pro-environmental investment decisions is not statistically significant. Fig. 3 plots the simple slopes for people with relatively weak (1 SD below the mean) and relative strong (1 SD above the mean) biospheric values.³ These simple slopes show that those with relative strong biospheric values consistently make pro-environmental investment decisions, while those with relative weak biospheric values are less likely to do so. However among those with relative weak biospheric values, the stronger they perceived CER the more likely they are to also make pro-environmental investment decisions. Those with relative weak biospheric values are as likely to make pro-environmental investment decisions as those with relative strong biospheric values when they believe that the organization aims to realize CER.

2.3. Discussion

We found no clear support for our first hypothesis: we did not find a significant difference in pro-environmental investment

² Including gender and age on pro-environmental intentions as covariates in the regression analyses did not have any effect on the results in both Study 1 and 2.

³ We conducted the same analyses for pro-environmental investment decisions that involved costs for the organization, and pro-environmental investment decisions that involved personal costs separately. The results show very similar findings, see Appendix C.

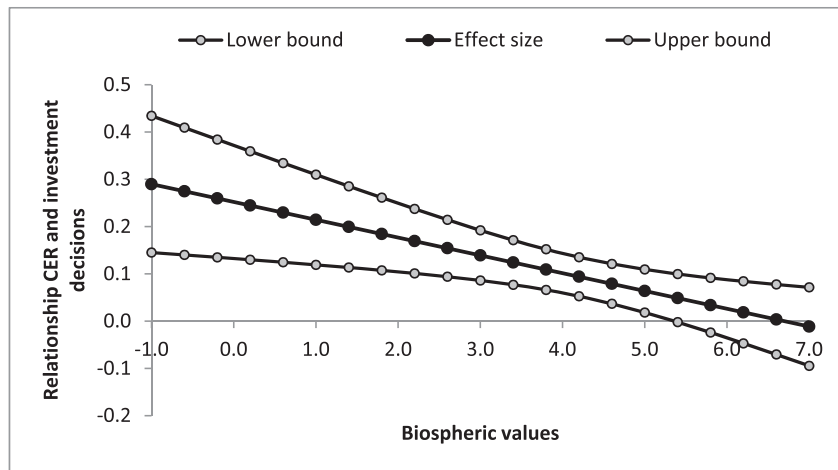


Fig. 2. The relationship between perceived CER and pro-environmental investment decisions for different levels of biospheric values.

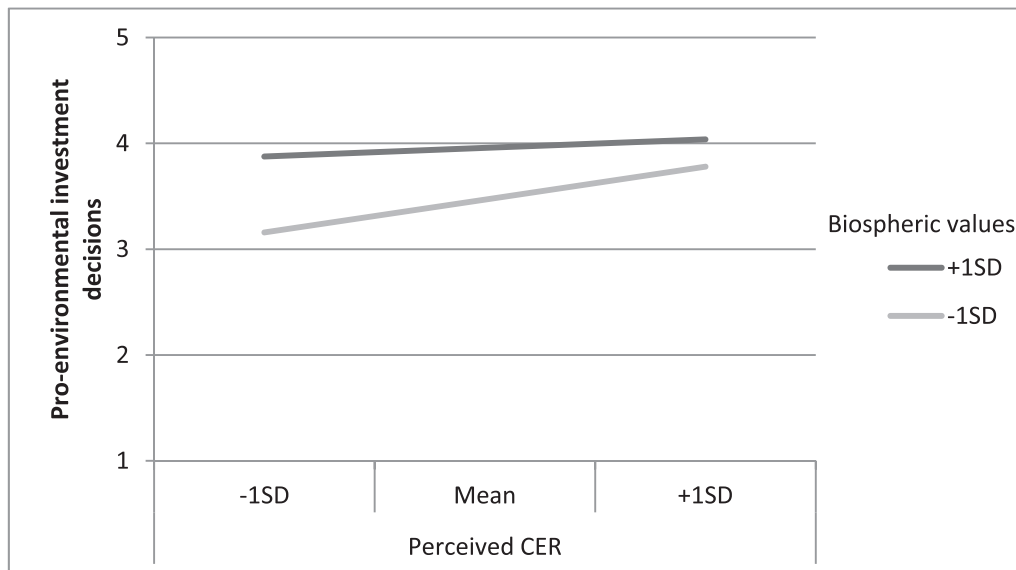


Fig. 3. Interaction effect of perceived CER and biospheric values on pro-environmental investment decisions.

decisions between the conditions in which there was no information on the organization's mission, policy and practices with regard to CER ('Control' condition), and in the other conditions ('CER even when not profitable', 'CER only when profitable', and 'No CER but focus on profit'). However, perceived CER was positively related to pro-environmental investment decisions. In addition, we found support for our second hypothesis: stronger biospheric values were associated with more pro-environmental investment decisions. Interestingly, we found that perceived CER was particularly positively related to pro-environmental investment decisions among those with weak to moderate biospheric values; people with relative strong biospheric values were more likely to make pro-environmental investment decisions anyway, irrespective of perceived CER.

3. Study 2

Study 2 aimed to replicate the findings of Study 1 via a questionnaire study among employees in a real organization. To examine the robustness of our findings, we included the same

measure of pro-environmental investment decisions as in Study 1. We additionally included measures of self-reported energy use and waste handling behaviours at work as dependent variables.

3.1. Method

3.1.1. Participants and procedure

The questionnaire study was conducted among employees working at a municipality in the Netherlands, which is a large and diverse organization. The municipality has 10 departments, each of which has different tasks and responsibilities, such as housing, waste collection, financial and tax matters, and security. In total, 293 respondents completed the study (55% men, 45% women), age varied from 20 to 65 ($M = 48.2$, $SD = 10.14$). An e-mail was sent by a staff member of the organization (our contact person) to employees at all levels of the organization of different divisions, therefore we do not know the number of employees that have been contacted or declined to participate.

Respondents could access the questionnaire via a link in the e-mail. Respondents first provided informed consent. Subsequently,

they completed a value scale, followed by measures of pro-environmental investment decisions and self-reported pro-environmental behaviour at work. Next, respondents indicated to what extent they believed that their organization aims to realize CER.

3.1.2. Measures

Biospheric values. Respondents completed the same value questionnaire as in Study 1. We computed mean scores on the biospheric value items ($M = 4.81$, $SD = 1.41$, $\alpha = 0.89$) and centred biospheric value scores for the analyses.

Perceived CER was measured in a similar way as in Study 1, yet, this time the items were tailored to respondents' own organization: "My organization has the goal to minimize its impact on the environment", "My organization has implemented policy and procedures to minimize its impact on the environment" and "My organization has stated in its mission to implement sustainable (pro-environmental) policy". Scores could range from 1 (strongly disagree) to 7 (strongly agree). Mean scores were computed ($M = 4.77$, $SD = 1.32$, $\alpha = 0.82$); we centred this variable for the analyses.

Pro-environmental investment decision. Respondents evaluated the same hypothetical pro-environmental investment decisions as in Study 1. Yet, we changed "organization X" into "your organization". Again, we computed the mean scores on the investment decisions ($M = 3.78$, $SD = 0.61$, $\alpha = 0.71$).

Self-reported pro-environmental behaviour at work was measured following an impact-oriented definition of behaviour (cf. Gatersleben, 2012). To assess energy use behaviour, we employed a methodology developed by environmental scientists, which has successfully been used in earlier studies (Abrahamse & Steg, 2011; Abrahamse, Steg, Vlek, & Rothengatter, 2007; Kramer, Wiersma, Gatersleben, Noorman, & Biesiot, 1998; Ruepert et al., 2016). We estimated energy use in Mega Joules (MJ; $1 \text{ m}^3 \text{ gas} = 31.65 \text{ MJ}$ and $1 \text{ kWh electricity} = 3.6 \text{ MJ}$) for the behaviours included in the questionnaire. We included two types of self-reported energy use behaviours that have a negative impact on the environment, related to energy use at work and energy use related to transport, respectively. Three items reflected energy use at the workplace, which were scored on a scale ranging from 1 (never) to 7 (always): "How often do you leave the lights on at your workspace when you leave your workspace (for example for a break) and there is no one in there?"; "How often do you switch the lights off in your workspace when you go home and nobody is left in your workspace?"; and "At work how often do you switch off your computer when you go home?" (four participants who did not use a computer for their work were excluded from the analyses on energy use at the workplace). We assessed energy use at the workplace on the basis of these three items (see Appendix D; $M = 30.40 \text{ MJ}$, $SD = 8.19$); higher scores reflect higher energy use at the workplace and a larger negative environmental impact.

Three items reflected energy use related to transport, including

one open ended question: "How many kilometres per week do you on average travel for work by car (for example for a meeting, business trips etc. but not for commuting)?" The other two items were scored on a scale ranging from 1 (never) to 7 (always): "When you travel by car for work, how often do you drive in an energy efficient way (such as looking ahead and anticipating on traffic, brake and accelerate quietly, and change to a higher gear as soon as possible)?"; "When you travel by car for work, how often do you carpool rather than drive alone?". We assessed energy use for transport on the basis of these three items (see Appendix D; $M = 23.76 \text{ MJ}$, $SD = 73.70$); higher scores reflect higher energy use related to transport and a larger negative environmental impact.

Next participants reported their waste handling behaviour; scores could range from 1 (never) to 7 (always). Waste prevention was measured with one item: "At work how often do you read e-mails, reports or articles from the computer screen rather than printing them?" ($M = 5.12$, $SD = 1.28$); higher scores reflect more self-reported pro-environmental behaviour at work. Recycling was measured with the item: "How often do you separate your paper from the regular garbage at work?" ($M = 6.54$, $SD = 0.96$); higher scores reflect a lower environmental impact. As not all behaviours are relevant to all respondents, there are missing data on some of the variables (e.g., energy use at the workplace).

3.2. Results

3.2.1. Results for pro-environmental investment decisions

Similar to Study 1, we first tested the relationships between biospheric values, perceived CER and pro-environmental investment decisions. As expected (Hypothesis 1), the more respondents believed their organization aims to realize CER, the more pro-environmental investment decisions they made (see Table 4, step 1). Also, stronger biospheric values were related to more pro-environmental investment decisions (see Table 4, step 1), supporting Hypothesis 2.

We next included the interaction between biospheric values and perceived CER in the regression model. Again, we found a significant negative interaction effect of perceived CER and biospheric values on pro-environmental investment decisions (see Table 4, step 2).

The Johnson-Neyman technique showed that perceived CER resulted in significantly more pro-environmental investment decisions among participants with weak to moderate biospheric values (i.e., score below 4.94; the 50th percentile). In contrast, perceived CER was not significantly related to pro-environmental investment decision for participants with relatively strong biospheric values (i.e., score above 4.94). Fig. 4 plots the bandwidth graph, and Fig. 5 plots the simple slopes for people with relatively weak (1 SD below the mean) and relative strong (1 SD above the mean) biospheric values. These simple slopes show that those with relative strong biospheric values consistently make pro-

Table 4
Regression of perceived CER and biospheric values on pro-environmental investment decisions.

| | β | t | p | R^2 | F | df | p |
|-------------------------------------|---------|-------|--------|-------|-------|--------|--------|
| Step 1 | | | | 0.22 | 38.63 | 2, 274 | <0.001 |
| Perceived CER | 0.12 | 2.16 | 0.03 | | | | |
| Biospheric values | 0.44 | 8.26 | <0.001 | | | | |
| Step 2 (Interaction added to model) | | | | 0.23 | 27.57 | 3, 273 | <0.001 |
| Perceived CER | 0.11 | 2.13 | 0.03 | | | | |
| Biospheric values | 0.43 | 7.95 | <0.001 | | | | |
| Perceived CER * Biospheric values | -0.11 | -2.12 | 0.04 | | | | |
| ΔR^2 and ΔF | | | | 0.01 | 4.48 | 1, 274 | 0.04 |

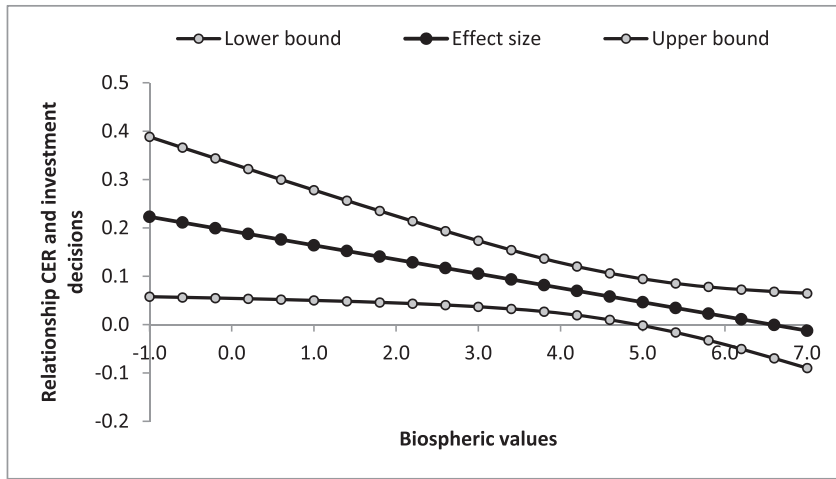


Fig. 4. The relationship between perceived CER and pro-environmental investment decisions for different levels of biospheric values.

environmental investment decisions, while those with relative weak biospheric values are less likely to do so. Similar as in Study 1 we see that for those with relative weak biospheric values, the stronger they perceived CER the more likely they were to make pro-environmental investment decisions.

3.2.2. Results for self-reported behaviour

As expected, the more respondents believed that their organization has the ambition to realize CER, the more they reported to engage in some of the pro-environmental behaviours at work (see Table 5, step 1). More specifically, the more they believed their organization aims to realize CER, the less energy they used at the workplace, and the more they recycled. Perceived CER was not significantly related to self-reported energy use related to transport or waste prevention behaviour.

Next, in line with our expectations, stronger biospheric values were related to more self-reported pro-environmental behaviour at work (see Table 5, step 1). More specifically, the stronger one's biospheric values, the less energy employees reported to use at the workplace and the more they indicated to recycle. We did not find a

significant relation between biospheric values and self-reported energy use related to transport and waste prevention behaviour.

Finally, we found a significant interaction effect of perceived CER and biospheric values on self-reported energy use at the workplace, waste prevention behaviour, and recycling behaviour. The interaction effect of perceived CER and biospheric values on energy use related to transport was not statistically significant (see Table 5, step 2).

The Johnson-Neyman technique showed that participants with weak to moderate biospheric values (i.e., score below 5.07; the 75th percentile) reported to use less energy at the workplace the more they believed the organization aimed to realize CER. In contrast, perceived CER was not significantly related to self-reported energy use at the workplace for those who strongly endorsed biospheric values (i.e., score above 5.07). Fig. 6 plots the bandwidth graph with the effect size for perceived CER in predicting self-reported energy use at the workplace for different levels of biospheric values, and Fig. 7 plots the simple slopes. These simple slopes show that those with relative strong biospheric values consistently report less energy use, but we see that those with relative weak biospheric values

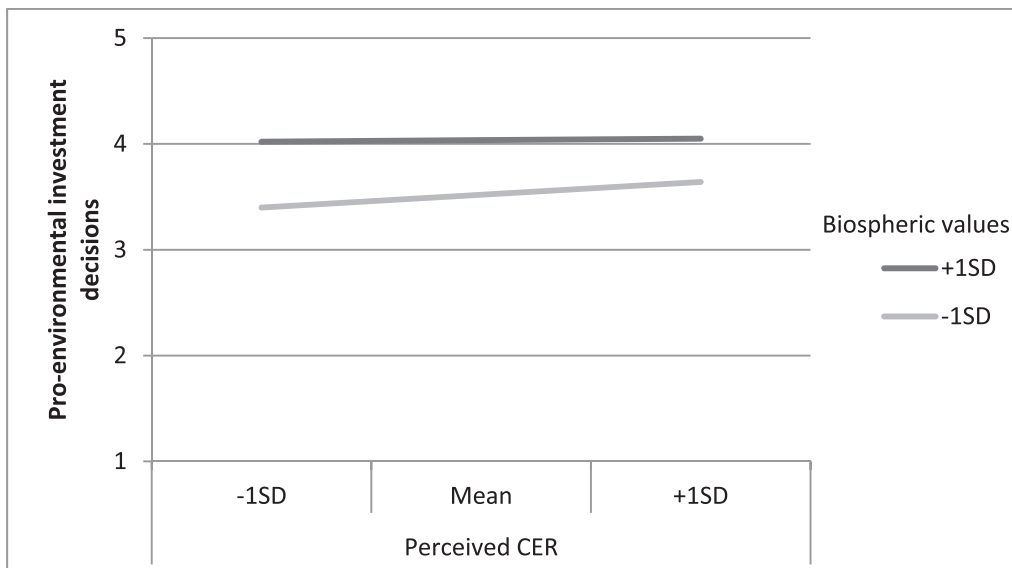


Fig. 5. Interaction effect of perceived CER and biospheric values on pro-environmental investment decisions.

Table 5
Regression of perceived CER and biospheric values on self-reported pro-environmental behaviours.

| | β | t | p | R^2 | F | df | p |
|-------------------------------------|---------|-------|--------|-------|-------|--------|--------|
| DV: Energy use at the workplace | | | | | | | |
| Step 1 | | | | 0.06 | 7.70 | 2, 240 | 0.001 |
| Perceived CER | -0.15 | -2.40 | 0.02 | | | | |
| Biospheric values | -0.18 | -2.82 | 0.01 | | | | |
| Step 2 | | | | 0.09 | 7.65 | 3, 239 | <0.001 |
| Perceived CER | -0.15 | -2.38 | 0.02 | | | | |
| Biospheric values | -0.15 | -2.34 | 0.02 | | | | |
| Perceived CER x Biospheric values | 0.17 | 2.67 | 0.01 | | | | |
| ΔR^2 and ΔF | | | | 0.03 | 7.15 | 3, 240 | 0.01 |
| DV: Energy use related to transport | | | | | | | |
| Step 1 | | | | 0.00 | 0.33 | 2, 244 | 0.72 |
| Perceived CER | -0.04 | -0.64 | 0.59 | | | | |
| Biospheric values | 0.04 | 0.55 | 0.52 | | | | |
| Step 2 | | | | 0.01 | 0.79 | 3, 243 | 0.50 |
| Perceived CER | -0.04 | -0.66 | 0.51 | | | | |
| Biospheric values | 0.02 | 0.32 | 0.75 | | | | |
| Perceived CER x Biospheric values | -0.09 | -1.30 | 0.19 | | | | |
| ΔR^2 and ΔF | | | | 0.01 | 1.70 | 3, 244 | 0.19 |
| DV: Waste prevention | | | | | | | |
| Step 1 | | | | 0.01 | 1.35 | 2, 274 | 0.26 |
| Perceived CER | 0.04 | 0.66 | 0.51 | | | | |
| Biospheric values | 0.09 | 1.43 | 0.15 | | | | |
| Step 2 | | | | 0.03 | 3.06 | 3, 273 | 0.03 |
| Perceived CER | 0.04 | 0.62 | 0.54 | | | | |
| Biospheric values | 0.07 | 1.09 | 0.28 | | | | |
| Perceived CER x Biospheric values | -0.15 | -2.54 | 0.01 | | | | |
| ΔR^2 and ΔF | | | | 0.02 | 6.43 | 3, 274 | 0.01 |
| DV: Recycling | | | | | | | |
| Step 1 | | | | 0.06 | 9.21 | 2, 274 | <0.001 |
| Perceived CER | 0.12 | 2.01 | 0.046 | | | | |
| Biospheric values | 0.21 | 3.57 | <0.001 | | | | |
| Step 2 | | | | 0.10 | 10.58 | 3, 273 | <0.001 |
| Perceived CER | 0.11 | 1.99 | 0.048 | | | | |
| Biospheric values | 0.18 | 3.13 | <0.01 | | | | |
| Perceived CER x Biospheric values | -0.21 | -3.54 | <0.001 | | | | |
| ΔR^2 and ΔF | | | | 0.04 | 12.52 | 3, 274 | <0.001 |

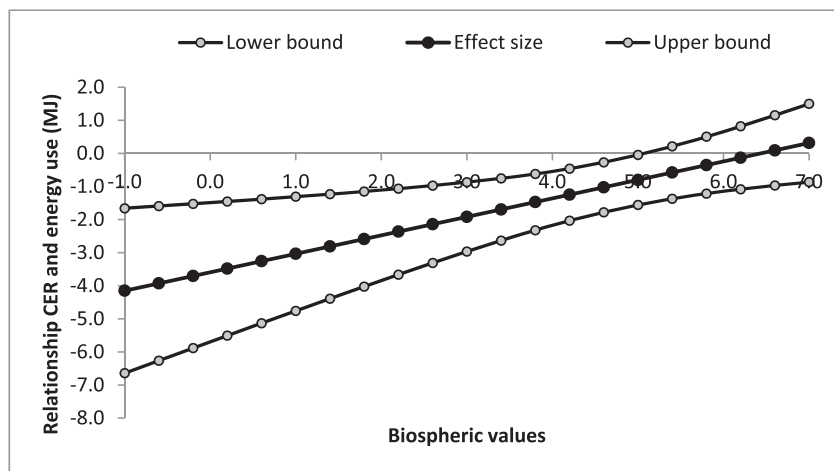


Fig. 6. The relationship between perceived CER and self-reported energy use at the workplace for different levels of biospheric values.

also report less energy use the stronger their perceived CER. People with relative weak biospheric values report as little energy use as those with relative strong biospheric values when they perceive the organization as aiming to realize CER.

Next, the Johnson-Neyman technique showed that perceived CER was positively related to self-reported waste prevention

behaviour for participants with relatively weak biospheric values (i.e., score below 3.60; the 25th percentile), while this relationship was not significant for participants with moderate to strong biospheric values (i.e., score above 3.60) (see Fig. 8 for the bandwidth graph and Fig. 9 for the simple slopes). Participants with relative strong biospheric values consistently report to prevent

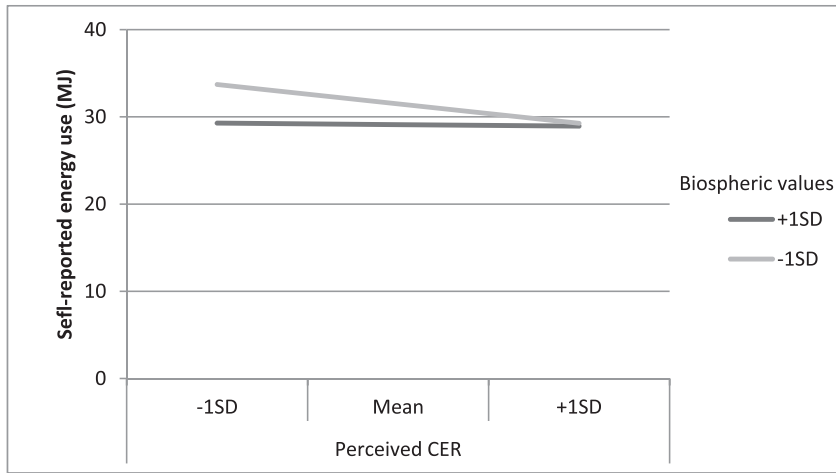


Fig. 7. Interaction effect of perceived CER and biospheric values on self-reported energy use at the workplace.

waste, irrespective of their perceived CER. While for participants with relative weak biospheric values we see that they are less likely to prevent waste when they do not strongly believe that the organization aims to realize CER, but the stronger their perceived CER the more likely they are to report to prevent waste as well.

Additionally, participants with relative weak to moderate biospheric values (i.e., score below 4.82; the 50th percentile) reported to recycle more at work the more they believed that their organization aims to realize CER. For participants with relatively strong biospheric values (i.e., score above 4.82), perceived CER was not significantly related to self-reported recycling at work (see Fig. 10 for the bandwidth graph and Fig. 11 for the simple slopes). These simple slopes show that participants with relative strong biospheric values consistently report to recycle, irrespective of their perceptions of CER. Participants with relative weak biospheric values are less likely to report to recycle, but only when they have low perceived CER. People with relative weak biospheric values report as much recycling at work as those with relative strong biospheric values when they perceive the organization as aiming to realize CER.

3.3. Discussion

Again, we found that the stronger employees believed that their organization aims to realize CER, the more likely they were act pro-

environmentally at work: they made more pro-environmental investment decisions, reported to use less energy at the workplace, and to recycle more. Also, the stronger employees' biospheric values, the more likely they are to make pro-environmental investment decisions, to report to use less energy at the workplace and to recycle more. Perceived CER and biospheric values did not significantly affect self-reported energy use related to transport and waste prevention behaviour. Importantly, again, we found that perceived CER was particularly positively related with pro-environmental behaviour at work (i.e., pro-environmental investment decisions, use less energy at the workplace, recycle more) among employees with weak to moderate biospheric values. Those with relative strong biospheric values reported to act more pro-environmentally at work irrespective of the extent to which they believed that their organization aims to realize CER.

4. General discussion

Organizations increasingly profile themselves as environmentally responsible and show their ambition to increase their environmental performance. To realize this ambition, it is crucial that their employees engage in behaviours that reduce their environmental impact. On the basis of the IFEP model (Steg et al., 2014a), we expected that Corporate Environmental Responsibility (CER) could encourage pro-environmental behaviour of employees at

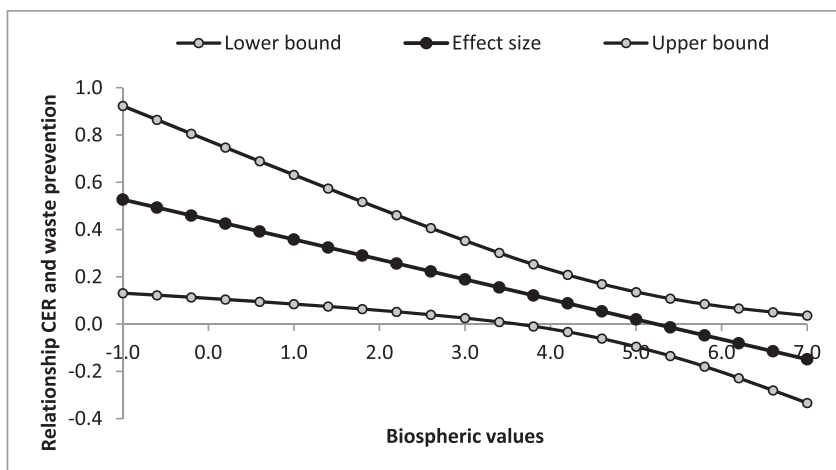


Fig. 8. The relationship between perceived CER and self-reported waste prevention for different levels of biospheric values.

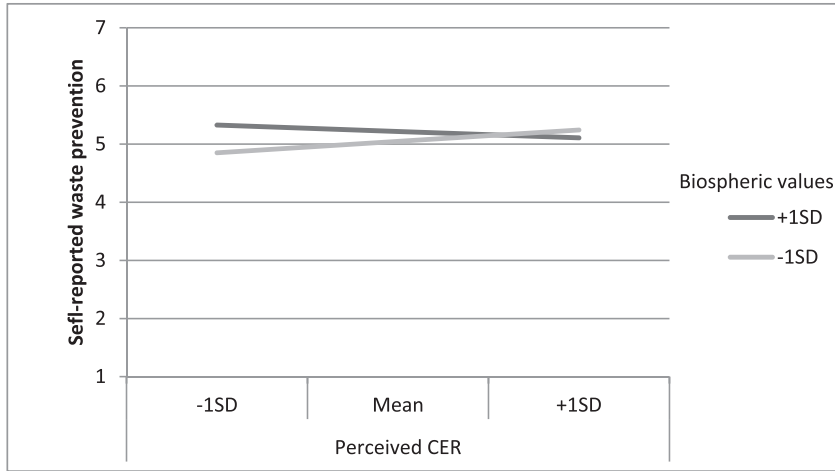


Fig. 9. Interaction effect of perceived CER and biospheric values on self-reported waste prevention.

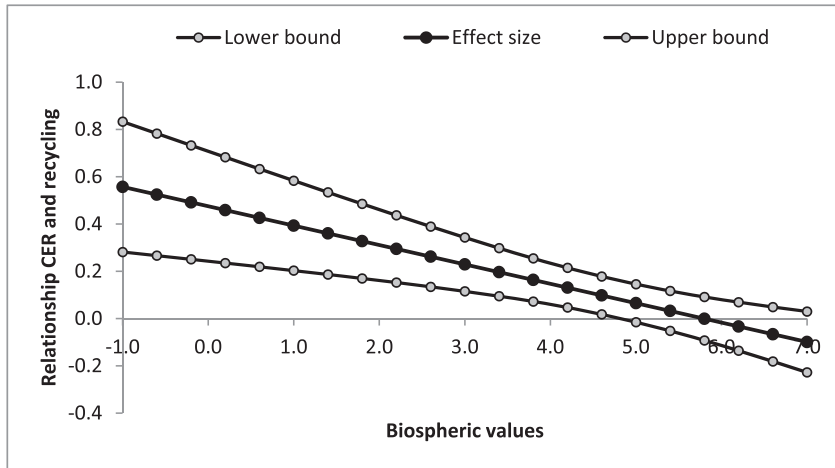


Fig. 10. The relationship between perceived CER and self-reported recycling for different levels of biospheric values.

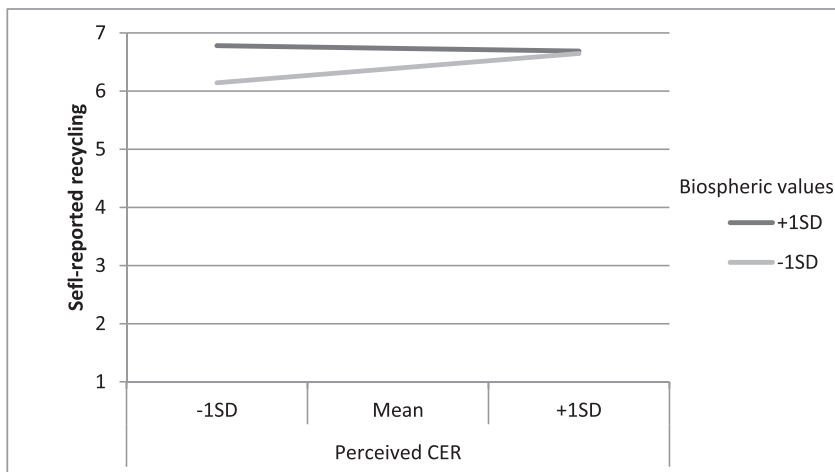


Fig. 11. Interaction effect of perceived CER and biospheric values on self-reported recycling.

work, because believing that the organization aims to realize CER (i.e., believing that the organization has explicated environmental goals in its mission and implemented adequate policy and

strategies to realize these goals) could serve as a contextual factor that makes employees focus on environmental consequences of choices. More specifically, CER can strengthen employees' focus on

benefiting the environment, which would encourage them to act pro-environmentally at work. Following the IFEP model, we expected that next to CER, biospheric values would predict pro-environmental behaviour at work, as biospheric values determine the extent to which people are a priori focused on benefiting the environment and increase the likelihood that people engage in pro-environmental behaviour in many different situations, including at work. In addition, we aimed to explore the interaction effect between perceived CER and biospheric values. We conducted an experimental and a questionnaire study to test our expectations.

4.1. Empirical findings and theoretical implications

4.1.1. Relationship between CER and pro-environmental behaviour at work

In the experimental study (Study 1), we first manipulated CER. More specifically, respondents learned about the organization's ambition to realize CER, and the conditions under which they would do so. No significant differences were found in pro-environmental investment decisions between people in the 'Control' condition (i.e., no information on CER) and the other conditions ('CER even when not profitable', 'CER only when profitable' and 'No CER but focus on profit making'). Future research is needed to test whether and under which conditions there may be an effect of the stated ambition of organizations to realize CER on pro-environmental behaviour at work.

Next, our findings suggest that perceived CER did not differ in the 'Control' condition (where no information was provided on CER) and in the condition where respondents learned that the organization only implemented policy and procedures to decrease their negative environmental impact when this has direct financial benefits. This suggests that people believe that organization aims to realize CER to a certain extent, which is in line with the web search of the 25 companies on the AEX index (see Introduction), showing that all these organizations make some reference to sustainability goals on their website.

Yet, the experimental and the questionnaire study consistently showed that people are more likely to act pro-environmentally at work (i.e., pro-environmental investment decisions, self-reported pro-environmental behaviours at work) when they believe that the organization has the ambition to realize CER. These findings support our reasoning based on the IFEP model (Steg et al., 2014a), indicating that contextual factors such as CER can indeed encourage pro-environmental actions at work by making employees focus more on the environmental consequences of their behaviour and on benefiting the environment.

4.1.2. Relationship between biospheric values and pro-environmental behaviour at work

The results of both studies further revealed that stronger biospheric values were related to more pro-environmental behaviour at work (i.e., pro-environmental investment decisions and self-reported pro-environmental behaviours), replicating findings from studies on pro-environmental actions in the private sphere. This finding suggests that values can indeed affect pro-environmental behaviour in different contexts, including at work, providing further support for value-theory (Schwartz, 1992) and the IFEP model (Steg et al., 2014a). Interestingly, biospheric values appeared to be relatively strongly related to pro-environmental investment decisions and some self-reported pro-environmental behaviours, and appeared to be a better predictor than perceived CER. Yet, biospheric values were not significantly related to self-reported energy use related to transport and waste prevention behaviour. A possible explanation could be that employees experience structural barriers or a lack of control over these behaviours, inhibiting

them to act upon their biospheric values. For example, workers may have little control over the amount of kilometres they need to travel for work.

4.1.3. Interaction effect of CER and biospheric values on pro-environmental behaviour at work

We explored the interaction effect of CER and biospheric values on pro-environmental behaviour at work. Interestingly, we found that believing that the organization aims to realize CER was especially related to more pro-environmental investment decisions and more self-reported pro-environmental behaviour at work among those with weak to moderate biospheric values. Interestingly, results of both studies consistently showed that moderate to weak biospheric values are less likely to lead to less pro-environmental behaviour at work when employees believe that the organization aims to realize CER. Those with moderate to weak biospheric values showed as much pro-environmental intentions as those with relative strong biospheric values when they believed that the organization has the ambition to realize CER.

These findings are an important addition to research showing that contextual factors especially affect behaviour of people with strong biospheric values (e.g., Maio, 2010; Verplanken & Holland, 2002). In this line of research, it has been argued that contextual factors can promote behaviour by activating related values, thereby particularly promoting value-congruent behaviour among those who strongly endorse the relevant values (e.g., Maio, 2010; Verplanken & Holland, 2002). Interestingly, we consistently found that contextual factors were particularly related to pro-environmental behaviour of those with weak to moderate biospheric values, while people with relatively strong biospheric values seemed to act pro-environmentally irrespective of their perception of CER. This suggests that people who strongly endorse biospheric values are more likely to consider the consequences of their behaviour at work for the quality of nature and the environment, and act accordingly, irrespective of CER. In contrast, the extent to which people with weak to moderate biospheric values are focused on protecting the environment can be strengthened by perceptions that the organization cares for the environment and aims to realize CER. Yet, our samples included only few individuals with very weak biospheric values. Hence, it may be that contextual factors like CER are particularly related to pro-environmental behaviour among those with moderately strong biospheric values, and not among those with very weak biospheric values. Hence, it may be that there is a curvilinear relationship between biospheric values, CER and pro-environmental behaviour at work, with CER particularly affecting pro-environmental behaviour of people with moderately strong biospheric values, but not among those with very weak or very strong biospheric values (cf. Biel et al., 2005; Hahnel et al., 2014). When people moderately endorse biospheric values, they may be a priori not strongly focused on benefiting the environment, and contextual factors that match their biospheric values strength can strengthen this focus, increasing the chance that they behave pro-environmentally at work. Yet, when biospheric values are very weak, meaning that people do not care about nature and the environment, believing that the organization aims to realize CER may not encourage pro-environmental behaviour at work, because CER does not align with their important values. Future research is needed to examine the conditions under which contextual factors particularly affect pro-environmental behaviour of those with relatively strong, moderate and weak biospheric values.

One relevant factor in this respect may be the type of contextual factors at stake (Biel et al., 2005). Research that demonstrated that contextual factors particularly affect behaviour of those who strongly endorse biospheric values typically relied on subtle

contextual cues, which may mainly have served as a prime. For example, one study showed that participants with relative strong biospheric values made more pro-environmental choices after being asked to form an impression of a person who adheres to environmental values (Verplanken & Holland, 2002). We employed a more explicit and stronger contextual factor (i.e., the extent to which an organization aims to realize CER), which is likely to have a stronger impact on behaviour among people with moderate to weak biospheric values. Another relevant factor could be the costliness of behaviour (e.g., effort, money or comfort). The behaviours included in our study are generally not very costly to engage in. Consequently, people with strong biospheric values may already engaged in these behaviours, while those with somewhat weaker biospheric values were encouraged to do so when the context made them focus on environmental aspects. If engaging in pro-environmental behaviour is very costly, contextual factors may not encourage people with moderate to weak biospheric values to engage in pro-environmental actions. Yet, contextual cues may encourage those with relatively strong biospheric values to engage in more costly pro-environmental behaviour. This suggests that contextual factors and biospheric values increases the likelihood that people consider the consequences of their behaviour at work for the quality of nature and the environment, but the extent to which this translates to pro-environmental behaviour depends on the costliness of the behaviour. Future research is needed to test these possible explanations.

4.2. Practical implications

Our studies have important practical implications. First, we consistently found that people with relative weak biospheric values are more likely to act pro-environmentally at work when they believe that their organization aims to realize CER. More specifically, we found that people with weak to moderate biospheric values who believed that their organization aims to realize CER were as likely to show pro-environmental intentions and report pro-environmental behaviours at work as people with relative strong biospheric values. This suggests that organizations and policy makers can encourage pro-environmental behaviour at work by making their ambitions and actions with regard to CER explicit to employees. More generally, this suggests that contextual factors can encourage people to behave pro-environmentally at work and that, perhaps counterintuitively, especially people who less strongly care about the environment are responsive to contextual factors that can promote pro-environmental behaviour. Future research is needed to examine whether such strategies indeed encourage pro-environmental behaviour at work.

4.3. Limitations and suggestions for future research

Certain limitations of the current research need to be kept in mind when interpreting the results. In Study 1 respondents were first year psychology undergraduate students. Yet, we conducted the study at the very start of the academic year when students are not likely to have completed any psychology courses discussing this topic or to have participated in other research on related topics, making it unlikely that they were familiar with the research. Yet, our student sample is not a representation of the general (working) population. However, in Study 2 we find similar results with a more representative sample, suggesting that this is not a problem.

In both studies we have included hypothetical investment decisions as an indicator of pro-environmental behaviour. These investment decisions implied that choosing the pro-environmental option has higher costs for the employee (in terms of money, comfort or effort), or for the organization (in terms of money). We

included this measure because responses to this measure are less likely to be influenced by organizational characteristics that may affect the opportunities employees face to act pro-environmentally (which could affect responses on the self-reported behaviour scale). Yet, the hypothetical investment decisions are somewhat artificial and may not fully capture decision making of employees at a municipality. Furthermore, we relied on measures of self-reported pro-environmental behaviour, which may not accurately reflect actual behaviour as respondents may have been motivated to present themselves somewhat favourably. Future research should employ different indicators of pro-environmental behaviour, including actual behaviour and meter readings of energy use.

We reasoned that CER can encourage pro-environmental behaviour because CER makes people focus more on benefiting environment. Yet, we did not measure people's focus on benefiting the environment, as asking questions on the extent to which people are focused on benefiting the environment is very likely to serve as an additional manipulation (e.g., Maio, Pakizeh, Cheung, & Rees, 2009; Spencer, Zanna, & Fong, 2005). Although our findings do support our theorizing and the IFEP model, future research could test whether CER and biospheric values indeed make people more focused on benefiting the environment.

4.4. Conclusion

In conclusion, we found that employees are more likely to behave pro-environmentally at work when they strongly endorse biospheric values and when they believe that the organization has the ambition to realize CER. Interestingly, especially people with weak to moderate biospheric values are more likely to make pro-environmental investment decisions and report more pro-environmental behaviour at work when they believe that the organization aims to realize CER. This suggests that by showing ambitions to realize CER and by acting accordingly organizations may not only reduce the environmental impact of their production and organizational processes, but also encourage pro-environmental behaviour among employees.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jenvp.2017.10.006>.

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