An Initiative Stimulating Pro-Environmental Behaviour: The Effects of Social Identity and Values

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Abstract

Climate change is a highly critical and relevant issue nowadays because it impacts the social and environmental sources of health, and our future depends on it. Climate change needs to be addressed by slowing down the rate and limiting the amount of global warming that is caused by human behaviour. One way of influencing human behaviour, is to encourage people to increase the use of reusable cups. We have investigated the influence of initiative approaches, social identity and biospheric and egoistic values on encouraging pro-environmental behaviour. Students were asked to read an article about a newly proposed initiative and report on their acceptability of and willingness to adapt to the initiative. The results showed that students are more acceptable of initiatives that rely on biospheric values compared to egoistic values and that are proposed using a bottom-up approach, possibly because they identify more easily with bottom-up initiators. These results offer recommendations to use biospheric values and bottom-up initiatives to encourage people to do one's bit to limit climate change.

Keywords: reusable cups, social identity, initiative, biospheric values, acceptability

An Initiative Stimulating Pro-Environmental Behaviour: The Effects of Social Identity and Values

Because of the way humans choose to live, such as travelling frequently by car and plane, and creating a lot of waste to name a few examples, the temperature on our planet has been increasing tremendously. This is a consequence of the growing amount of greenhouse gases that we produce with our unsustainable lifestyles and patterns of consumptions, among many other practices (IPCC, 2023). Therefore, much research has been conducted to investigate what we can do to improve our future. An important aspect that researchers have focused on is how they can motivate people to behave more pro-environmentally. Using knowledge from behavioural sciences, studies have found that the personal reasons that people have for behaving in certain ways, like attitudes and values, as well as the social identity they consider in choosing how to behave, are crucial determinants for environmental behaviour and climate action (Stern et al., 1998; Schultz and Zelezny, 1999; Dietz et al., 2005; De Groot & Steg, 2008; Hornsey & Armani, 2004; Steg, 2016; Bouman et al., 2020). To briefly explain, the values someone endorses consist of goals that guide their behaviour and attitudes follow from these values and are crucial for deciding how to behave (Bouman et al., 2020).

The aim of this thesis is to look into a way to stimulate pro-environmental behaviour in students by proposing a pro-environmental initiative, focusing on the identity of the initiators and the values of the initiators as well as of the student respondents, and measuring the acceptability of and willingness to adapt to the initiative, of the students.

Given that the climate problem is often portrayed as a problem that should be tackled cooperatively, little research has been conducted to investigate the problem at an intergroup and intragroup level (Ostrom et al., 2002). However, most of the time, formulating new policies occurs from the top down and it depends on decision making that affects people from

several different social groups (Pearson et al., 2016). Extensive research has been conducted on the social identity approach proposed by Fielding and Hornsey (2016). This approach argues that the way people form their attitudes is a combination of how they see themselves as an individual and how they see themselves in relation to others around them, specifically people from their own social group compared to people from other social groups. The social identity approach has been used in many studies trying to explain pro-environmental behaviour, which is why we want to use it to investigate what it means for stimulating the use of reusable cups as a replacement for disposable cups. Therefore, the present study will focus on what role group dynamics and specifically social identity play in responding to climate change.

Considering values, Schwartz (1992) explains that values are concepts or beliefs that function as goals that guide behaviour over many situations throughout someone's life and that can vary in importance. In other words, Schwartz (1992) argues that values can function as guiding principles to help an individual work towards what they find most important in life. Therefore, individuals are intrinsically motivated to work towards certain goals, if they have strong personal values associated with those goals. Accordingly, values could be a way to possibly stimulate someone to work towards a goal, like bringing a reusable cup instead of using disposable cups, by reinforcing the personal values that coincide with that goal (Bouman et al., 2020). There are many different values people can have, but four values have been found to be particularly important for investigating environmental and sustainable behaviour, which are biospheric (involving the environment and nature), altruistic (involving the well-being of other people), hedonic (involving pleasure and your own well-being) and egoistic (involving personal benefits) values (Stern et al., 1998; De Groot & Steg, 2008). De Groot and Steg (2008) concluded that the values are associated with personal norms and awareness of consequences, which have been found to be relevant predictors of environmental

behaviour (Schwartz, 1977; Stern et al., 1999; Van Liere & Dunlap, 1978). Using these findings about values, together with the social identity approach, a next step towards stimulating pro-environmental behaviour, specifically here referring to reducing the use of disposable cups, can be investigated. In this present study, we will examine the possible effect of using a top-down versus a bottom-up approach, the effect of social identification on it and the effect of using biospheric compared to egoistic values for stimulating the use of reusable cups.

Initiative Approach and Acceptability/Willingness to Adapt

First, we will focus on the two different approaches that are used to propose the pro-environmental initiative in this study. Generally, it has been assumed that to be able to produce climate change and stimulate pro-environmental behaviour, a top-down influence, for example government policies or a global institute, is needed, because it is a society-wide issue that cannot be changed by a few individuals (Miller, 2004; Brennan, 2009). However, small-scale, bottom-up initiatives, like grassroot initiatives are developing and increasing more and more (e.g. Middlemiss & Parrish, 2010; Seyfang & Haxeltine, 2012).

Jans (2021) found that a bottom-up pro-environmental initiative is an effective approach in stimulating pro-environmental behaviour. The results showed that using a bottom-up approach is positively associated with the fact that people identify as someone who values the environment, and through this it can strengthen related attitudes and intentions to act according to this identity. A top-down approach was found to be positively associated with pro-environmental social identity for people that identified with the initiative, but this association did not influence pro-environmental behaviour or intentions (Jans, 2021).

Social Identity and Acceptability/Willingness to Adapt

Jans (2021) has briefly touched upon social identity being an influence for the different effects of the two approaches, but there is more to this. As mentioned before, a lot of

research has been conducted using the social identity approach, which argues that people compare themselves to others to find similarities and differences, which helps categorizing everyone into social groups. These group memberships are crucial elements that can guide someone how they think they should think, act, or feel. As a result, someone's attitudes will be similar to that of fellow (in)group members, and as dissimilar as possible to that of outgroup members (Fielding & Hornsey, 2016). For instance, studies have shown that people use the group membership of a messenger, or as in this study the initiators, to determine what to do with what they have to say or propose (Esposo et al., 2013; Hornsey & Imani, 2002; Mackie & Cooper, 1984; Mackie et al., 1990). Group membership is often defined in research by comparing ingroup members with outgroup members. In this study, this type of comparison can be found when the participant compares themselves to the initiators, which can be either perceived as an ingroup or an outgroup member. In general, if a message comes from an ingroup member compared to an outgroup member it is the most beneficial, because it results in more content-focused processing (Mackie & Cooper, 1990), in less defensiveness in reaction to criticism (Hornsey & Imani, 2002) and the strength of argumentation has more influence (Esposo et al., 2013). Additionally, Kahan et al. (2011) found that overall ingroup sources are perceived to be more trustworthy than outgroup sources, even if it is evident that the outgroup source has expertise on the subject. As for stimulating to bring your own cup or mug to reduce the use of disposable cups, it can be concluded that using an ingroup source should create the largest effect on someone's attitudes towards this idea, and thus this might result in the highest probability of taking action by bringing a reusable cup.

Next to that, norms have been shown to have more influence when they belong to a group that is salient in a social context, especially for people that identify strongly with that group and that have attitudes that align with these group norms (White et al. 2011). By making the social identity salient, its beliefs, attitudes, and behaviours get incorporated to

form an identity that aligns with that of the group prototype (Terry et al., 1999). Relating this to proposing a new initiative, by making the social identity of the initiators salient, participants that identify with this group will be inclined to act in accordance with the group's ideas.

In a relating study, Masson et al. (2016) found evidence that individuals tend to perceive the group they are a part of as positive which makes a part of their identity positive as well. To maintain this, they will act in accordance with their group's norms and expectancies, which will again result in a positive opinion about the group. Therefore, the motivation to act in line with the group and ingroup members, will increase the willingness to act in a pro-environmental manner and/or increase the acceptability of a newly proposed environmental initiative if the group is perceived to value this, especially for ingroup members that strongly identify with the group (Masson et al., 2016). Taking everything together, research has shown that to stimulate pro-environmental behaviour, such as proposing a new environmental initiative as in the present study, using an ingroup as source or initiator will result in higher support, and in other words acceptability and willingness to adapt, for the initiative (Schultz & Fielding, 2014).

Values and Acceptability/Willingness to Adapt

Having discussed the different approaches and the influence of social identity, the focus will now be on the impact of values on behaviour. Research has generally investigated the effect of personal values that guide individuals to act in a certain way. However, little research has examined the effect of values that are the basis of motives behind an initiative or proposal. Therefore, the present study focuses on the values of both the initiator and individuals that are responding to the initiative. Bouman et al. (2020) studied the relationship between perceived group values and individual engagement in pro-environmental behaviour. They found that if individuals perceived their ingroup to prioritize biospheric values, they are

inclined to partake in pro-environmental behaviour. Additionally, this effect was even stronger for individuals that identified strongly with the ingroup members, and it was the strongest when the individuals did not highly prioritize biospheric values themselves. Interestingly, Ruepert et al. (2017) found that employees that prioritize biospheric values themselves and perceive their organization to do so as well were inclined to act in a pro-environmental manner, but they also found an effect for employees with weak to moderate biospheric personal values if they perceived their organization in the same way. In contrast, Terry et al. (1999) found that individuals that indicated taking part in recycling as important for their identity were more motivated to act in a pro-environmental manner compared to individuals that did not find this an important aspect of their identity. Accordingly, to stimulate pro-environmental behaviour by proposing a new initiative it is crucial to make sure that individuals not only identify strongly with the initiators as stated before, but also that they perceive the initiators to prioritize biospheric values.

On the other hand, egoistic values have not been found to have any specific influence on pro-environmental behaviour. Egoistic values can solely help to stimulate a certain behaviour, like bringing a reusable cup, if it is presented as something that will mainly benefit the person acting (De Groot & Steg, 2008). For example, if bringing a reusable cup means the price for coffee will be lower for those who bring it and higher for those who do not. To investigate this, the present study compares the effect of biospheric values versus egoistic values of the initiator. Additionally, the personal values of the participants are recorded to see if the results of Bouman et al. (2020) with low personal biospheric values or the results of Ruepert et al. (2017) with high personal biospheric values having the highest effect are most reliable.

Present Study

Environmental behaviour and acceptability of and willingness to adapt to new pro-environmental proposals and initiatives have been approached from many different perspectives, but many phenomena remain unexplained. The present study will have a combined approach that involves aspects from both identity and values. As described before, several studies have been conducted that focused on bottom-up influence and approaches to initiatives (e.g., Jans, 2021; Middlemiss & Parrish, 2010; Seyfang & Haxeltine, 2012). The present study is aimed at extending the knowledge by focusing on not one approach but both a bottom-up approach and a top-down approach. We expect that with the participant population consisting of students, the bottom-up approach will have a higher effect on the acceptability of and the willingness to adapt to the environmental initiative. The intention behind the use of both the bottom-up and top-down approach is to find the reason why the bottom-up approach might be more beneficial. In relation with that, we investigate the effect of the identity of the initiators on the acceptability and willingness of students, which can be deducted from the group memberships of the different initiators coming from the two approaches. Lastly, the influence of values, specifically biospheric and egoistic values, of both the initiators and the students will be examined. The combination of these three variables creates a unique study which, to our knowledge, has not been conducted before.

Hypotheses

Hypothesis 1: Participants identify more strongly with the bottom-up initiators compared to the top-down initiators (**H1**).

Hypothesis 2: Participants report a higher acceptability of and willingness to adapt to the bottom-up initiative compared to the top-down initiative (**H2a**), especially participants that strongly identify with the initiators (**H2b**).

Hypothesis 3: Participants report a higher acceptability of and willingness to adapt to the initiative that relies on biospheric values, compared to the initiative that relies on egoistic values (**H3a**), especially for participants that endorse strong biospheric values (**H3b**).

Hypothesis 4: Participants report the highest acceptability of and willingness to adapt to the bottom-up initiative that relies on biospheric values (**H4a**), especially for participants that highly identify with the initiators (**H4b**) and that endorse strong biospheric values (**H4c**).

Methods

Participants and Procedure

Through our online questionnaire, we recruited a total of 166 participants. All participants are students at the University of Groningen. 74.1% of the participants identifies as female ($n = 123$), 24.1% of participants identifies as male ($n = 40$), and 1.2% of the participants identifies as other ($n = 2$) and 1 participant would rather not say. 63.9% of the participants stated they are from the Netherlands ($n = 106$), 16.3% of the participants stated they are from Germany ($n = 27$), 14.5% stated they are from a different EU country ($n = 24$) and 5.4% of participants stated they are from a country outside of the EU ($n = 9$). The mean age of participants was 20.36 ($SD = 1.89$), with a range from 18 to 31. Participants below the age of 18 were excluded from the dataset because of ethical reasons. An a priori power analysis based on an Analysis of Variance (ANOVA) test, showed that 279 participants were required to achieve a medium effect size ($f_2 = .25$) and power .95%.

Since we did not ask our participants for sensitive personal information (e.g., political preference or sexual orientation), our research was approved through the fast-track procedure of the Ethics Committee of Psychology at the University of Groningen. After receiving the approval, we uploaded our Qualtrics questionnaire to SONA. SONA is an online research portal, through which first-year psychology students can participate in research projects from

other students at the University of Groningen. Participants were rewarded with 0.3 'SONA points' for their participation.

At the beginning of the questionnaire, participants were told that they would be participating in a research project that would investigate their opinions on a new initiative that would be replacing disposable coffee cups by bringing their own mugs to the university. Participants were told their participation was voluntary, and that the research would take about 10 minutes of their time. They were also informed that there was no risk in participating in the research, and that their data would be handled securely. The actual research purposes were not disclosed before the study, to ensure the participants were not primed or biased towards answering in a certain way. An informed consent form was shown to participants, and they were actively asked for their permission to share their data and answers with us.

After permission was given, participants were randomly assigned to one of the four texts and posters we designed to measure their responses (see Appendix A). Participants were shown one of four texts. The texts consisted of a self-made 'U-krant' article about the replacement of disposable cups by students bringing their own cups or mugs. After reading the article, participants were asked to give their opinion on the initiative. Furthermore, participants were asked to rate certain values and identifications on a Likert Scale. After completing all the questions, the participants received a debriefing, stating the actual purposes of the research.

Design

We designed an online questionnaire in the form of a 2x2 between-subjects experimental design. Through Qualtrics, participants were automatically placed in one of four experimental conditions randomly. Each condition had its own unique manipulation text. Through our first manipulation, conditions varied in the initiators of the newly proposed initiative: students of the university (bottom-up) vs. the executive board (top-down). Through

the second manipulation, the initiator's motivation behind the initiative varied (biospheric values vs. egoistic values). These two manipulations created four unique 'U-krant' articles (see Appendix A). The independent variables in this study are initiative approach, social identity, personal values and initiator values. The dependent variables are acceptability of the initiative and willingness to adapt to the initiative.

Lastly, we informed participants that participation was voluntary, that they could end their participation at any time and that their answers would be made anonymous.

Materials and Instruments

The materials used for this study consisted of the four different manipulation texts in both Dutch and English with complementing posters and our questionnaire, in both Dutch and English (see Appendix A).

The texts were written in such a way that they mostly consisted of the same information. Based on the different conditions some parts were altered. The text and poster based on the condition Top-Down + Biospheric presented the reader with the information that the initiative was thought of by members of the Executive Board motivated by a biospheric value. This top-down condition was made salient by providing quotes from the initiators in a corporate style and the biospheric value was corroborated by the quotes on the environmental impact that the initiative could have.

The text and poster based on the condition Top-Down + Egoistic contained the same top-down information as the first condition, this being the portrayal of the Executive Board as initiators and the more corporate language. The egoistic condition was made salient using a monetary motive as reasoning for the initiative by, for example, presenting symbols pointing to money, like euro signs and a wallet.

The Bottom-Up + Biospheric condition text contained information about the initiators being students and their biospheric motivation. The bottom-up condition was made salient

using casual language in the quotes and providing some more context on the day-to-day life of these students. The biospheric condition was made salient in a similar way to the beforementioned biospheric condition.

The Bottom-Up + Egoistic condition text contained the same bottom-up information about the student initiators but now motivated by a monetary intent. Casual language was used in the quotes, and information on the students' life was provided as well. The egoistic condition was made salient in a similar way to the beforementioned egoistic condition.

Measures

After reading one of the articles and the included poster, participants filled in the questionnaire. The scales and items we used, can be found in Appendix B, together with the descriptive statistics of the scales and the individual items. For all scales, participants could answer on a seven-point Likert Scale. In the first block, participants were asked to indicate their acceptability regarding the initiative and there were four different items on the scale. In the second block, the willingness to adapt to the initiative was measured with four different items. In the third block of the survey, we asked about the personal values of the participants using a scale with eight different values. The fourth block assessed the values that participants perceived the initiators to prioritize. This data is excluded from the present thesis. In the fifth block, participants had to indicate to what extent they feel connected to the University of Groningen. This data is excluded in this present thesis. The sixth block of the questionnaire measured the perceived endorsement. This data is also excluded in this present thesis. In the seventh block, we asked participants to answer eleven questions about the extent to which they identify with two groups, the Executive Board and students of the University of Groningen. These questions were adapted from several social identity studies that are conducted before (Bouman et al., 2020; Cameron, 2004; Doosje et al., 1995; Doosje et al.,

1998; Ellemers, Kortekaas, & Ouwerkerk, 1999; Leach et al., 2008; Luhtanen & Crocker, 1992; Masson et al. 2016; Spears et al., 1997).

Attention Check

At the end of the questionnaire, we included one question to check whether the participants were paying enough attention. In a multiple-choice question, we asked the participants what they read in the article. The options were as follows: "*I read about a group of students from the University of Groningen that wants to encourage people to bring their own cup or mug to save money*", "*I read about a group of students from the University of Groningen that wants to encourage people to bring their own cup or mug to help the environment*", "*I read about the Executive Board of the University of Groningen that wants to encourage people to bring their own cup or mug to save money*", "*I read about the Executive Board of the University of Groningen that wants to encourage people to bring their own cup or mug to help the environment*". Participants who answered that they read a different article than was shown in their experimental condition, were removed from the data.

In total, 71 participants from the full dataset failed the attention check. We decided to take them all out, because in each group there was a substantial number of participants that failed the attention check. Also, we decided to use the attention check as a criterium because it provides evidence about how well the participants have paid attention to our manipulation. If participants cannot recall their manipulation condition they were in, then it cannot have had a big influence.

Manipulation Check

In addition to checking if participants were paying attention, we also wanted to ensure that the different types of framing influenced the participants accordingly and hence each condition would be effective in its intended message. Especially since we conducted an experimental study, we judged a manipulation check to be even more essential. Therefore, we

tested whether participants in the biospheric conditions perceived the initiative as more pro-environmental than participants in the egoistic condition, and if participants in the egoistic condition perceived the initiative as more financially beneficial than participants in the biospheric conditions.

For the biospheric manipulation check, participants in the biospheric conditions ($M =$ 5.96, $SD = .74$) perceived the initiative as significantly more pro-environmental than participants in the egoistic condition ($M = 5.52$, $SD = .84$), $t_{164} = -3.16$, $p < .001$. For the egoistic manipulation check, participants in the egoistic condition ($M = 4.82$, $SD = .62$) did not perceive the initiative as significantly more financially beneficial than participants in the biospheric condition ($M = 4.72$, $SD = .81$), $t_{161} = .80$, $p = .212$. Therefore, the biospheric manipulation was successful in fulfilling its intended message, but the egoistic manipulation was not.

Results

Descriptive Statistics

We began our statistical analyses by calculating correlations of our main quantitative variables (acceptability, willingness to adapt, personal values and initiator identification) to get an idea of the strength and direction of the relations. As can be observed from Table 1, some correlations were significant at a $p < .001$ level. Acceptability is significantly correlated with willingness to adapt ($r = .603$), personal biospheric values ($r = .363$) and initiator identification ($r = .221$). Willingness is also significantly correlated with personal biospheric values ($r = .246$). In Table 1, the means, standard deviations, and sample sizes per variable can be found as well. Additionally, in Table 2 the number of participants per experimental condition are displayed. It is important to note, that since we deleted participants that did not satisfy the attention check, the groups are not of exact equal size. It appears that participants

in the top-down condition ($n = 66$) compared to the bottom-up condition ($n = 100$) had more difficulty paying attention and/or recalling what they had read about.

Table 1

Descriptive Statistics and Bivariate Pearson Correlations between All Variables

Variable	N	M	SD	1	2	3	4	5
1 Acceptability	166	5.56	.84	1				
2 Willingness to Adapt	165	5.07	1.14	.625**	1			
3 Personal Biospheric Values	163	5.26	.93	.407**	.303**	1		
4 Personal Egoistic Values	164	3.72	.81	-.069	-.144	-.125	1	
5 Initiator Identification	161	4.09	1.36	.232**	.060	.049	.154	1

Note. ** = $p < .001$

Table 2

Number of Participants per Condition

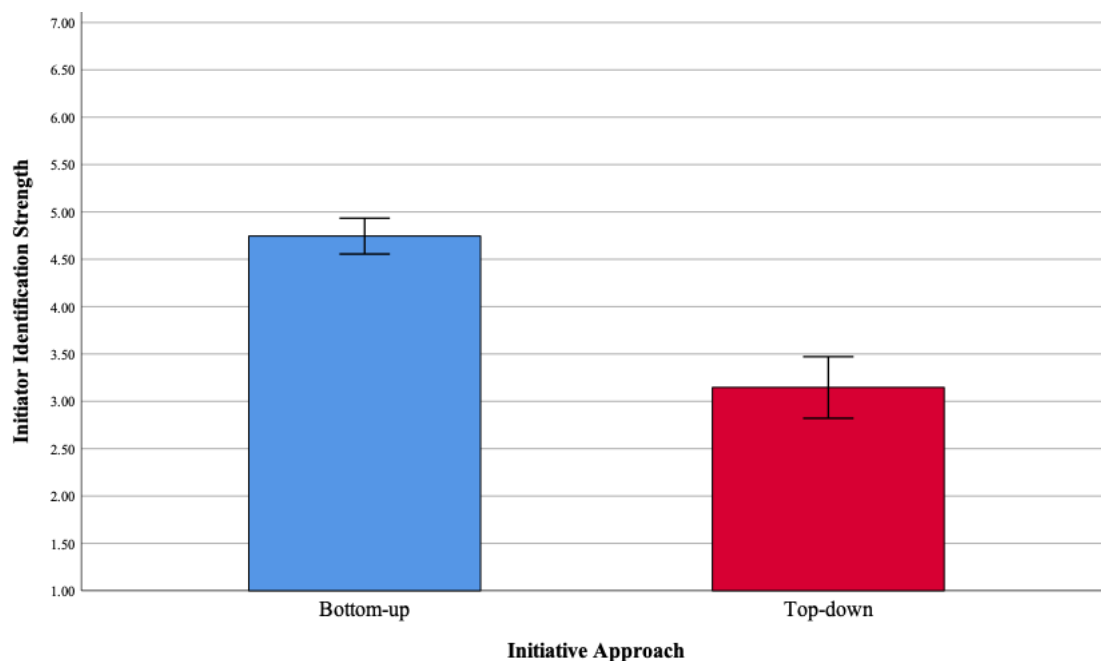|	Top-down	Bottom-up
Biospheric	32	53
Egoistic	34	47

Testing the Hypotheses

The Effects of Different Approaches on Social Identification

After orientating ourselves on the data with descriptive statistics and the attention check, we tested the hypotheses. First, we wanted to find out if the bottom-up approach resulted in higher identification with the initiators compared to the top-down approach to the initiative. To test this hypothesis, we merged the two bottom-up conditions and the two top-down conditions to create a bottom-up group ($n = 100$) and a top-down group ($n = 66$). Having created two groups, we could conduct a t-test to compare their means. First, we had to check the assumptions of the t-test before conducting it. Only the equal variance assumption

was violated, as the Levene's test for equality of variances has $p < .001$, which results in

rejecting the null hypothesis. Therefore, we looked at the equal variance not assumed results.

As expected, participants in the bottom-up condition reported higher initiator identification

($M = 4.74$, $SD = .93$) than participants in the top-down condition ($M = 3.15$, $SD = 1.32$),

$t_{108.34} = 8.48$, $p < .001$. This difference can be seen in Figure 1. Therefore, H1 was supported.

Figure 1

Means of Initiator Identification Strength across Top-Down and Bottom-Up Approaches

Note. Initiator identification strength scores are shown for bottom-up and top-down

approaches to proposing the initiative with error bars that represent the 95% confidence
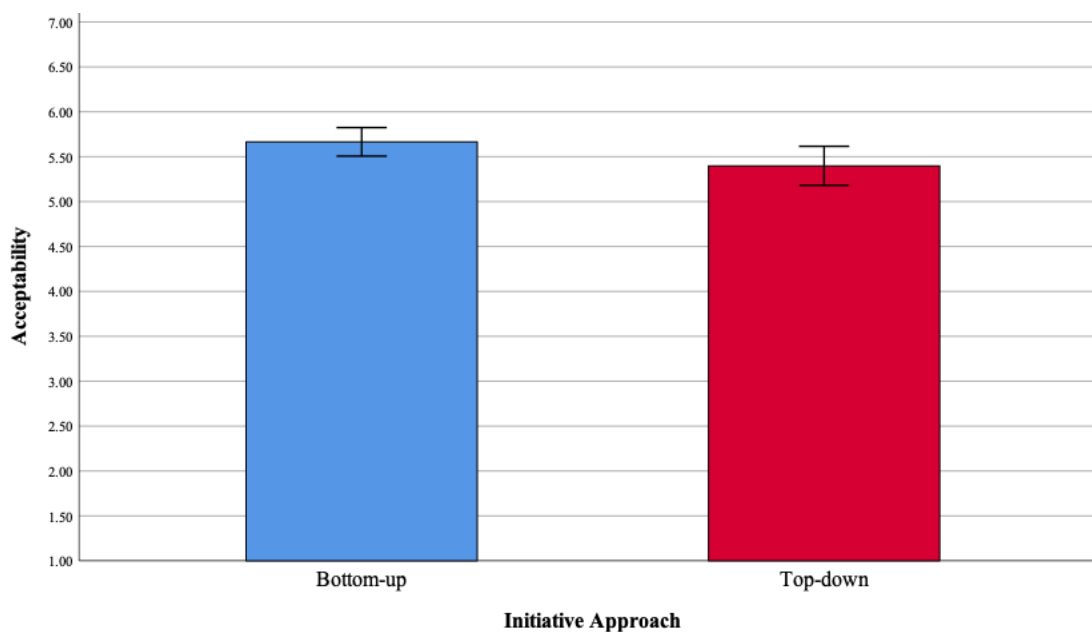
intervals.

The Effect of Framing on Acceptability and Willingness to Adapt

Second, we looked at the two dependent variables that are most important in this

present study: acceptability and willingness to adapt. Here again, we used the two groups for

the two different approaches to the proposed initiative, so we could conduct an independent

samples t-test. Levene's test for equal variances was insignificant ($p = .431$), so we could

assume equality of variances. As expected, participants reported higher acceptability of the

bottom-up approach (M = 5.67, SD = .80) compared to the top-down approach (M = 5.40, SD = .88), t_{164} = 2.02, p = .023. This difference can be seen in Figure 2. Conversely, no significant difference was found between the bottom-up approach (M = 5.11, SD = 1.21) and the top-down approach (M = 5.01, SD = 1.03) for willingness to adapt between the two approaches, t_{164} = .56, p = .289. With this, H2a was partially supported.

Figure 2

Means of Acceptability across Top-Down and Bottom-Up Approaches

Note. Acceptability scores are shown for bottom-up and top-down approaches to proposing the initiative with error bars that represent the 95% confidence intervals.

Table 3

Number of Participants per Identification Group

Groups	N
Weak Bottom-Up Initiator Strength	15
Strong Bottom-up Initiator Strength	16
Weak Top-Down Initiator Strength	12
Strong Top-Down Initiator Strength	9

Then, we looked at the difference in acceptability for the two different approaches and compared participants who strongly identified with the initiators and participants that weakly identified with the initiators. For this we made new groups of which the number of participants can be found in Table 3. There was no significant difference in mean acceptability of the top-down ($M = 5.39$, $SD = .89$) and the bottom-up initiative ($M = 5.83$, $SD = .64$) for participants that strongly identified with the initiators, $t_{23} = 1.43$, $p = .083$ and no significant difference between the top-down initiative ($M = 5.23$, $SD = .96$) and bottom-up initiative ($M = 5.40$, $SD = .82$) for participants that weakly identified with the initiators, $t_{25} = .50$, $p = .311$. For willingness to adapt, there was also an insignificant difference between the top-down ($M = 4.97$, $SD = 1.31$) and bottom-up approach ($M = 5.19$, $SD = 1.28$) for strong identifiers, $t_{23} = .40$, $p = .346$ and an insignificant difference between the top-down ($M = 5.04$, $SD = 1.18$) and bottom-up approach ($M = 5.03$, $SD = .94$) for weak identifiers, $t_{25} = -.02$, $p = .492$. Concluding, H2b was not supported by this data.

The Effect of Values on Acceptability and Willingness to Adapt

Thirdly, we further investigated the dependent variables acceptability and willingness to adapt by looking at the influence of values. We compared two groups, which consisted of the two different values that were used as motive behind the proposed initiative to which were referred in the manipulation article. We conducted an independent samples t-test to compare the means of the biospheric conditions ($n = 85$) with the means of the egoistic conditions ($n = 81$). Levene's test for equality of variances was insignificant ($p = .879$), so we could assume equality of variances. As expected, participants reported higher acceptability when the initiative was described according to biospheric values ($M = 5.77$, $SD = .85$) compared to the initiative with egoistic values ($M = 5.34$, $SD = .78$), $t_{164} = -3.38$, $p < .001$. This difference can be seen in Figure 3. For willingness to adapt, Levene's test was also insignificant ($p = .358$) and there was no significant difference between the means of the biospheric group ($M = 5.18$,

$SD = 1.06$) and the egoistic group ($M = 4.95$, $SD = 1.20$), $t_{163} = -1.34$, $p = .091$. So H3a was partially supported.

Figure 3

Means of Acceptability across Initiatives with Egoistic Values and Biospheric Values
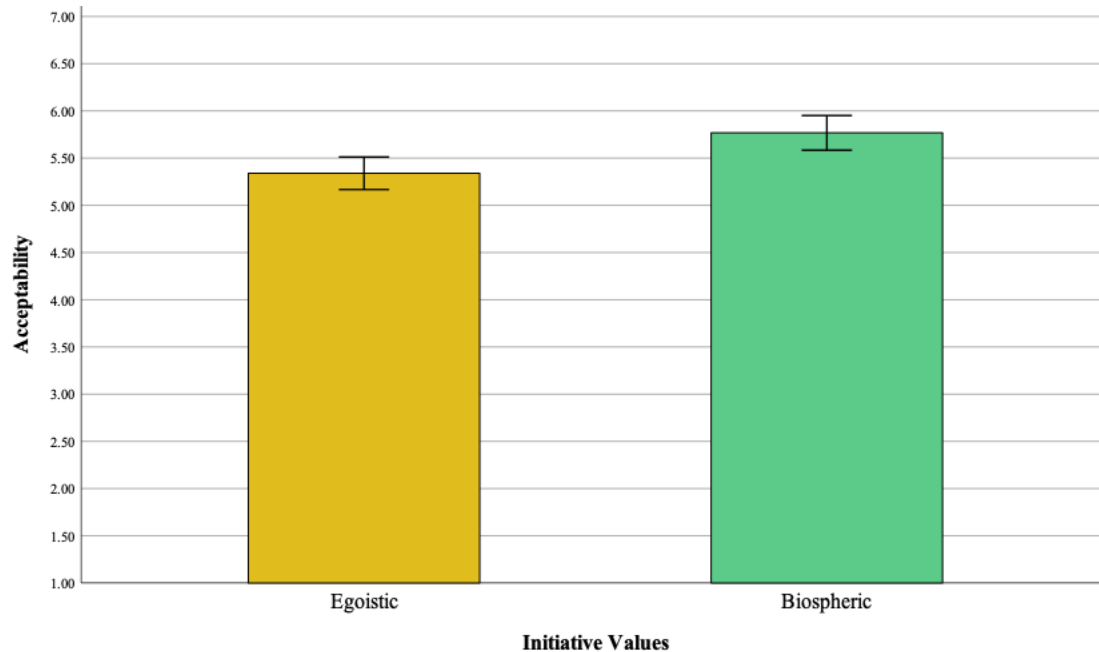
Note. Acceptability scores are shown for initiatives that rely on egoistic values and that rely on biospheric values with error bars that represent the 95% confidence intervals.

Table 4

Number of Participants per Value Group

Groups	N
Weak Biospheric Personal Values	23
Strong Biospheric Personal Values	27
Weak Biospheric Personal Values	22
Strong Egoistic Personal Values	22

Additionally, we also wanted to find out about the influence of high or low endorsement of personal values, for which we made new groups. In Table 4, you can see the number of participants per group. We expected participants to report high acceptability and willingness when they endorse strong biospheric values themselves. We found that

participants that endorse strong biospheric values (M = 6.07, SD = .74) were more acceptable of the initiative than participants that have weak biospheric values (M = 4.86, SD = .79), t_{48} = -5.60, p < .001. This result can be seen in Figure 4. Participants that endorse strong egoistic values (M = 5.41, SD = .98) and participants that have weak egoistic values (M = 5.59, SD = .84) did not differ in acceptability, t_{42} = .662, p = .256. For willingness to adapt, participants with strong biospheric values (M = 5.62, SD = 1.17) were also more willing to adapt to the initiative compared to participants with weak biospheric values (M = 4.48, SD = 1.40), t_{48} = -3.14, p = .001. This result can be seen in Figure 5. Additionally, participants that endorse strong egoistic values (M = 4.45, SD = 1.43) were less willing to adapt to the initiative compared to participants that have weak egoistic values (M = 5.20, SD = .91), t_{42} = 2.08, p = .022. This result can be seen in Figure 6. So H3b was supported by this data.
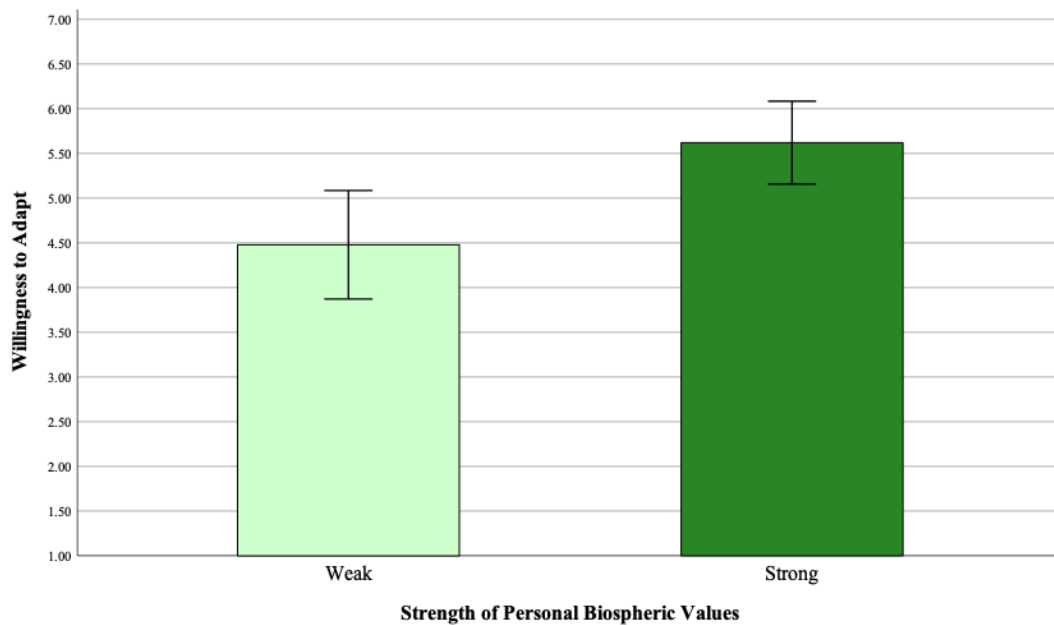
Figure 4

Means of Acceptability across Groups of Participants with Weak and Strong Personal Biospheric Values
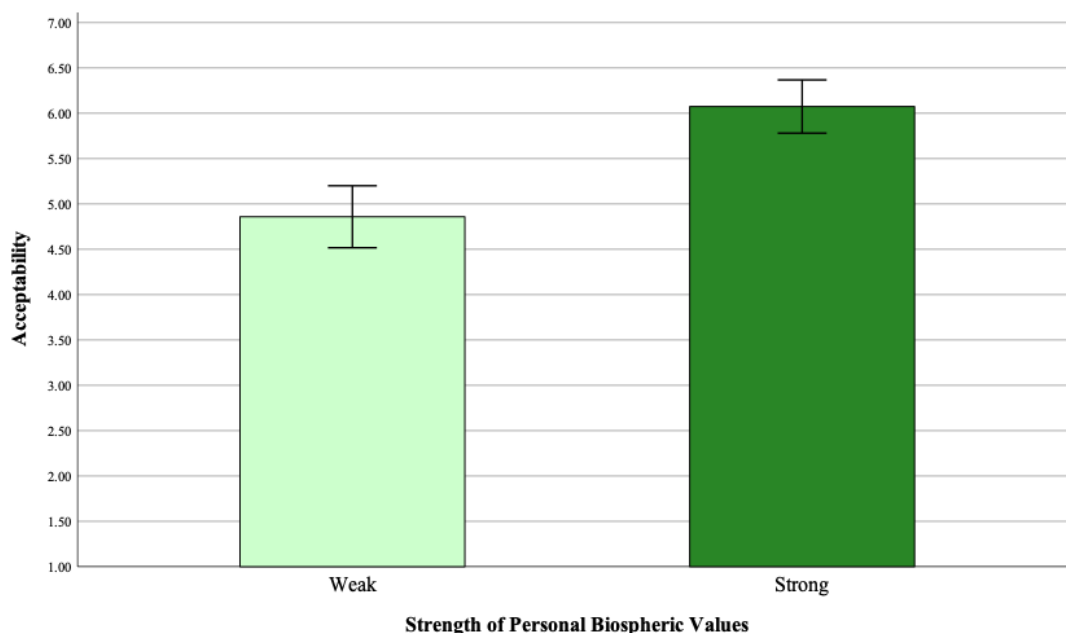
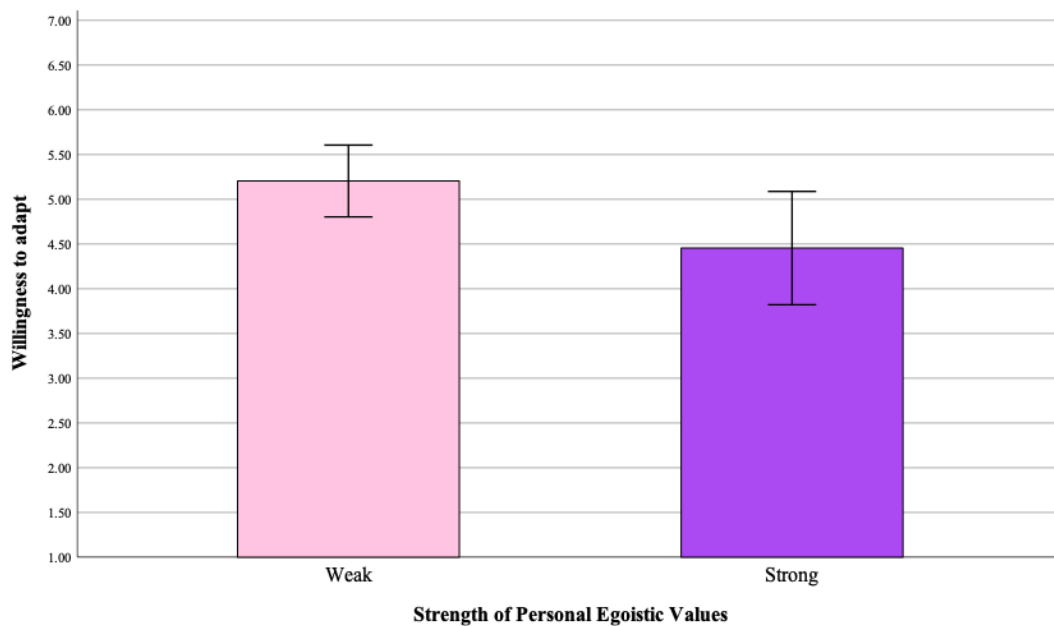*Note.* The error bars represent 95% confidence intervals.

Figure 5

Means of Willingness to Adapt across Participants with Weak and Strong Personal Biospheric Values

Note. The error bars represent 95% confidence intervals.

Figure 6

Means of Willingness to Adapt across Participants with Weak and Strong Personal Egoistic Values

Note. The error bars represent 95% confidence intervals.

The Combined Effects of Social Identification, Values and Framing on Acceptability and

Willingness to Adapt

To examine the effects of the strength of social identification, personal values and the approach of framing the initiative on the dependent variables acceptability and willingness to adapt, I conducted an ANOVA to compare the four different manipulation groups all at once. The ANOVA table (Table 5) shows that the average acceptability of the four groups significantly differed from each other, $F(3,162) = 5.28$, $p = .002$, $\eta^2 = .09$, and that the average willingness to adapt did not significantly differ, $F(3,162) = .68$, $p = .565$, $\eta^2 = .01$. Since I compared multiple groups at once, I conducted Bonferroni post hoc tests to find out what group means of acceptability differed from each other and to correct for multiple comparisons. Just two means of two groups significantly differed, which are bottom-up biospheric ($M = 5.83$, $SD = .85$) and top-down egoistic ($M = 5.14$, $SD = .81$), $p = .001$. With this, I conclude that the reported acceptability in the bottom-up biospheric condition is not significantly higher than in the other three groups, so H4a is not supported. For participants that report to strongly identify with the initiators, the means of the four groups for both acceptability ($p = .153$) and willingness to adapt ($p = .390$) were found to be insignificantly different. So H4b is not supported by this data. Lastly, for participants that strongly endorse biospheric values no significant difference was found between the four groups for both acceptability ($p = .452$) and for willingness to adapt ($p = .351$). So also, H4c was not supported by this data. The insignificant differences can be found in Figure 7.

Table 5

Means, Standard Deviations, and One-Way Analyses of Variance in Acceptability of and

Willingness to Adapt to an Initiative

Measure	Top-down Biospheric		Top-down Egoistic		Bottom-up Biospheric		Bottom-up Egoistic		$F(3, 162)$	η^2
	M	SD	M	SD	M	SD	M	SD		
Acceptability	5.67	.89	5.14	.81	5.83	.83	5.48	.74	5.28*	.09
Willingness to Adapt	5.12	.95	4.90	1.11	5.23	1.13	4.98	1.28	.68	.01

* p < .05

Figure 7

Means of Acceptability across the Four Different Conditions: Bottom-Up + Egoistic, Bottom-Up + Biospheric, Top-Down + Egoistic and Top-Down + Biospheric
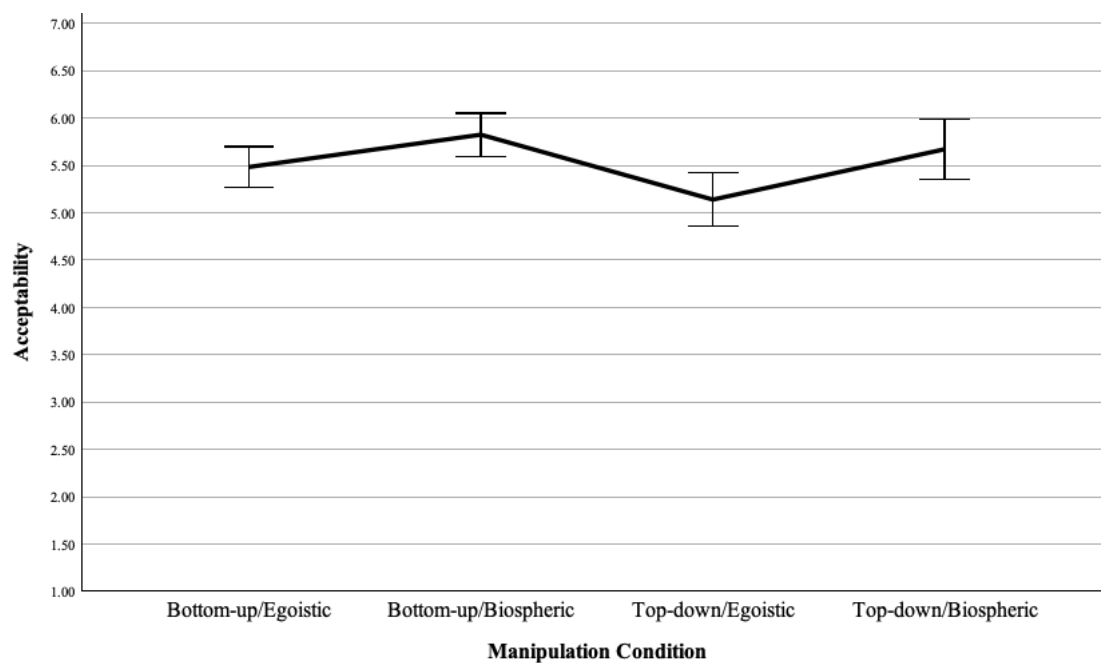
Note. The acceptability scores are shown for the four initiatives with different combinations of initiative approaches and values, and the error bars represent the 95% confidence intervals.

Discussion

Interpretations

In the present study, we investigated the effects of the identity of the initiators, which varied with the two different approaches, and the values of the initiators as well as the values of the respondents on the acceptability of and willingness to adapt to the initiative.

Starting with our first expectations for this study, participants indeed identified more strongly with the bottom-up initiators compared to the top-down initiators. Next to that, participants were more acceptable of the bottom-up initiative compared to the top-down initiative, but contrary to our expectations this effect did not rely on the strength of the identification with the initiators. Participants did not differ in how willing they were to adapt to the initiative for the top-down versus the bottom-up approach. Strongly identifying with students of the University of Groningen (i.e. the bottom-up initiators), means that the participants considered being a student as an important part of their social identity and research has shown before that people try to align their opinions and attitudes with people similar to themselves, for example people that share the same social group (Fielding & Hornsey, 2016). Relatedly, Jans (2021) found that people who socially identify with a bottom-up initiative, had strengthened attitudes regarding pro-environmental behaviour and had higher intentions to act pro-environmentally. However, contrary to our findings, she found that participants identified both with the bottom-up and the top-down approach, but that only the bottom-up approach was associated with a higher intention to act in line with the initiative. The present study found that participants clearly identified more strongly with the bottom-up initiators than with the top-down initiators, and that this social identification was no mediator for the effect on acceptability.

Looking at the effect of the values of the initiators, it could be concluded that participants were more acceptable of the initiative if it relied on biospheric values compared to when it relied on egoistic values, as we expected. Participants did not differ in willingness

to adapt to the initiative for the different values. The fact that participants endorsed biospheric values themselves resulted in a higher acceptability and willingness to adapt, and participants that endorsed strong egoistic values were less willing to adapt to the initiative. The fact that students were more likely to accept an initiative that relies on biospheric values, has been found before as well by Bouman and colleagues (2020). Biospheric values have been found to be more effective in stimulating climate action compared to egoistic values (Bouman et al., 2020). The probability that people who prioritize egoistic values are willing to act in a pro-environmental way is low compared to people that do not prioritize these values, which we found in this present study. This is possibly because this often takes effort, costs time or even money (De Groot & Steg, 2008; Steg et al., 2014; Stern et al., 1998). Importantly, little research has investigated the effect of perceiving an initiative to rely on egoistic values, as in this study. Next, it did seem to matter whether participants prioritize biospheric values themselves or not. Apparently, personal values are considered while rating the initiative, and they might be important enough to enhance the attitude towards the initiative. As mentioned before, mixed results have been found about the influence of personal values. Researchers have found that strongly endorsing biospheric values was not a requirement for being influenced by an initiative that relies on biospheric values (Ruepert et al., 2017), but it has also been found that people might be more motivated if they already endorse those values compared to people that do not find them important (Terry et al., 1999). This present study strengthens the idea that personal values are important for attitudes towards environmental initiatives, but more research should be conducted on how this works.

We expected that the highest acceptability and willingness to adapt would be found for participants that were exposed with the bottom-up biospheric initiative, and that this effect would be even higher if participants strongly identified with the initiators and endorsed strong biospheric values themselves. However, none of these last expectations were confirmed.

Since we found no significant influence of social identification on acceptability and willingness, this result was not very surprising. Yet if social identification were to be found crucial for the effect of the different approaches, this hypothesis would be meaningful and it should then be tested again.

Implications

Theoretical implications

Some of the present findings are in line with the literature, but there are also discrepancies. The fact that bottom-up initiators are more easily identified with has again been shown, which strengthens the idea that people tend to identify more strongly or easily with a bottom-up initiative.

Social identification with the initiators was found to not be a mediator in the relation between acceptability and initiative approach, which has not been specifically stated before. It has been argued that social identity plays an important role in stimulating pro-environmental behaviour, but to the best of our knowledge, little research has been conducted with social identification as mediator. No significant results were found for this mediation, but considering the literature and the result more research should be conducted on this.

Practical implications

The fact that personal values did not influence the extent to which participants felt the initiative was acceptable, creates possibilities for environmental campaigns, initiatives, and such. If personal values are not important or crucial enough to change attitudes, there is no need to try to change someone's values. Instead, it is more beneficial to make sure that, in whatever way you want to encourage others to act more pro-environmentally, the idea or initiative you are proposing clearly relies on biospheric values according to the results of this study and previous research. It has been frequently found that to stimulate pro-environmental behaviour, the goal and motive should be clear and biospheric. In general, people are more

acceptable and/or willing of initiatives that are perceived to rely on biospheric values. Therefore, it is crucial that an initiative or message clearly expresses or demonstrates these values.

Evidently, the results point towards the use of a bottom-up approach compared to a top-down approach. It is therefore important, that if you want to stimulate as many people as possible to act in a pro-environmental manner, to fit the initiative or message to their identity or place in the social hierarchy. If people perceive an idea to come from people that have the same amount of power or influence, it will have the beneficial effect of a bottom-up approach. Policy makers or initiators should adapt the initiative or message so that people do not perceive the idea to come from higher up, because this works against the goal.

Limitations

As reported before, we incorporated an attention check in the questionnaire, which resulted in having to delete 71 participants from our sample. The attention check showed that quite a few participants were not able to consciously recall what they had read about in the beginning of the experiment. Because the article formed our manipulation, it was crucial that participants were paying attention to what they read about. However, it is not clear if participants did not pay attention well enough or that the manipulation had a subconscious or unconscious influence on the participants. Therefore, the best thing to do was to delete the data of those participants that failed the attention check. Unfortunately, this resulted in the sample of 133 participants, which means that the power of the study decreased a lot. Low power means that there is a smaller chance of detecting a true effect and the probability that the results are influenced by random error is higher, and therefore conclusion should be drawn with caution. The number of participants per condition decreased and therefore we are less confident about the extent to which all results are convincing. Luckily, we also did a manipulation check to see if the participants seemed to be manipulated in the right manner

and for at least the biospheric conditions this seemed to be the case. In conclusion, although the sample had to be reduced, the manipulation had an influence on the behaviour of the participants, which means the results of this experiment are a satisfactory addition to the literature.

Additionally, we expected both acceptability and willingness to adapt to be influenced by the manipulations we incorporated in the experiment. However, merely acceptability was significantly influenced and for willingness to adapt we found no significant results. It is important to be critical in interpreting the results and to draw conclusions about what the results mean and implicate. Showing that acceptability of people can change through an initiative does not mean that they will change their behaviour to be in line with the initiative. Willingness to adapt to the initiative is a step in the right direction towards undertaking action, but unfortunately, we were not able to find any meaningful results in this present study regarding this. More research should be conducted to investigate the effects we have found and how they could be implemented to stimulate people to change their behaviour and help reduce climate change.

Recommendations

The questionnaire participants had to fill in after reading the article was considerably long because the questionnaire consisted of questions for five overlapping but different theses. Therefore, for future studies that investigate similar variables we would recommend using a compact list of questions to ensure that the manipulation has an influence on the entire study.

Next to that, the design of our article and poster might not have demonstrated clearly enough what the important aspects (the initiator approach and the values) were. As a result, people might not have paid attention to the right details or any details at all, which resulted in an unexpected result on the attention check. It is important, therefore, to make sure that the design of the manipulation works in the manner it was supposed to. As an additional step,

future researchers could test the manipulation with a small sample of participants before conducting the actual experiment.

The fact that the initiative that relied on egoistic values was perceived as less acceptable and that people were less willing to adapt to it, compared to the biospheric initiative has not had much attention before. Research so far has focused just on biospheric initiative, but it is important to find out more about why biospheric initiatives are perceived and reacted to as most positively. Therefore, more research should focus on comparing the effects of different ways and reasons to propose an initiative.

Conclusion

To conclude, this study provides insights into how students can be encouraged to act pro-environmentally using a combination of approaches. Mainly, this experiment has found that to stimulate pro-environmental behaviour, it is beneficial to use a bottom-up approach, and biospheric values as motivators. Additionally, personal values do not seem to influence acceptability or willingness in a substantial way. Also, social identification might be an important factor for the benefits of the bottom-up approach, but this has to be researched more extensively. Considering the limitations of this experiment, the results have considerable low power, so to provide strong conclusions about these factors, more research should be conducted. Nevertheless, the current study adds another step towards finding the best ways to help and protect our climate.

Appendix A

Top-Down + Egoistic condition

You read the following article in the U-krant:

University of Groningen launches coffee cup initiative to save money

The executive board of the University of Groningen wants to start saving money at the different faculties. Through an initiative, the university's executive board wants to ensure that fewer disposable cups will be used at the university. They explain: "The cups that are currently used at the university are expensive. As disposable cups are thrown away after use, new cups have to be purchased continuously. These are unnecessary costs. It would be more sensible if this budget could be spent differently. The university could use the budget freed up by the initiative for other purposes." The executive board is asking RUG students to bring their own mug or cup to the university from next week on. The executive board will draw attention to the issue with the help of posters at coffee machines spread across the various faculties of the RUG. On top of that, a newsletter with additional information will be distributed via email. The executive board continues: "By asking students to bring their own mug or travel cup from home, it is hoped that the use of disposable cups at the university will be reduced, thus saving the university money."
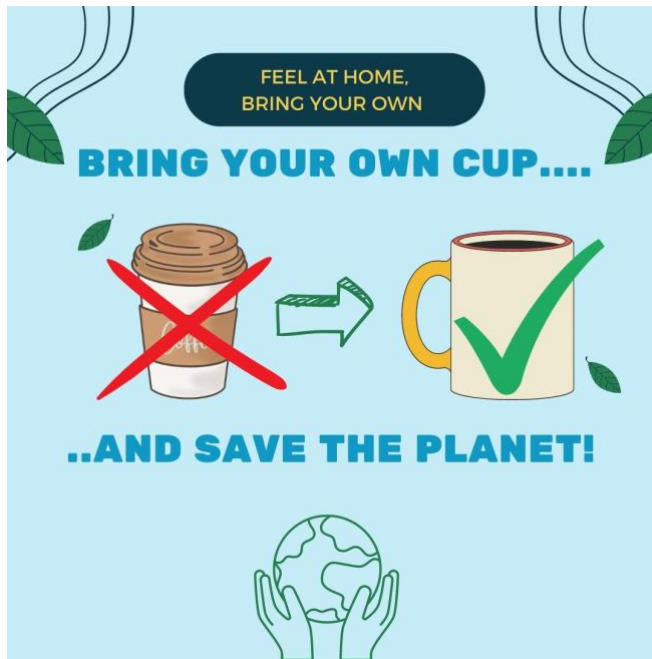
Bottom-Up + Egoistic condition

You read the following article in the U-krant:

Students launch coffee cup initiative to save money

Five students from the University of Groningen would like to save money within the university in order to organize more activities. Maria (21), Thomas (23), Julia (22), Jayden (21) and Sven (20) launched a campaign themselves to ensure that fewer disposable cups will be used at the university. Jayden explains: "A few weeks ago, a few fellow students and I went to study at our faculty, and you know how it is, we got some coffee and refills. Then we noticed how many of those cups we used just in a few hours. We started asking students from other faculties about this, and then did some research afterwards." Julia adds: "The cups currently in use at the university cost quite a bit of money. Because everyone throws away their cups after only one use, new cups have to be purchased all the time. This is an unnecessary cost. We think this could be better spent elsewhere. By saving on coffee cups, some savings can be built up that could be used for other things." The group is asking fellow students to bring their own mug or cup to university from next week on. They will raise awareness by hanging posters at coffee vending machines scattered across the various faculties at the RUG. During the first few days, the students themselves will also be present at various coffee corners and canteens to draw attention to the issue. "By bringing your own cup or travel cup from home, we think we can reduce the use of disposable cups at the university and by doing this we hope to save money." explains Thomas.

Bottom-Up + Biospheric condition

You read the following article in the U-krant:

Students launch sustainability initiative with coffee cups

Five students from the University of Groningen want to draw attention to the impact that disposable products have on the environment. Maria (21), Thomas (23), Julia (22), Jayden (21) and Sven (20) have launched a sustainability initiative themselves to ensure that fewer disposable cups are used at the university. Jayden explains: "A few weeks ago, a few fellow students and I went to study at our faculty, and you know how it is, we got some coffee and refills. Then we noticed how many of those cups we used just in a few hours. When we threw away the cups, we also noticed how many of them ended up in the wrong bins. We started asking students from other faculties about this, and then did some research afterwards." Julia adds: "Making and recycling the disposable cups that are currently used at the university costs a lot of water and energy. In addition, they also contain plastic. The cups are often only used once, and then usually not even recycled." The group is asking fellow students to bring their own mug or cup to the university starting next week. They will raise awareness by hanging up posters at coffee vending machines scattered across the various faculties at the RUG. During the first few days, the students themselves will also be present at various coffee corners and canteens to draw attention to the issue. "By bringing your own mug or travel cup from home, we think we can reduce the use of disposable cups at the university and by doing this we hope to lend a helping hand to the environment." explains Thomas.

Top-Down + Biospheric condition

You read the following article in the U-krant:

University of Groningen launches sustainability initiative with coffee cups

The executive board of the University of Groningen is drawing attention to the impact of disposable products on the environment. Through a sustainability initiative, the executive board wants to ensure that fewer disposable cups will be used at the university. They explain: "Making and recycling the disposable cups that are currently used at the university costs a lot of water and energy. In addition, they contain plastic. The cups are often used only once, and then disposed of incorrectly, making recycling difficult." The executive board is asking RUG students to bring their own mug or cup to the university starting next week. The executive board will draw attention to the issue with the help of posters at coffee machines spread across the various faculties of the RUG. On top of that, a newsletter with additional information will be distributed via email. The executive board continues: "By asking students to bring their own mug or travel cup from home, it is hoped that the use of disposable cups at the university will be reduced, thus allowing the university to make a positive impact on the environment."

Appendix B

Scale	M Scale	SD Scale	Cronbach's Alpha
Acceptability	5.57	.84	.84

Items	M Items	SD Items	
Valence: *I think the initiative is… (1 = very negative, 7 = very positive)*	6.02	.87	
Acceptability: *I think the initiative is… (1 = very unacceptable, 7 = very positive)*	6.05	.92	
Essentialism: *I think the initiative is… (1 = very inessential, 7 = very essential)*	5.20	1.08	
Necessity: *I think the initiative is… (1 = very unnecessary, 7 = very necessary)*	4.97	1.19	

Scale	M Scale	SD Scale	Cronbach's Alpha
Willingness to Adapt	5.07	1.14	.87

Items	M Items	SD Items	
To what extent are you willing to bring your own mug to the university as a replacement for a disposable cup? (1 = very unwilling, 7 = very willing)	5.45	1.28	
Which cup do you prefer, the disposable cup or your own mug/cup? (1 = strong preference for the disposable cup, 7 = strong preference for my own mug/cup)	4.27	1.44	
Would you encourage other students to bring their own mug or cup? (1 = absolutely not, 7 = absolutely)	5.08	1.33	
To what extent do you agree with the following statement: As a student from the University of Groningen, I am willing to bring my own cup? (1 = strongly disagree, 7 = strongly agree)	5.50	1.32	

Scale	M Scale	SD Scale	Cronbach's Alpha
Personal Biospheric Values	5.26	0.93	.85
Items			
To what extent is… a guiding principle in your life (1 = opposed to my principles, 7 = extremely important)	**M Items**	**SD Items**	
Respecting the earth (living in harmony with other living beings)	5.53	1.03	
Unity with nature (feeling connected with nature)	4.78	1.29	
Protecting the environment (preservation of environmental quality and nature)	5.40	1.07	
Preventing pollution (protecting natural resources)	5.35	1.11	

Scale	M Scale	SD Scale	Cronbach's Alpha
Personal Egoistic Values	3.72	1.08	.81
Items			
To what extent is… a guiding principle in your life (1 = opposed to my principles, 7 = extremely important)	**M Items**	**SD Items**	
Power (control over other people, dominance)	2.48	1.05	
Being influential (the right to direct or command)	3.49	1.34	
Wealth (material possessions, money)	3.81	1.13	
Being ambitious (hardworking, ambitious, striving)	5.10	1.12	

Scale	M Scale	SD Scale	Cronbach's Alpha
Student Initiator Identification	4.81	.88	.89
Items			
To what extent do you agree with the following statements? (1 = completely disagree, 7 = completely agree)	**M Items**	**SD Items**	
I identify with students from the University of Groningen	5.30	1.04	
I have a lot in common with the average student at the University of Groningen	4.60	1.13	
I feel committed to students from the University of Groningen	4.45	1.15	
I am proud to be a student at the University of Groningen	5.37	1.15	
I am glad to be a student at the University of Groningen	5.79	.876	
The fact that I am a student at the University of Groningen is an important part of my identity	4.27	1.34	
Being a student at the University of Groningen is an important part of how I see myself	4.27	1.37	
I am similar to the average student at the University of Groningen	4.44	1.21	

Scale	M Scale	SD Scale	Cronbach's Alpha
Executive Board Initiator Identification	3.00	1.17	.91
Items			
To what extent do you agree with the following statements? (1 = completely disagree, 7 = complete agree)	**M Items**	**SD Items**	
I identify with the Executive Board	3.01	1.28	
I have a lot in common with the average member of the Executive Board	3.04	1.25	
I feel committed to the Executive Board	2.97	1.31	

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