

Perceptions of Group Biospheric Values and Circular Economy Behaviour

Dorina Ciuperca

S4712145

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Group number: 24

Supervisor: dr. Elliot Sharpe

Second evaluator: Isabel Pacheco

In collaboration with: Joost Appelo, Flo Bleeker, Teo Burlacu, Anne-Floor Dechering, Marthe

van Loo

February 11, 2024

A thesis is an aptitude test for students. The approval of the thesis is proof that the student has sufficient research and reporting skills to graduate, but does not guarantee the quality of the research and the results of the research as such, and the thesis is therefore not necessarily suitable to be used as an academic source to refer to. If you would like to know more about the research discussed in this thesis and any publications based on it, to which you could refer, please contact the supervisor mentioned

Abstract

The world is currently facing a climate crisis. To tackle this, scientists call on individuals to get involved in pro-environmental action. There is emerging evidence of the influence of the group biospheric values on pro-environmental behaviour engagement. Social Identity Theory (SIT) posits that individuals are motivated to act in line with perceived group values to maintain a positive social identity. The theory also suggests that ingroup values are more influential than outgroup values on behaviour. In line with previous research and the SIT, we hypothesize that stronger perceived group biospheric values are related to stronger engagement in circular economy-related behaviour (CEB). Secondly, we hypothesize that perceived ingroup biospheric values are more strongly correlated with individual circular economy behaviour. We tested our hypotheses using a survey that measured biospheric values and circular economy behaviour. Our results indicated partial evidence for our first hypothesis. Suggesting that while perceived ingroup biospheric values are associated with CEB, there may be other factors influencing this association. Further, we did not find evidence for our second hypothesis. Results suggested that outgroup values may be more influential than ingroup values on behaviour. Policymakers can use the current findings to develop interventions aimed at encouraging people to engage in pro-environmental behaviours.

Keywords: biospheric values, circular economy behaviour, perceived biospheric group values, ingroup perception of values, outgroup perception of values

Perceptions of Group Biospheric Values and Circular Economy Behaviour

According to the IPCC Report (2023), the global surface temperature between 2011 and 2020 was 1.1°C above average temperatures during 1850-1900, thereby causing irreversible changes and damage to ecosystems. The impact of this rise in the global average temperature has led to reduced food and water security and an increased occurrence of climate-related food- and water-borne diseases (add source). Urgent and active involvement is required in tackling this issue, which often takes the form of pro-environmental behaviour. Subsequently, it is important to identify mechanisms that drive individuals to engage in environmentally friendly behaviours. One catalyst for such behaviours is values (Bouman & Steg, 2019; Steg, 2016; Stern & Dietz, 1994).

Biospheric Values

Values are trans-situational predictors of attitudes and behaviour (Bouman et al., 2020; Schwartz et al., 2012; Steg, 2016; Stern & Dietz, 1994). They serve as guiding principles that are deeply rooted and stable over time and serve as personal points of reference for evaluating the consequences of thoughts and actions (Bouman et al., 2020; Bouman & Steg, 2019; Ruepert et al., 2017; Schwartz et al., 2012). Moreover, the more an individual endorses a value, the more likely they are to act in line with it (Bouman et al., 2018). Most individuals, even across cultures, endorse the same values to some extent (Hanel et al., 2018). However, people vary in the values they prioritize, and as such the choices they make (Bouman et al., 2018). Therefore, values play a key role in determining an individual's behaviour across various situations.

Currently, four values are considered to underlie pro-environmental behaviour: egoistic (concern for self), hedonic (pleasure-induced concern), altruistic (concern for others), and biospheric (concern for the environment) (Bouman et al., 2018). The current body of evidence indicates that biospheric values are usually the strongest predictors of pro-

environmental action (Bouman et al., 2018, 2020). Namely, those who strongly endorse biospheric values tend to engage in environmentally friendly behaviours. This influence of biospheric values on pro-environmental behaviour is attributed to the general function of values as guiding principles for action. Moreover, individuals tend to act on their values to maintain internal consistency (Bouman et al., 2020, Schwartz et al., 2012; Stern & Dietz, 1994). Therefore, individual biospheric values acts as a precursor of pro-environmental behaviour.

Perceived Biospheric Group Values and Behaviour

While individual values are linked to individual action, there is also evidence that suggests that group values influence the endorsement of both values and value-related actions at the individual level. Research by Schwartz (2012) and Stern and Dietz (1994) highlights how group values serve as guiding principles that shape expectations, thereby influencing the behaviour of group members. According to the Social Identity Theory (SIT) (Tajfel & Turner, 1979), individuals derive a sense of identity and self-esteem from their membership in social groups, leading them to internalize the values, and goals of those groups. This process, known as social identification, shapes individuals' perceptions, attitudes, and behaviours in line with the collective interests of their ingroup. As a result, people's views, attitudes, and behaviours are shaped to align with their ingroup's interests. Moreover, individuals tend to act on these values to avoid cognitive dissonance and maintain a positive social identity and sense of belonging. Essentially, as guided by Social Identity Theory, individuals shape their values and behaviour to align with those perceived to be endorsed by the group.

In the context of biospheric values, the perception of prioritization of environmental concern by the ingroup may positively influence engagement in pro-environmental action. Therefore, individuals who perceive their group to be endorsing biospheric values to a greater extent may also be more likely to engage in environmentally friendly behaviours. When

individuals believe that their ingroup prioritizes biospheric values, they may as well align their values, to match those of the group. This is done to reinforce their social identity and sense of belonging. As supported by previous research, we propose that perceived group biospheric values play an important role in individual engagement in pro-environmental actions (Bouman et al., 2020; Wang et al., 2021). Thus, suggesting that when individuals perceive their ingroup to prioritize environmental concerns, they are more inclined to engage in pro-environmental behaviour themselves. Therefore, in line with SIT, we hypothesize that there is a positive association between perceived ingroup biospheric values and individual behaviour.

As posited by SIT, ingroups serve as points of reference to individuals and as such influence their endorsement of values and behaviour. However, individuals analyse their outgroups' values, to provide points of comparison or contrast. Nevertheless, individuals' perceptions of their ingroup are more positive and provide more accurate estimations of their value endorsement (Hanel et al., 2018). Ingroup favouritism, a key principle of SIT, also supports this point, as individuals generally like to see their group more positively, in order to maintain a positive social identity. However, Hanel et al. (2019) suggest that these perceptions may be biased due to the general tendency in science to report differences over similarities and doing the opposite may lead to more accurate interpretations. Therefore, most of the existing data suggests that individuals are more accurate in the estimation of their ingroup's values, as opposed to outgroup values. However, this may not be the case if data is reported differently. In the current study, we focus on the former and hypothesize that perceived ingroup values are more strongly correlated with individual behaviour than perceived outgroup values.

In the current study, we investigate biospheric values, as they play a critical role in the endorsement of pro-environmental behaviour (Bouman & Steg, 2019; Steg, 2016; Stern &

Dietz, 1994). Further, as an instance of pro-environmental behaviour, we analyse circular economy behaviour (CEB). CEB may play a role in increasing resilience against extreme weather and natural disasters, by lowering greenhouse gases and accelerating the shift to a low-carbon economy (*What Is Circular Economy and Why Does It Matter?*, 2023). Namely, in line with the view that perceived group values influence individual action, we propose that perceived ingroup biospheric values are positively associated with CEB. Further, in line with previous research and in line with the view that the group is closer to the self-concept, we propose that perceived ingroup values are more influential on individual CEB than perceived outgroup values.

In conclusion, the climate crisis emphasises the need for immediate action, highlighting the need to understand the factors that motivate pro-environmental behaviour. Values, namely biospheric values may act as predictors of such actions. Drawing on Social Identity Theory, individuals derive parts of their social identity from their ingroups, aligning their values and behaviours with their perception of the ingroup. Suggesting that individuals who perceive their group to prioritize environmental protection are more likely to engage in circular economy practices. Outgroups, however, may not play a role as individuals naturally detach themselves and provide not-so-accurate estimations. Thus, proposing that perceptions of the ingroup would be more influential than those of the outgroup on individual behaviour. This paper aims to expand the current body of knowledge on the relationship between perceived group biospheric values and engagement in circular economy-related behaviour. The study is conducted in the Netherlands using a student sample to reduce variability in the sample, as controlled for education. Therefore, in line with previous research, we hypothesise that:

H1: There is a positive association between perceived ingroup biospheric values and individual circular economy behaviour.

H2: Perceived ingroup biospheric values are more strongly correlated with individual circular economy behaviour than perceived outgroup biospheric values and individual circular economy behaviour.

Methods

Participants

A total of 183 people took part in our study, of those 16 opened the survey without filling in anything, three did not consent to participate, eight did not consent to data processing, 12 people were neither FEB nor BSS students, and 41 did not answer any further questions. After excluding those participants, the final sample was 103 participants. The sample was comprised of students within the Behavioural and Social Sciences (BSS) and Economic and Business (FEB) faculties at the University of Groningen. No data about age, gender or any other demographic data was collected. The participants were recruited in several ways: using invitation links on social media (i.e., via WhatsApp groups), they were approached by research team members within the recreational areas in the buildings of both faculties and lastly, QR codes were displayed in lectures from both faculties, with consent from lecturers.

Research Design and Procedure

The current study was approved by the Ethics Board of the University of Groningen. The current study was part of a larger questionnaire that included questions on altruistic values and public health behaviour. The study was in English. Participants completed the study online on personal devices. Participation was voluntary and there was no compensation for the participation in the study.

In the beginning, participants provided informed consent and could withdraw with no penalty at any point during the survey. First, respondents indicated which faculty they were from, Behavioural and Social Sciences or Economics and Business. Next, students were asked

to report their biospheric and altruistic values. Afterwards, students were asked to estimate the values of students from their faculty (BSS or FEB) and then from the opposite faculty (BSS estimates FEB values and vice versa). Subsequently, using a self-developed scale participants were asked to rate the frequency of getting involved in behaviours related to circular economy in the past three months and rate their motivation (financial, environmental, or other reasoning). Lastly, participants answered questions related to public health behaviour. The current study focuses on biospheric values and circular economy behaviour, so altruistic values and public health behaviour will not be analysed. The final sample consisted of 53 students from the BSS and 50 students from FEB.

Measures

Biospheric Values

We measured personal values using the Environmental Portrait Value Questionnaire (E-PVQ) (Bouman et al., 2018), which is based on Schwartz's PVQ (Schwartz, 2003; Schwartz et al., 2012). Our scale only included statements related to biospheric and altruistic values, leaving out statements related to hedonic and egoistic values as in the original E-PVQ. Participants were shown statements (i.e. "It is important to this person to prevent environmental pollution.", and "It is important to this person to be in unity with nature.") and were instructed to indicate how similar the portrayed person is to them. Respondents were asked to do this using a 7-point scale ranging from 1 (*totally not like me*) to 7 (*totally like me*). Four of the nine items reflected biospheric values, with good internal consistency, $\alpha=.84$. We also calculated the mean values over the four biospheric values items for the BSS faculty ($M=4.97$; $SD=1.13$) and FEB ($M=4.92$; $SD=1.01$). We did not include altruistic values in our analysis, as they were not relevant to our research questions.

Perceived Biospheric Group Values

Perceptions of group values were also measured using the adapted version of the E-PVQ, four of the items reflected biospheric values. Namely, participants from both groups were asked to rate the extent to which the portrayed person is representative of the relevant group. The rating was again completed on a seven-point scale ranging from 1 (*totally not like BSS/FEB students*) to 7 (*totally like BSS/FEB students*). Internal consistency for the perceived values of the BSS sample was good, with $\alpha=0.87$, ($M=5.17$, $SD=0.94$). Internal consistency for the perceived values of the FEB sample was also good, $\alpha=0.89$, $M=3.82$, $SD=1.03$.

Circular Economy Behaviours

Circular economy-related behaviours were measured using a self-developed scale, items and descriptive statistics are presented in Table 1. This section included six questions, which were adapted from the 9 R's by Kircherr et al. (2017). Participants were asked to rate the frequency of their engagement in these behaviours in the past 3 months on a scale ranging from 1 (*never*) to 7 (*always*). The internal consistency of the scale was good, $\alpha=.71$, ($M=4.48$, $SD=1.06$). Assuming a large effect size ($\rho =0.5$), using G*Power 3 (Faul et al., 2007), we need 82 participants.

Table 1

Circular Economy Behaviour Descriptive Statistics

	M	SD
Bought second-hand clothing, instead of shopping for new clothes?	3.54	1.95
Used a reusable water bottle, instead of plastic/paper cups?	5.79	1.29
Ate leftovers instead of throwing food away.	5.60	1.32

Chose products made from recycled materials?	3.71	1.49
Bought second-hand furniture, instead of buying new furniture?	3.53	2.14
Repaired something (or had someone else repair it) instead of buying new?	4.67	1.61
Circular Economy Behaviour Scale	4.48	1.06

Results

To test our first hypothesis, which posited a positive association between perceived ingroup biospheric values and personal circular economy behaviour, we performed a series of correlations. In the BSS sample, we found a positive moderate correlation between perceived ingroup biospheric values and CEB, ($r(46) = 0.31, p = 0.034, 95\% \text{ CI} [0.02; 0.54]$). Thus, respondents from the BSS faculty who perceive that other students from the same faculty endorse biospheric values were more likely to engage in behaviours related to circular economy. In the FEB sample, we found a weak positive association between perceived ingroup values and CEB, but that was not significant ($r(46) = 0.11, p = 0.477, 95\% \text{ CIs} [-0.18; 0.38]$). Hence for the FEB sample, perceived values from their faculty peers did not seem to be associated with CEB. In conclusion, we found a moderate positive association between perceived ingroup biospheric values and personal circular economy behaviour in the BSS sample. However, these findings were not replicated in the FEB sample. As such we found a positive association between perceived ingroup biospheric values and circular economy behaviour in the BSS group and no association in the FEB sample. Thus, suggesting partial support for our first hypothesis.

Further, we analysed the association between perceived outgroup biospheric values and personal circular economy behaviour. Firstly, we found a moderate positive correlation

between the BSS perception of the values of FEB on individual circular economy-related behaviour ($r(46) = 0.56, p < .001, 95\% \text{ CIs } [0.32; 0.73]$). Suggesting that the perception of FEB students' endorsement of biospheric values by BSS students related to engagement in individual past circular economy behaviour in the BSS sample. The correlation between FEB students' perception of BSS biospheric values and CEB was positive, but weak and not statistically significant ($r(46) = 0.02, p = 0.882, 95\% \text{ CIs } [-0.26; 0.30]$). Thus, we did not find a relation between FEB students' perception of BSS biospheric values and individual circular economy behaviour. Therefore, these findings suggest that perceived outgroup biospheric values positively influence circular economy-related behaviours in the BSS sample. However, there seems to be no such association in the FEB sample.

To test our second hypothesis, whether perceived ingroup values are more influential than perceived outgroup values on individual circular economy-related behaviour, we analyse and compare the correlations reported earlier. While the association between BSS-perceived ingroup biospheric values and CEB was moderate ($r(46) = 0.31$), this association was stronger in the outgroup condition, the association between perceived values of FEB and BSS behaviour ($r(46) = 0.56$). Thus, suggesting that BSS students' behaviours are more strongly influenced by FEB students' values (perceived outgroup values). In the FEB sample, the opposite was true. The association between perceived FEB students' biospheric values and individual circular economy behaviour was positive and weak ($r(46) = 0.11$). However, this association was weaker in the outgroup condition, the association between FEB perception of BSS endorsement of biospheric values and individual FEB behaviour was weak ($r(46) = 0.02$). Both associations were not statistically significant ($r(46) = 0.11, p = 0.477; r(46) = 0.02, p = 0.882$). Thus, BSS students' behaviours were more influenced by their perception of FEB values, and although the opposite was true in the FEB sample, the correlations were not significant. Therefore, we did not find evidence for our second hypothesis.

As such we found partial support for our first hypothesis. Namely, we found that for BSS students the perception of other BSS students' values is associated with individuals' circular economy-related behaviour. However, this association was not replicated for the FEB respondents. Further, we did not find evidence for our second hypothesis, as the correlations were not statistically significant for the FEB students. While the opposite of our assumptions was true for students from BSS, the association between their behaviour and the values of students from the FEB was stronger.

Discussion

Overview

The climate crisis, a global modern issue, can be tackled by engaging in pro-environmental behaviour. One of the main predictors of engagement in pro-environmental behaviour is biospheric values. Namely, in the current paper, we investigate the influence of the perception of biospheric group values on circular economy behaviour. Firstly, in line with Social Identity Theory and empirical research, group values and how they are perceived are assumed to influence an individual's actions (Bouman et al., 2020; Common Cause Foundation, 2016; Ruepert et al., 2017; Tajfel & Turner, 1979; Wang et al., 2021). Therefore, we hypothesised that there is an association between perceived group biospheric values and engagement in circular economy behaviour. Additionally, in line with ingroup favouritism, an aspect of SIT, individuals are more accurate in predicting the values of their ingroup than those of an outgroup. People also act in line with their ingroup's perceived values, to conform to the group and maintain a sense of belongingness. Therefore, due to better accuracy and internal motivation to belong, an individual's behaviour may be influenced more by their perception of ingroup values than of outgroup values. Thus, our second hypothesis posits that perceived ingroup biospheric values are more strongly correlated with individual circular economy behaviour than perceived outgroup biospheric values.

The findings of the current paper are in line with the existing body of research. In line with our first hypothesis and previous research by Bouman et al. (2020), we provide partial evidence of the association between perceived group biospheric values and circular economy-related behaviour. We found an association between perceived ingroup biospheric values and CEB for students from the faculty of Behavioural and Social Sciences, but no such association was identified in students from the Faculty of Economics and Business. However, we did not find evidence for our second hypothesis, perceived ingroup values were not more influential than perceived outgroup values on individual behaviour. Namely, BSS students' behaviours were influenced more by their perception of FEB's values, while the results for the FEB students were not statistically significant.

Perceived Biospheric Ingroup Values and Circular Economy Behaviour

In line with our first hypothesis, we found partial evidence for the relation between perceived group biospheric values and engagement in circular economy behaviour. Namely, in the BSS sample, we identified a positive moderate correlation between perceived group biospheric values and CEB. Suggesting that the higher the endorsement of perceived ingroup biospheric values, the higher the proclivity to engage in behaviours related to circular economy. Thus, partially supporting our first hypothesis. However, the former findings were not replicated in the FEB sample, as results suggest a weak and statistically non-significant correlation between perceived ingroup biospheric values and CEB. Therefore, for students from FEB, we do not find an association between perceived ingroup biospheric value and CEB. As such, our data suggest that there is a positive association between perceived ingroup biospheric values and circular economy behaviour in the BSS group, but not in the FEB one. Therefore, we found only partial evidence for our first hypothesis, that there is a positive association between perceived ingroup biospheric values and circular economy behaviours.

Part of our findings can be explained through the prism of Social Identity Theory, as, individuals derive their social identity from the group membership, leading them to internalize and adhere to the values of their ingroup (Tajfel & Turner, 1979). Thus, Social Identity Theory suggests that perceived ingroup values influence individual behaviour, as individuals act in line with group values to maintain a positive social identity and sense of belongingness to the group. Therefore, our findings in the BSS sample, where we identified a positive association between perceived ingroup biospheric values and engagement in circular economy behaviour, are consistent with SIT principles. Therefore, BSS students who perceive their faculty peers to strongly endorse biospheric values are more likely to engage in circular economy-related behaviours, reflecting the influence of ingroup values on behaviour. The findings in the BSS sample, are also in line with previous research, which provided evidence for the association between perceived group biospheric values and pro-environmental behaviour (Bouman et al., 2020; Wang et al., 2021). We also extend those lines of research by specifically analysing circular economy behaviour in association with perceived ingroup biospheric values. Therefore, the identified positive association between perceived ingroup biospheric values and circular economy behaviours is in line with the Social Identity Theory and previous research.

Conversely, our findings were not replicated in the FEB group, as the correlation between perceived ingroup biospheric values and CEB was not statistically significant. As such there is no association between perceived ingroup biospheric values and CEB, for FEB students. This pattern of results is not consistent with existing data and to the knowledge of the researchers has little coverage in the existing literature. Nevertheless, we propose an explanation based on the influence of potential stereotypes related to students from a business background. Namely, students from the Faculty of Economics and Business may be considered to be driven by financial incentives and have higher regard for values associated

with power and achievement. Therefore, FEB students may be perceived to endorse biospheric values to a lesser extent, thus leading to a weak or non-existent association between perceived ingroup biospheric values and CEB in the FEB group. Although not supported by research, the perception of lower endorsement of group biospheric values by FEB students in their peers may be explained by certain stereotypes. Therefore, our findings in the FEB group are different from those in the BSS sample, as for business students we did not find an association between perceived ingroup biospheric values and circular economy behaviours, which may be explained by stereotypes associated with students from FEB.

Although our study provides evidence for the first hypothesis, it is only partial, as we found a positive association in only one of the two studied groups. Our model only addresses perceived biospheric values, omitting secondary variables that might influence this association. Therefore, to address the shortcomings of this research and to extend the existing body of knowledge future studies could develop a model that also considers group identification (also see Bouman, Steg, & Dietz, 2020). By measuring group identification alongside the association between perceived ingroup biospheric values and pro-environmental behaviour, we can gain a deeper understanding of the nature of the relationship between perceived group biospheric values and pro-environmental behaviour. In the context of our findings, measuring group identification may offer insight into the nature of the association between perceived ingroup biospheric values and circular economy behaviours in both groups. Therefore, offering some insight into the discrepancy between our results. To gain deeper insight and expand the existing body of knowledge, including the current study future research could develop models that analyse group identification in relation to perceived ingroup biospheric values and pro-environmental behaviours.

The contradictory nature of the results in the two groups provides partial evidence to the first hypothesis. We find a positive association between perceived group biospheric values

and engagement in circular economy behaviour only in the BSS group. The identified relation is consistent with existing literature and Social Identity Theory. In contrast, the lack of an association has little support, and we suppose may be explained by stereotypes related to students from a business background. To strengthen current findings and address the shortcomings we propose extending the current model by measuring group identification alongside perceived ingroup biospheric values and pro-environmental behaviours.

Perceived Biospheric Ingroup and Outgroup Values and Circular Economy Behaviour

The findings from our analyses did not provide evidence for our second hypothesis, which perceived ingroup biospheric values are more influential on individual behaviour than perceived outgroup biospheric values. In the BSS sample, where BSS students perceived FEB students' values as outgroup values, the association between perceived outgroup biospheric values and CEB was stronger than the correlation between ingroup (BSS) values and individual circular economy behaviours. Therefore, this suggests that BSS students' circular economy behaviour may be more influenced by the perceived biospheric values of FEB students (outgroup) than the perceived biospheric values of BSS peers (ingroup). Conversely, we did not find an association in the FEB sample as both correlations were not significant. In the FEB sample, where FEB students perceived BSS students' values as outgroup values, the association between perceived outgroup biospheric values was weaker than the correlation between perceived ingroup biospheric values (FEB) and circular economy. However, both correlations were not statistically significant, thus this association does not exist. As such our results suggest that the association is not statistically significant in the FEB sample and for the BSS sample, outgroup biospheric values were more influential. Therefore, we do not find evidence for our second hypothesis.

These findings are not in line with the Social Identity Theory, thus suggesting that other mechanisms may play a role in explaining the stronger association between perceived

outgroup biospheric values and circular economy behaviour than with perceived ingroup biospheric values (Tajfel & Turner, 1979). Namely, SIT posits that ingroups serve as points of reference to the individual, thereby influencing individuals' social identity, values, and behaviours (Tajfel & Turner, 1979). Moreover, in line with ingroup favouritism, a component of SIT, individuals perceive their outgroups' values as less relevant compared to ingroup values. Therefore, we should have identified a stronger association between perceived ingroup biospheric values and circular economy behaviours, than with perceived outgroup biospheric values. However, this was not the case, thereby suggesting that there may be other factors beyond social identity that influence behaviour. There is currently little research explaining the mechanisms of these unexpected findings, therefore we cannot provide a comprehensive explanation of the stronger association between perceived outgroup biospheric values on circular economy behaviours, as compared to perceived ingroup biospheric values. Therefore, as Social Identity Theory cannot explain our findings, future research is required to identify explanations.

Overall, our results do not provide evidence for our second hypothesis. Namely, BSS students' circular economy behaviours are influenced more by the perception of FEB students' biospheric values (outgroup) than by the perception of BSS students' biospheric values (ingroup). The associations were not statistically significant for the FEB group. These findings cannot be explained by the Social Identity Theory, therefore further research is required to explain underlying mechanisms.

Limitations and Future Directions

One limitation of the current research is its correlational nature. Therefore, we cannot make conclusions related to the causal relationship between the perception of biospheric values and behaviour. As such future research could employ an experimental design, that would allow manipulating the perception of biospheric values and the observed pro-

environmental behaviour. Additionally, individuals should be randomly assigned to conditions. By controlling the variables and employing randomization procedures in the experimental condition, future research could establish causal links between perceived biospheric values and circular economy behaviours. Therefore, the use of an experimental design over a correlational as in the current study could lead to enhanced reliability and validity of findings. Further, offering more conclusive evidence regarding the influence of the perception of group biospheric values on behaviour.

Moreover, the findings of the current research are limited to the context of circular economy behaviours. Namely, circular economy behaviours encompass individual behaviour that may not require a lot of effort. Moreover, these behaviours have secondary gains, in the form of personal economic benefit. Thus, future research could analyse the association between perceived group biospheric values and more complex environmental behaviours. One such line of research could focus on the influence of perceived group biospheric values on using alternative modes of transport, when owning a personal car, in areas with inadequate infrastructure. A personal car may be more convenient and more time efficient to use when running errands, rather than changing several lines of public transport to get to one's destination. Such research may still be influenced by personal economic benefit, but it could consider perceived group biospheric value, personal convenience, and engagement in pro-environmental behaviour in non-optimal conditions. Therefore, by expanding research in such a manner, we may gain insight into the different influences of perceived group biospheric values and personal convenience on pro-environmental behaviour. Thus, offering a deeper understanding of influencing factors on the association between perceived group biospheric value and pro-environmental research.

Practical Implications

The current study due to its student sample and correlation nature may have limited practical implications. Yet practitioners may use these findings in designing interventions for encouraging engagement in circular economy behaviours. By recognizing the different influences of group values on individual behaviours, practitioners can design interventions aimed at specific groups or communities. In the context of BSS students, the responsible faculty members, when developing interventions aimed at promoting sustainable behaviours, may aim to emphasize the alignment between group environmental values and circular economy behaviours. Therefore, interventions for groups with established positive associations between perceived group biospheric values should be based on promoting a view of collective biospheric values, which would in turn influence engagement in circular economy behaviour.

Secondly, the lack of a significant association in the FEB group, emphasizes the need to develop interventions aiming to promote biospheric values endorsement and pro-environmental action engagement for this group. Firstly, faculty members responsible for the promotion of these values can develop interventions that aim to challenge misconceptions related to the endorsement of biospheric values in this group. Further, interventions could highlight the relevance of circular economy behaviours for both environmental and economic benefit. Therefore, interventions for groups with no established associations between perceived ingroup biospheric values and pro-environmental behaviour could first develop interventions that challenge established stereotypes. And subsequently, design interventions that aim to promote biospheric values and subsequent circular economy-related action.

Conclusion

In summary, our findings indicate partial evidence for our first hypothesis, however, we do not find evidence for our second hypothesis. Firstly, we found that perceived biospheric ingroup values are associated with circular economy behaviours. However, this

association was true for only one of the two groups studied. Therefore, our results suggest that while group values might influence individual behaviour, there may also be other factors that play a significant role. Secondly, we did not find evidence for our second hypothesis. Instead in one of the groups, the association between perceived outgroup biospheric values was stronger and circular economy behaviours than between perceived ingroup biospheric values. Therefore, this suggests that in certain contexts perceived outgroup values may be more influential than perceived ingroup values. Future research could focus on identifying explanations, as current findings cannot be explained in the context of Social Identity Theory. Overall, our research sheds light on the importance of perceived group values on behaviour, but it also emphasizes the need for further research in the area.

References

- Bouman, T., & Steg, L. (2019). Motivating Society-wide Pro-environmental Change. *One Earth*, 1(1), 27–30. <https://doi.org/10.1016/j.oneear.2019.08.002>
- Bouman, T., Steg, L., & Kiers, H. A. L. (2018). Measuring Values in Environmental Research: A Test of an Environmental Portrait Value Questionnaire. *Frontiers in Psychology*, 9, 564. <https://doi.org/10.3389/fpsyg.2018.00564>
- Bouman, T., Steg, L., & Zawadzki, S. J. (2020). The value of what others value: When perceived biospheric group values influence individuals' pro-environmental engagement. *Journal of Environmental Psychology*, 71, 101470. <https://doi.org/10.1016/j.jenvp.2020.101470>
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191. <https://doi.org/10.3758/BF03193146>
- Hanel, P. H. P., Maio, G. R., & Manstead, A. S. R. (2019). A new way to look at the data: Similarities between groups of people are large and important. *Journal of Personality and Social Psychology*, 116(4), 541–562. <https://doi.org/10.1037/pspi0000154>
- Hanel, P. H. P., Wolfradt, U., Lins De Holanda Coelho, G., Wolf, L. J., Vilar, R., Monteiro, R. P., Gouveia, V. V., Crompton, T., & Maio, G. R. (2018). The Perception of Family, City, and Country Values Is Often Biased. *Journal of Cross-Cultural Psychology*, 49(5), 831–850. <https://doi.org/10.1177/0022022118767574>
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>
- Ruepert, A. M., Keizer, K., & Steg, L. (2017). The relationship between Corporate Environmental Responsibility, employees' biospheric values and pro-environmental behaviour at work. *Journal of Environmental Psychology*, 54, 65–78. <https://doi.org/10.1016/j.jenvp.2017.10.006>

- Schwartz, S. H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beierlein, C., Ramos, A., Verkasalo, M., Lönnqvist, J.-E., Demirutku, K., Dirilen-Gumus, O., & Konty, M. (2012). Refining the theory of basic individual values. *Journal of Personality and Social Psychology*, *103*(4), 663–688. <https://doi.org/10.1037/a0029393>
- Steg, L. (2016). Values, Norms, and Intrinsic Motivation to Act Proenvironmentally. *Annual Review of Environment and Resources*, *41*(1), 277–292. <https://doi.org/10.1146/annurev-environ-110615-085947>
- Stern, P. C., & Dietz, T. (1994). The Value Basis of Environmental Concern. *Journal of Social Issues*, *50*(3), 65–84. <https://doi.org/10.1111/j.1540-4560.1994.tb02420.x>
- Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict In Austin WG & Worchel S. (Eds.), *The social psychology of intergroup relations* (pp. 33–47). *Monterey, CA: Brooks/Cole*.
- Wang, X., Van Der Werff, E., Bouman, T., Harder, M. K., & Steg, L. (2021). I Am vs. We Are: How Biospheric Values and Environmental Identity of Individuals and Groups Can Influence Pro-environmental Behaviour. *Frontiers in Psychology*, *12*, 618956. <https://doi.org/10.3389/fpsyg.2021.618956>
- What is circular economy and why does it matter?* (n.d.). UNDP Climate Promise. <https://climatepromise.undp.org/news-and-stories/what-is-circular-economy-and-how-it-helps-fight-climate-change>