

## Article

# Is an Appeal Enough? The Limited Impact of Financial, Environmental, and Communal Appeals in Promoting Involvement in Community Environmental Initiatives

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**Abstract:** Community environmental initiatives are set up by community members to promote pro-environmental behaviours in their community. Community members involved in these initiatives are likely to behave more pro-environmentally. Yet, the question remains how to get community members involved. Previous findings suggest stronger environmental and communal, but not financial, motives promote people's involvement in community environmental initiatives. The present paper examines whether appeals to such environmental or communal motives can promote involvement more than appeals to financial motives or no appeals. Three experimental studies revealed that environmental and communal appeals did not promote initiative involvement more than financial appeals or no appeals. Moreover, a combined environmental and communal appeal was not more effective than single appeals. Furthermore, in a field study examining 167 existing community energy initiatives, we found no relationship between the emphasis in flyers on financial, environmental, and communal benefits of initiative involvement and the proportion of community members involved in these initiatives. These findings suggest appeals may not be enough to promote initiative involvement. We discuss the theoretical and practical implications of these findings.

**Keywords:** environmental appeals; financial appeals; communal appeals; community environmental initiatives; pro-environmental behaviour; initiative involvement



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## 1. Introduction

Limiting the effects of climate change requires a rapid transition towards more pro-environmental behaviour [1]. Different strategies have been implemented to promote pro-environmental behaviour, including community environmental initiatives, also referred to as grassroots initiatives and bottom-up initiatives (e.g., [2–4]). We define community environmental initiatives as initiatives started and run by some community members to promote more pro-environmental behaviour within their community (e.g., [2,3,5,6]). Some examples are initiatives to move a community to more sustainable energy use (e.g., through the collective purchasing of solar panels) and community farming initiatives that promote more sustainable food production. Initiative involvement can be reflected by various behaviours, such as visiting initiative meetings, signing up as members, participating in initiative activities, and feeling psychologically attached to the initiative (e.g., the degree of identification with the initiative). Research shows that stronger involvement in community environmental initiatives, including membership in and identification with the initiative, is associated with more pro-environmental behaviours (e.g., household energy behaviours) [7,8]. Yet, typically, only a few members of a given community become involved in such initiatives [9]. Given the potential of community environmental initiative involvement in promoting pro-environmental behaviour, it is important to understand how community members can be encouraged to become involved. This paper examines

the extent to which appeals to financial, environmental, and communal motives are effective in promoting involvement in community environmental initiatives. Specifically, we examine the effects of appeals to these motives on interest to join an initiative, requesting more information or taking a flyer about an initiative, and having signed up as an initiative member.

Appeals are likely to be more effective when they target important motives for being involved in a community environmental initiative (cf. [10]). Different motives may underlie involvement in community environmental initiatives, including financial, environmental, and communal motives (cf. [11,12]). Even though people generally think financial motives play an important role in their decision to become involved in a community environmental initiative [9,12,13], financial motives do not significantly relate to initiative involvement when environmental and communal motives are also considered [12]. An explanation for this is that the financial benefits of a behaviour are not seen as worth the effort to change one's behaviour (cf. [10,14]). Yet, people are more likely to be involved in a community environmental initiative (i.e., more interested in joining, more likely to actually join, and identify more strongly with the initiative) when they are motivated to protect the environment (environmental motive) and when they are motivated to connect to others in their community (communal motive) [12].

Involvement in community environmental initiatives can be seen as a type of pro-environmental behaviour ([6], cf. [15]). People are generally motivated to protect the environment (for example, based on their values or self-identity) and consider the environmental consequences of their behaviour [16–18]. This may explain why environmental motives promote initiative involvement.

Community environmental initiatives also enable people to meet and connect with others in their local community, which can explain why communal motives, the motive to be involved in one's community, can promote initiative involvement [9,12]. Having social connections is an important human motive (cf. [19,20]). Although people rate communal motives as relatively less important than financial or environmental motives for their involvement in community environmental initiatives, communal motives (like environmental motives) are uniquely and positively associated with different indicators of initiative involvement [12].

In line with the general assumption that (sustainable) behaviour can be motivated by emphasising monetary benefits [21–23], community environmental initiatives often appeal to financial motives (such as saving on energy costs) (e.g., [24]) to encourage people to become involved. Yet, to our knowledge, the effectiveness of financial appeals in promoting involvement in community environmental initiatives has not been studied. Research suggests that financial appeals (i.e., emphasising the monetary benefits of engaging in the targeted behaviour) may have limited effects on promoting pro-environmental behaviour more generally [25–27]. Financial appeals seem to focus people on cost–benefit calculations, and, since many pro-environmental behaviours yield only small financial gains, people may believe the targeted behaviour is not worth the effort [14]. In addition, financial appeals can weaken intrinsic motivation to engage in the targeted behaviour and consequently, pro-environmental behaviour in general becomes less likely [10,21].

More generally, appeals are likely to be more effective when they target important motives for becoming involved in a community environmental initiative (cf. [28]), which also implies that financial appeals are probably not very effective in promoting initiative involvement, as financial motives are hardly related to involvement [12]. This would imply that appealing to environmental motives (i.e., emphasising the environmental benefits of initiative involvement) and communal motives (i.e., emphasising the opportunity to be involved in and connected to one's community) would be more effective than financial appeals in promoting involvement in community environmental initiatives. There is indeed some evidence to suggest that environmental appeals are more effective than financial appeals in promoting pro-environmental behaviour [25,27,29]. Yet, to our knowledge the effectiveness of environmental versus financial appeals has not been studied in the context

of community environmental initiative involvement. Furthermore, while the possible effectiveness of communal appeals in promoting initiative involvement has been hinted at in the literature [9,30,31], to our knowledge, the effectiveness of such appeal to promote initiative involvement has not yet been studied. We aim to address this gap in the literature, and test whether environmental and communal appeals are more effective in promoting initiative involvement than financial appeals or no appeals.

We further explore whether combining environmental and communal appeals might be even more effective in promoting involvement in community environmental initiatives than each of these appeals on their own. According to theories of rational behaviour and persuasion (cf. [11], e.g., [32]), two appeals in combination could be more effective in promoting initiative involvement than a single appeal, as the overall benefit of becoming involved is suggested to be greater (enabling the attainment of both environmental and communal motives). In addition, at least one of the two arguments could be appealing to people in this case. Yet, there is also some evidence to suggest that combining appeals can backfire [33]. For example, combined financial and environmental appeals are less effective in encouraging pro-environmental behaviour compared to environmental appeals alone. This is probably because an appeal that targets extrinsic motives (e.g., financial benefits) can undermine the effects of an appeal that targets intrinsic (e.g., environmental) motives [27]. Yet, the question remains as to whether emphasising communal appeals along with environmental appeals would also be less effective than either of these appeals alone, or if a combination of both appeals might actually be more effective in promoting initiative involvement. We will address this question in the present research.

Appeals may not affect every recipient to the same extent, rather their effectiveness may vary depending on the extent to which the advertised benefits are personally important to the recipients [34–36]. While an appeal is likely to be more effective when it targets a motive that is generally more predictive of initiative involvement, it may be even more effective when that motive is more personally relevant to the recipient. Specifically, people may differ in the extent to which they find the advertised benefits important, depending on their values (i.e., important goals they strive for in their life) or identities (i.e., the way they see themselves). Appeals may be more effective in promoting initiative involvement when they are tailored to people's identities or the values they prioritise. Indeed, environmental appeals are more likely to promote pro-environmental behaviour among those with stronger biospheric values (i.e., those who strongly care about the environment), while financial appeals are more likely to promote pro-environmental behaviour among those with stronger egoistic values (i.e., those who strongly care about their own resources) [34,36]. For example, an informational film explaining the negative environmental consequences of bottled water use increased recipients' overall knowledge, but it only led to stronger intentions to reduce the use of bottled water among those with strong biospheric values [36]. One reason for this may be that people are more motivated to act upon information that is personally relevant to them (e.g., [37]). Similarly, appeals may be more effective if the advertised benefits fit with how people see themselves (their self-identity, reflecting the label people use to define themselves), as people are motivated to act in line with how they see themselves in order to be consistent [38,39]. Therefore, we will test whether appeals are more effective when they align with an individual's self-identity and values. We hypothesise that environmental appeals are more effective among those with a stronger environmental self-identity (who more strongly see themselves as someone who acts pro-environmentally) or higher biospheric values, that financial appeals are more effective among those with a stronger financial self-identity (who more strongly see themselves as someone who is conscious about money) or higher egoistic values, and that communal appeals are more effective among those with a stronger communal self-identity (who more strongly see themselves as a member of their community). The question remains as to which values underlie communal motives [12,40] and thus which values could increase the effectiveness of communal appeals. We explore whether communal appeals may be effective among those with stronger hedonic values (as people may enjoy having contact

with other community members) or altruistic values (as people may value benefitting the community).

### *Current Research*

In four studies, we tested the effectiveness of environmental and communal appeals in promoting initiative involvement compared to financial appeals, no appeals, and a combined environmental and communal appeal. We assessed two different indicators of initiative involvement: interest to join (both self-reported and observed) and actual initiative membership. Additionally, we examined different variables that may explain why appeals may encourage involvement. First, we assessed the perceived message quality of the different appeals, including how convincing and credible they were perceived to be. Appeals are likely more effective in promoting initiative involvement when the perceived quality of the message is higher (cf. [41,42]). Second, we assessed whether people believed that the benefits stressed in the appeals would be a likely outcome of joining the initiative. We tested our predictions in three experiments on different fictitious initiatives and in a field study among existing community energy initiatives. To cross-validate our findings, the studies examined community initiatives with different pro-environmental goals. Specifically, Study 1 experimentally compared the effects of financial, environmental, and communal appeals on perceived message quality and interest to join an initiative on food-waste. We additionally tested whether the effectiveness of the appeals was enhanced when they were tailored to corresponding pre-existing motivations (i.e., financial, environmental, and communal self-identities). Study 2 experimentally explored the effects of combined environmental and communal appeals on perceived message quality and interest to join a vegetarian cooking initiative, compared to appeals to either environmental or communal motives. Again, we tested if environmental appeals would be more effective among those with a stronger environmental self-identity, and if communal appeals would be more effective among those with a stronger communal identity. These two studies were conducted at the same time and thus did not build upon each other. Subsequently, Study 3 was conducted to better understand the findings of the first two studies. Study 3 compared the effects of financial, environmental, and communal appeals, respectively, on interest to join a clothes-swapping initiative with a control condition without any appeal. Additionally, we assessed the effects of the appeals on perceived message quality and beliefs about the financial, environmental, and communal benefits of joining the initiative. This time, we tested if appeals would be more effective among those with higher corresponding values. This set of studies contains all the experiments we conducted on the effects of appeals on initiative involvement. Finally, Study 4 examined the effects of flyers emphasising the financial, environmental, and/or communal benefits of joining that were actually used to promote involvement in community energy initiatives. We tested whether the extent to which financial, environmental, and communal benefits were emphasised in these flyers was related to the proportion of community members who joined the community energy initiative.

## **2. Study 1**

Study 1 aimed to compare the effects of financial, environmental, and communal appeals on perceived message quality, interest to join, and the request for more information on the initiative as a behavioural measure of interest to join. We also explored the potential moderating role of financial, environmental, and communal self-identity on the appeals' effectiveness.

### *2.1. Method*

#### **2.1.1. Procedure, Participants, and Design**

Participants were approached at various university locations and asked to fill in a paper questionnaire about a new student initiative on food waste. Since the final sample size was slightly lower than the targeted sample size, we conducted a post-hoc sensitivity

analysis in addition to the a priori power analysis, with the same parameter specifications. This analysis suggested that we could still detect an effect of  $f = 0.21$  given our sample size of  $N = 231$ . The questionnaire started with a short text explaining that fellow students had recently established the Movement Against Food Waste initiative and then measured the moderator variables. The second page contained the experimental manipulation: a flyer emphasising either the financial, environmental, or communal benefits of joining the initiative, to which participants were randomly assigned (see Appendix A). The financial appeal condition emphasised that the prevention of food waste is “good for your wallet” and that, by joining the initiative, students could save money. The environmental appeal condition emphasised that the prevention of food waste is “good for the environment” and that, by joining, students could protect the environment. The communal appeal condition emphasised that the prevention of food waste “connects people”, and that, by joining, they could meet fellow students. An a priori power analysis indicated that a sample size of  $N = 246$  participants would be needed to detect a small to medium effect with a one-way ANOVA with three groups ( $f = 0.20$ ,  $\alpha = 0.05$ ; power = 0.80; G\*Power [43]), which we defined as the target sample size. We based the expected small to medium effect for this and the following experiments on similar studies testing the effectiveness of financial and environmental appeals on pro-environmental behaviour [25,27]. In total, 244 students consented to participate in this experiment ( $M_{\text{age}} = 21.93$ ,  $SD = 2.96$ , 75% female). To ensure the manipulation that was directed at students at a Dutch university was relevant for participants, we excluded participants who were not students at this university ( $N = 12$ ). The final 231 participants were randomly assigned to a financial ( $n = 77$ ), environmental ( $n = 82$ ), or communal ( $n = 72$ ) appeal condition (experimental condition was dummy-coded for this analysis, with the financial appeal condition as the reference variable).

### 2.1.2. Measures

Items were measured on a 7-point Likert scale ranging from 1 “completely disagree” to 7 “completely agree”, unless otherwise specified (see Appendix B for an overview of all items across all studies).

*Environmental self-identity.* Prior to the experimental manipulation, three items measured the extent to which participants saw themselves as someone who acts in an environmentally friendly way [39] (e.g., “I see myself as an environmentally friendly person”;  $\alpha = 0.85$ ;  $M = 4.41$ ,  $SD = 1.03$ ).

*Communal self-identity.* We adapted the environmental self-identity scale to assess to what extent participants saw themselves as a student of their university (e.g., “I see myself as a (name of university) student”;  $\alpha = 0.62$ ;  $M = 5.65$ ,  $SD = 0.90$ ).

*Financial self-identity.* We also adapted the environmental self-identity scale to capture the extent to which participants saw themselves as a financially responsible person (e.g., “I see myself as someone who is responsible about their money”;  $\alpha = 0.89$ ;  $M = 4.74$ ,  $SD = 1.34$ ).

*Perceived message quality.* Participants first rated the perceived quality of the message, by completing three items (e.g., “I find the information on the flyer convincing”;  $\alpha = 0.75$ ;  $M = 3.67$ ,  $SD = 1.44$ ).

*Interest to join.* Next, five items assessed interest to join the student initiative (e.g., “I would like to attend a meeting to get more information on the Movement Against Food Waste”;  $\alpha = 0.93$ ;  $M = 3.48$ ,  $SD = 1.34$ ).

*Request for more information.* As a behavioural measure of interest to join, upon collecting the completed questionnaire, the experimenter told participants that the initiative was about to be launched and asked whether participants would like to provide their email addresses so they could be contacted with further information; 63% of participants chose to do so.

*Manipulation check.* At the end of the questionnaire, participants indicated which reason was emphasised in the appeal by indicating “yes” or “no” for each of the following statements: “The flyer asks you to take part in the Movement Against Food Waste in order to protect the environment/save money/be involved with (name of university) students”.

## 2.2. Results

The manipulation check revealed that most people indicated that the flyer emphasised the benefits stressed in their appeal condition (see Table 1). However, in the communal appeal condition, nearly half of the participants also indicated the flyer emphasised environmental benefits. Thus, while participants predominantly indicated they had seen the appeal that they actually received, they indicated that other benefits of being involved were also emphasised, in particular environmental benefits.

**Table 1.** Percentage of participants who indicated that financial, environmental, and communal benefits were emphasised per experimental condition.

Condition	Financial Reason Was Emphasised	Environmental Reason Was Emphasised	Communal Reason Was Emphasised
Financial appeal	88%	27%	1%
Environmental appeal	1%	99%	2%
Communal appeal	7%	46%	76%

A univariate ANOVA indicated a significant effect of appeal condition on perceived message quality,  $F(2, 228) = 6.74$ ,  $p = 0.001$ , partial  $\eta^2 = 0.056$  (see Appendix C for descriptive and inferential statistics across all studies). As expected, post-hoc tests showed that the quality of the financial appeal was perceived as lower than that of the environmental appeal ( $p < 0.001$ ) and the communal appeal ( $p = 0.024$ ), while the perceived quality of the environmental and communal appeals did not differ ( $p = 0.206$ ). However, contrary to our hypothesis, we found no significant effect of appeal condition on interest to join the initiative,  $F(2, 228) = 0.26$ ,  $p = 0.772$ , or request for more information on the initiative,  $\chi(2) = 0.62$ ,  $p = 0.733$  (see Table 2 for descriptive statistics per experimental condition).

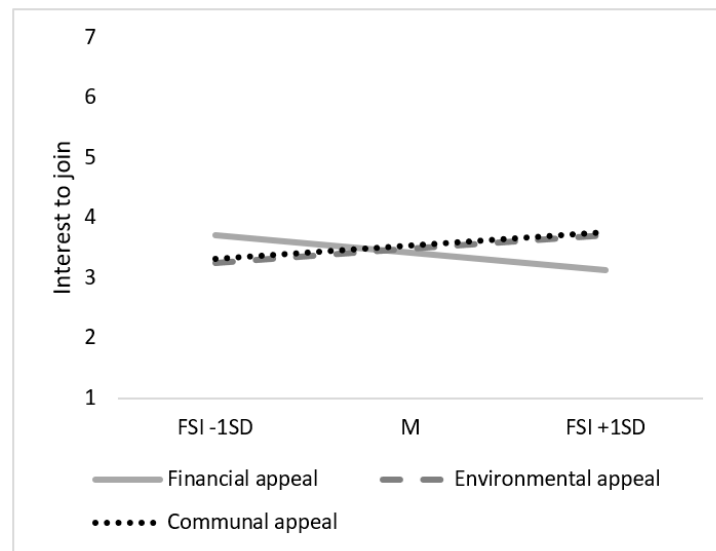
**Table 2.** Means and standard deviations for Study 1 (full sample).

	Descriptive Statistics per Appeal Condition					
	Financial		Environmental		Communal	
	M	SD	M	SD	M	SD
Perceived message quality	3.31 <sup>a</sup>	1.02	3.95 <sup>b</sup>	1.14	3.72 <sup>b</sup>	1.19
Interest to join	3.41	1.33	3.46	1.28	3.57	1.42
Information request		34%		40%		37%

Note. Different superscripts indicate significant (post-hoc test) differences across experimental conditions.

We conducted three separate moderation analyses (for each of the three moderators) to explore if the effectiveness of the respective appeals was enhanced when they were tailored to one's financial, environmental, or communal self-identity. Results showed a main effect of environmental self-identity on interest to join,  $b = 0.35$ ,  $t(225) = 2.69$ ,  $p = 0.008$ ,  $f^2 = 0.033$ , and a main effect of communal self-identity on interest to join,  $b = 0.43$ ,  $t(225) = 2.28$ ,  $p = 0.0024$ ,  $f^2 = 0.023$ ; all other main effects on the different outcomes were non-significant,  $ps \geq 0.071$ . This suggests that those with a stronger environmental and communal, (but not those with a stronger financial) self-identity are more likely to be interested to join. Yet, contrary to our expectations, the effects of environmental appeals did not differ depending on the strength of people's environmental self-identity  $ps \geq 0.100$ . Similarly, the effects of communal appeals did not depend on the strength of people's communal self-identity,  $ps \geq 0.163$ . However, we did find that financial self-identity moderated the effect of the financial (compared to the environmental) appeal,  $b = 0.39$ ,  $t(225) = 2.41$ ,  $p = 0.017$ ,  $f^2 = 0.026$ , and the effect of the financial (compared to the communal) appeal,  $b = 0.38$ ,  $t(225) = 2.26$ ,  $p = 0.025$ ,  $f^2 = 0.023$ ; no interaction effects were found for any of the other outcome variables,  $ps \geq 0.323$  (experimental condition was dummy-coded for this analysis, with the financial appeal condition as the reference variable). Counter to

expectation, a stronger financial self-identity rendered the effect of the financial appeal condition on interest to join less effective compared to the environmental and communal appeal conditions (see simple slopes in Figure 1). Yet, if we account for alpha error inflation due to the multiple analyses run, the found interaction does not reach significance (as the Bonferroni-adjusted significance level for the nine tests run is 0.006). As such, this finding should be interpreted with caution.



**Figure 1.** Simple slopes showing the interaction effect between financial self-identity (FSI) and the financial, environmental, and communal appeal conditions (indicated by the different lines) on interest to join.

Hence, Study 1 did not support the hypothesis that environmental and communal appeals are more effective than financial appeals in promoting initiative involvement, although these two appeals were seen as higher in perceived message quality. Results also did not show that appeals tailored to pre-existing motivations are more effective than non-tailored appeals and even suggest that financial appeals can perform worse among those with a strong financial self-identity.

### 3. Study 2

Study 2 aimed to explore whether appeals targeting both environmental and communal motives would be more, or less, effective in promoting initiative involvement than each of these appeals on their own. Moreover, we again tested if the effectiveness of environmental appeals was enhanced among those participants with a strong environmental self-identity, and whether the effects of communal appeals would be stronger among those with a strong communal self-identity (as reflected in their level of identification with the student community). We focused on a different type of student-led environmental initiative: one that promoted vegetarian cooking and eating among students.

#### 3.1. Method

##### 3.1.1. Procedure, Participants, and Design

Participants completed a computer-based questionnaire in individual cubicles. A short text introduced the fictitious Good Food Student Initiative (prior pilot testing ( $N = 29$ ) had indicated that this name evoked associations with environmental ( $M = 4.14$ ,  $SD = 1.36$ ) and communal goals ( $M = 4.52$ ,  $SD = 1.38$ ) to a similar extent (measured on a 7-point Likert scale), as we aimed to avoid that the initiative name would prime a particular environmental or communal goal. Nevertheless, the rather high mean ratings above the scale midpoint suggest that participants could perceive the initiative to emphasise both environmental and communal reasons at the same time). Specifically, it was indicated that

university students were setting up an initiative aimed at promoting vegetarian cooking and eating, and would soon spread flyers to advertise the new initiative. Participants were then presented with a double-sided flyer (displayed side by side on screen) aimed at encouraging people to join the initiative (see Appendix A). Flyers in all conditions displayed the initiative name and a call to “sign up for our initiative”. Next, the environmental appeal condition indicated that by joining, one could “help protect the environment and save the planet” and that “the Good Food Student Initiative gives you the opportunity to contribute to a better environment”. The communal appeal condition indicated that by joining, one could “get involved with the student community and connect to other students” and that “the Good Food Student Initiative gives you the opportunity to meet and connect with other students”. The combined appeal condition included both types of benefits. To ensure that participants would process the information and engage with the flyer, they were asked to write down in a text box what they could achieve by signing up with the student initiative, while the flyer was still presented on screen. An a priori power analysis analogous to that in Study 1 indicated that a sample size of  $N = 246$  would be needed to detect an effect  $f = 0.20$  with a power of 0.80. In total, 250 undergraduate students participated in this experiment in exchange for course credits, which corresponds to the targeted sample size ( $M_{\text{age}} = 20.13$ ,  $SD = 1.92$ , 69% female). Participants were randomly assigned to an environmental ( $N = 82$ ), communal ( $N = 84$ ), or combined appeal condition ( $N = 84$ ).

### 3.1.2. Measures

Items were measured on a 7-point Likert scale ranging from 1 “completely disagree” to 7 “completely agree” unless otherwise specified (as in Study 1, the questionnaire measured additional variables not reported in this paper, specifically groupiness (prior to the experimental manipulation), as well as individual and communal sustainable food intentions, other communal intentions, and reasons to join the initiative (after the experimental manipulation)). We computed a mean score for each scale.

*Environmental self-identity.* We used the same three-item scale used in Study 1 ( $\alpha = 0.88$ ;  $M = 4.97$ ,  $SD = 1.13$ ).

*Identification with students.* We included a measure of identification with students as an indicator of communal self-identity [44] (e.g., “I identify with students at (name of university)”;  $\alpha = 0.81$ ;  $M = 5.18$ ,  $SD = 1.02$ ).

*Perceived message quality.* Participants indicated the perceived message quality (see Study 1). We added one extra item: “I find the flyer appealing” ( $\alpha = 0.87$ ;  $M = 4.69$ ,  $SD = 1.18$ ; see Appendix B for an overview of all items across studies).

*Interest to join.* We next assessed how interested participants were in joining the student initiative with six items. Barring slight variations in wording, items were equivalent to those in Study 1 ( $\alpha = 0.95$ ;  $M = 4.34$ ,  $SD = 1.48$ ).

*Choice to take a flyer.* The last page of the questionnaire indicated that the initiative would soon be launched. As a behavioural indicator of interest in the initiative, participants were given the opportunity to take a flyer if they would like more information on the initiative. These flyers were attached to the inside of their cubicle door and could be picked up by participants upon leaving the lab. The experimenter recorded that 53% did so.

*Manipulation check.* At the end of the questionnaire, participants indicated to what extent the flyer had indicated that the Good Food Student Initiative enables one to contribute to a better environment and to connect with other students, respectively. We used a continuous, rather than a dichotomous, answer scale in this study, ranging from 1 “not at all” to 7 “very much”.

### 3.2. Results and Discussion

A mixed ANOVA using the manipulation checks as the within-subjects factor and appeal condition as the between-subjects factor indicated a significant interaction effect between the manipulation check and appeal condition,  $F(1, 247) = 127.93$ ,  $p < 0.001$ . As expected, participants in the environmental appeal condition indicated that the flyer



emphasised environmental benefits more than communal benefits ( $p < 0.001$ ), whereas participants in the communal appeal condition indicated more emphasis on communal benefits than environmental benefits ( $p < 0.001$ ). Participants in the combined appeal condition rated both emphases similarly high ( $p = 0.591$ ), indicating that the experimental manipulation was successful (Table 3). However, the relatively high rating of emphasised communal benefits in the environmental appeal condition may indicate similar concerns as in Study 1 that people already associate certain benefits with the initiative, which we will return to in the General Discussion.

**Table 3.** Mean rating of environmental and communal reasons according to the flyer (manipulation check).

Condition	Environmental Reason Was Emphasised		Communal Reason Was Emphasised	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Environmental appeal	6.38	0.81	4.26	1.63
Communal appeal	3.87	2.02	6.27	0.97
Combined appeal	6.14	1.22	6.25	1.05

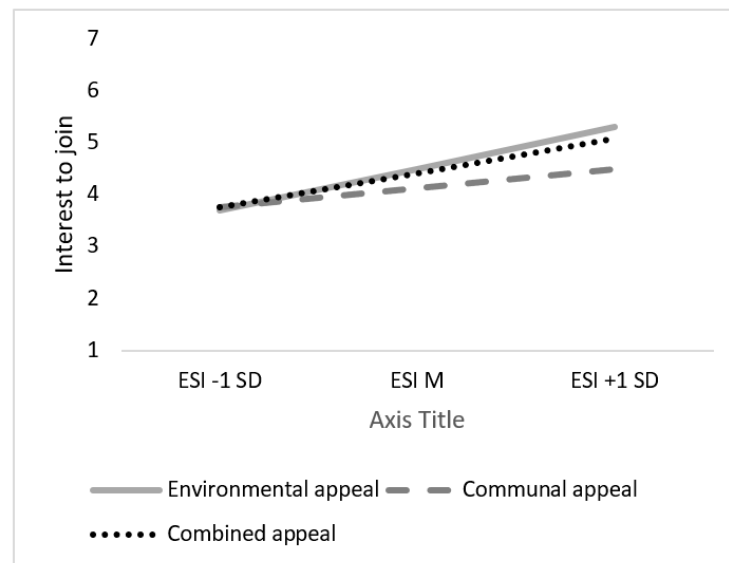
Appeal condition did not significantly influence perceived message quality, interest to join the initiative ( $F_s < 1.31$ ,  $p_s \geq 0.272$ ), or choice to take a flyer,  $\chi(2) = 2.45$ ,  $p = 0.293$  (see Table 4). When adding the interaction with environmental self-identity to the model (analogous to the analysis described in Study 1, with the environmental appeal condition as the reference variable), there was a significant main effect of environmental self-identity on interest to join,  $b = 0.71$ ,  $t(244) = 4.95$ ,  $p < 0.001$ ,  $f^2 = 0.100$ , but not on perceived message quality,  $p_s \geq 0.170$ . In line with expectations, this indicates that people are more interested in joining the more they see themselves as someone who acts in an environmentally-friendly way. We did not find a main effect of identification with students on any of the outcomes,  $p_s \geq 0.275$ .

**Table 4.** Means and standard deviations for Study 2.

	Descriptive Statistics per Appeal Condition					
	Environmental		Communal		Combined env/com	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Perceived message quality	4.47	1.31	4.75	1.03	4.64	1.21
Interest to join	4.52	1.49	4.15	1.45	4.37	1.50
Choice to take a flyer		52%		48%		60%

Moreover, environmental self-identity moderated the effect of the communal (compared to the environmental) appeal condition on interest to join,  $b = -0.39$ ,  $t = -1.98$ ,  $p = 0.049$ ,  $f^2 = 0.016$ ; but not the effect of the combined (compared to the environmental) appeal condition on interest to join,  $b = -0.13$ ,  $t = -0.70$ ,  $p = 0.482$ ,  $f^2 = 0.001$ ; the interaction effects between environmental self-identity and appeal condition for the other outcome variables were not significant,  $p_s \geq 0.062$ . Additionally, in line with our expectation, a stronger environmental self-identity enhanced the effect of the environmental appeal relative to the communal appeal on interest to join: interest to join was significantly higher in the environmental appeal condition than in the communal appeal condition among people with a strong (+1SD above the mean) environmental self-identity ( $p < 0.01$ ). In contrast, no significant differences were found between the conditions on interest to join among those with a weak environmental self-identity (−1SD,  $p > 0.05$ ). Similarly, in the combined appeal condition, a stronger environmental self-identity was associated with a higher interest to join (see simple slopes plotted in Figure 2). The effect of appeals was not moderated by identification with students on any of the outcome variables,  $p_s \geq 0.275$ . Yet, as in Study 1, when we account for alpha error inflation given the number of tests we

conducted (Bonferroni-adjusted significance level = 0.008), the identified moderation effect is no longer significant, so these results should be interpreted with caution.



**Figure 2.** Simple slopes showing the interaction effect between environmental self-identity (ESI) and appeal condition on interest to join.

In summary, combining environmental and communal appeals was not more, or less, effective than single appeals. Environmental appeals (alone and when combined with a communal appeal) seem somewhat more effective in promoting interest to join (but not the other outcome variables) among those with a relatively strong environmental self-identity compared to those with a relatively weak environmental self-identity. However, results should be interpreted with care given the number of tests we conducted. We did not find this enhanced effect for communal (or combined) appeals when tailored to those with a strong communal identity (i.e., who strongly identified with students).

#### 4. Study 3

As we did not find significant differences in the effects of different appeals on initiative involvement in Studies 1 and 2, an important question is whether appeals are effective at all in promoting initiative involvement compared to not emphasising any benefits of being involved in community environmental initiatives. Therefore, Study 3 included a control condition that did not provide any information on the benefits of joining the initiative, along with a financial, environmental, and communal appeal condition, respectively. Moreover, it could be that the appeals had no effect on initiative involvement because the promoted initiatives pursued goals that did not necessarily require joining an initiative (e.g., people can avoid food waste and eat vegetarian individually as well). Thus, it is possible that while students were willing to act in line with the goals of the promoted initiative, they could have decided to engage in the promoted behaviour individually instead of by joining the initiative. Furthermore, it may be that appeals are not effective because they do not change participants' beliefs that the initiative can provide the benefits emphasised in the appeals. To address these issues, we presented a fictitious student initiative with a promoted behaviour that required student involvement (i.e., a behaviour students could not individually engage in): the Clothes Swap Initiative, which aims to promote the reuse of clothing items. Next to this, we aimed to improve the flyers so that the different appeals more clearly emphasised the advertised benefits (for example by including testimonials that stressed the respective benefits). As in the previous studies, we also explored if the appeals were more effective when they corresponded to people's personal motivations, this time in terms of people's values [45]. Specifically, we tested if the effectiveness of environmental

and financial appeals was enhanced for people with strong corresponding (i.e., biospheric or egoistic) values, respectively. We further explored whether strong hedonic or altruistic values enhanced the effectiveness of communal appeals.

#### 4.1. Method

##### 4.1.1. Procedure, Participants, and Design

Participants completed an online questionnaire that presented a short text about the new Clothes Swap Initiative and its aim. Participants were asked to give their feedback on a flyer that promoted the initiative, which included the experimental manipulation (see Appendix A). All flyers had the initiative name and some basic, identical contact information. Next to this, the financial appeal condition stated that “clothes swapping saves money” and that joining the initiative would enable students “to get clothes for free”. The environmental appeal condition stated that “clothes swapping benefits the environment” and that joining would enable students to “save energy and water”. The communal appeal condition stated that “clothes swapping brings students together” and that joining would enable students to “connect with fellow students”. The three conditions further included testimonials from the founding students again stressing the respective benefits. In the control condition, no benefits were stated, and the flyer simply asked people to “join the initiative and get swapping”. An a priori power analysis indicated that a sample size of  $N = 280$  would be necessary to detect an effect size of  $f = 0.20$  given a power of 0.80. Unfortunately, in total, only 139 students at a Dutch university took part in this experiment (68% female,  $M_{\text{age}} = 21.33$ ,  $SD = 2.48$ ), indicating that the study is underpowered. Fifteen participants had missing data on the dependent variables and were excluded from data analyses (final  $N = 124$ ). We conducted a post-hoc sensitivity analysis, which indicated that this study would be able to detect a medium effect of  $f = 0.30$ . The majority of participants (58%) were recruited via the psychology student participant pool and the remaining students were recruited in open student spaces. Participants were randomly assigned to one of four experimental conditions: a control condition ( $n = 33$ ), financial ( $n = 30$ ), environmental ( $n = 32$ ), or communal ( $n = 29$ ) appeal condition.

##### 4.1.2. Measures

All items were randomised and measured using a Likert scale ranging from 1 “completely disagree” to 7 “completely agree” unless otherwise specified (the questionnaire measured additional variables not reported in this paper, specifically reasons to join the initiative (after the experimental manipulation)).

*Perceived message quality and interest to join.* Perceived message quality ( $\alpha = 0.86$ ;  $M = 3.73$ ,  $SD = 1.23$ ) and interest to join ( $\alpha = 0.95$ ;  $M = 3.87$ ,  $SD = 1.54$ ) were assessed in a similar way as in Study 2, barring minor variations in wording, and one less item for interest to join for brevity reasons (see Appendix B for a comparative overview of all items).

*Perceived benefits of joining.* We assessed the perceived financial, environmental, and communal benefits of joining, respectively, on a scale from 1 “not at all” to 7 “very much”. Two items were used for each scale, reflecting financial benefits (“To what extent do you think joining the initiative would ... save you money”; “get you clothes for free”;  $\rho_{\text{SB}} = 0.76$ ;  $M = 5.20$ ,  $SD = 1.23$ ), environmental benefits (“... benefit the environment”; “... reduce energy use and waste and save water”;  $\rho_{\text{SB}} = 0.85$ ;  $M = 5.20$ ,  $SD = 1.40$ ), and communal benefits of joining (“... bring students together”; “... connect you with fellow students”;  $\rho_{\text{SB}} = 0.89$ ;  $M = 4.74$ ,  $SD = 1.26$ ).

*Personal values.* We included a short value scale measuring biospheric, altruistic, egoistic, and hedonic values on a scale from -1 (“opposed to my values”), 0 (“not important”) to 7 (“extremely important”) [45]. Biospheric values were measured with four items (e.g., Respecting the earth: harmony with nature;  $\alpha = 0.89$ ;  $M = 5.07$ ,  $SD = 1.48$ ). Altruistic values were measured with four items (e.g., equality: equal opportunity for all;  $\alpha = 0.79$ ;  $M = 5.22$ ,  $SD = 1.30$ ). Egoistic values were measured with five items (e.g., social power: control over

others;  $\alpha = 0.72$ ;  $M = 2.71$ ,  $SD = 1.37$ ). Hedonic values were measured with three items (e.g., pleasure: joy, gratification of desires;  $\alpha = 0.91$ ;  $M = 4.82$ ,  $SD = 1.58$ ).

*Manipulation check.* Three single items assessed participants' agreement with the following statements: "According to the flyer, joining the Clothes Swap Initiative will . . . save me money; benefit the environment; bring students together".

#### 4.2. Results and Discussion

A mixed ANOVA using the financial, environmental, and communal manipulation checks as the within-subjects factor and appeal condition as the between-subjects factor indicated a significant interaction effect between the manipulation checks and appeal conditions,  $F(6, 234) = 35.63$ ,  $p < 0.001$ . As expected, participants' ratings for each manipulation check were the highest in the corresponding appeal condition (e.g., participants in the financial appeal condition indicated that financial benefits were emphasised; see Table 5). Yet, the mean ratings tended to be around or above the mid-point of the scale across conditions, which may indicate that participants thought the flyers also somewhat appealed to other motives than the ones we targeted.

**Table 5.** Mean agreement with the statement that the flyers contained a financial, environmental, or communal appeal across experimental conditions.

Condition	Manipulation Check Statement					
	Message Is Financial		Message Is Environmental		Message Is Communal	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Control	4.13	1.63	4.06	1.81	4.29	1.55
Financial appeal	5.63	0.96	3.87	1.70	4.30	1.51
Environmental appeal	3.97	1.63	5.48	1.39	4.19	1.42
Communal appeal	3.66	1.40	3.66	1.70	6.31	0.93

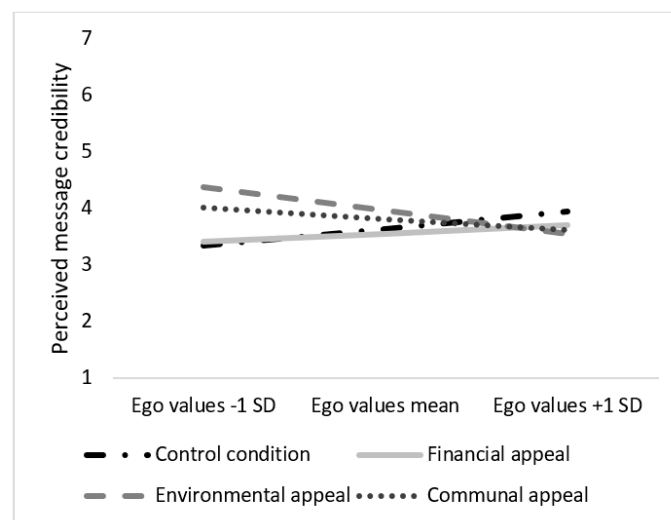
Again, results showed no significant differences in perceived message quality nor interest to join between the different appeal conditions (Table 6). Furthermore, three separate ANOVA showed no effects of appeal condition on any of the three beliefs about the benefits of joining (Table 6).

**Table 6.** Means, standard deviations, and inferential statistics for Study 3.

	Descriptive Statistics per Experimental Condition								Inferential Statistics		
	Financial		Environmental		Communal		Control		ANOVA		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (3,120)	<i>p</i>	partial $\eta^2$
Perceived message quality	3.63	1.03	3.88	1.35	3.82	1.24	3.61	1.29	0.35	0.787	0.009
Interest to join	3.78	1.27	3.71	1.75	4.12	1.54	3.87	1.63	0.40	0.751	0.010
Perceived benefits of joining									<i>F</i> (3,119)		
Financial	4.95	1.21	4.94	1.51	5.50	0.95	5.41	1.11	1.81	0.150	0.044
Environmental	5.25	1.03	4.69	1.70	5.57	1.42	5.31	1.27	4.28	0.087	0.053
Communal	4.67	0.97	4.84	1.50	4.43	1.35	4.97	0.97	1.65	0.381	0.025

Similar to Study 1, Study 3 again did not support our hypothesis that environmental and communal appeals would be more effective than financial appeals in promoting initiative involvement. Furthermore, environmental and communal appeals were not more effective in promoting initiative involvement than no appeals at all. Additionally, the appeals did not affect the perception that joining would have the benefits stressed by the appeal, which may explain why we did not find that any of the appeals promoted interest to join. Yet, please note that this study may be underpowered, and that the relatively small sample size does not allow the detection of small effects.

We conducted separate moderation analyses to test if values enhanced the effects of corresponding appeals on perceived message credibility and interest to join the initiative. We did not find any main effects of values on any of the outcomes (although the effect of biospheric values on interest to join the initiative was marginally significant:  $b = 0.36$ ,  $t(109) = 1.94$ ,  $p = 0.055$ ,  $f^2 = 0.037$ ; all other  $ps \geq 0.129$ ). Furthermore, we did not find any evidence that specific appeals were more effective on any of the outcome variables when the corresponding values were higher (all  $ps \geq 0.257$ ). Specifically, environmental appeals were not more effective the higher people's biospheric values, and communal appeals were not more effective the higher people's hedonic or altruistic values. Financial appeals were also not more effective the higher people's egoistic values. However, we did find a significant interaction of egoistic values and environmental appeal condition on perceived message credibility, ( $b = -0.52$ ,  $t(109) = -2.37$ ,  $p = 0.020$ ,  $f^2 = 0.052$ ). Simple slopes (see Figure 3) indicated that perceived message credibility was slightly higher in the environmental appeal condition compared to the control condition when egoistic values were relatively weak ( $b = 0.90$ ,  $t(109) = 2.311$ ,  $p = 0.023$  but not when they were relatively strong ( $ps \geq 0.320$ ). Yet, given the number of tests conducted, this exploratory finding should be viewed with caution, as the interaction effect does not remain significant when alpha error inflation is accounted for (as the Bonferroni-adjusted significance level is 0.008).



**Figure 3.** Simple slopes showing the interaction effect between egoistic values and appeal condition on perceived message credibility.

## 5. Study 4

Lastly, we investigated if the extent to which financial, environmental, and communal benefits are emphasised in promotional flyers is related to actual membership in community energy initiatives in various neighbourhoods in the Netherlands. As this study did not manipulate different appeals but relied on ratings of the emphasis on the different benefits of joining the initiative in flyers that were actually used, we tested our main hypothesis in a different way. Specifically, we expected that the more strongly flyers emphasised environmental and communal benefits to promote initiative involvement, the higher the ratio of members (relative to the number of potential households) in the local communities would be. We did not expect such a relationship for the emphasis on the financial benefits and the ratio of initiative members.

### 5.1. Method

#### 5.1.1. Procedure and Sample

Buurkracht is an umbrella organisation that supports local energy initiatives in the Netherlands by offering, among other things, energy-saving advice to initiative members and promotional material, such as flyers to recruit members. We received all the flyers

used by participating local energy initiatives from Buurkracht. The flyers had been used by the volunteers in 167 local Buurkracht initiatives to promote people's involvement in these initiatives. The flyers were specific to each initiative, they were one to four pages long, and included images and text aimed at promoting people's membership in the initiative and attendance of a first initiative meeting. Information on the various benefits of being involved in the initiative was also typically included. Although the promotional materials ranged in appearance from one- or two-sided flyers to four-page booklet-type materials, we consistently use the term flyer in this study.

### 5.1.2. Measures

*Perceived benefits emphasised in the appeals.* Two research assistants individually rated the extent to which each flyer emphasised the financial, environmental, and communal benefits of joining the initiative, respectively. Ratings were made blind to the membership data for the initiatives. We conceptualised financial benefits as saving money, for example saving money on heating, by investing in renewable energy, increasing the value of the home (by, for example, improving insulation), and subsidies. Environmental benefits were conceptualised as, for example reducing CO<sub>2</sub> emissions. Communal benefits were conceptualised by emphasising a sense of community, for example, partaking in activities together with other community members, meeting other community members, and learning from neighbours. For each flyer, each benefit was rated on a scale ranging from 1 ("no emphasis at all") to 5 ("very strong emphasis"). The Spearman–Brown interrater reliability was sufficient for each of the three benefits (financial benefits:  $\rho = 0.78$ ; environmental benefits:  $\rho = 0.76$ ; communal benefits:  $\rho = 0.74$ ), so we computed a mean score for ratings of both judges and for each appeal.

*Membership ratio.* We computed the ratio of households who were members of the Buurkracht community energy initiatives in a given community by dividing the number of households that had signed up as initiative members by the total number of households in the community that could potentially join the initiative (i.e., all the households that were targeted with the promotional flyers). As inspection of this variable revealed a severely right-skewed distribution, we removed neighbourhoods with more than 2549 households. We considered these neighbourhoods as outliers because they were more than three times the interquartile range and greatly exceeded the number of households in the local area commonly targeted by Buurkracht. Across all initiatives, the membership ratio ranged from 0 to 40%, with a mean membership ratio of 10% ( $SD = 6\%$ ).

### 5.2. Results and Discussion

On average, financial benefits were rated as most emphasised ( $M = 3.43$ ,  $SD = 0.86$ ), followed by communal ( $M = 2.92$ ,  $SD = 0.86$ ) and then environmental benefits ( $M = 2.07$ ,  $SD = 0.74$ ). A repeated-measures ANOVA with the three benefits as the within-subjects factor revealed that these differences were significant,  $F(2, 294) = 128.52$ ,  $p < 0.001$ , with post-hoc tests indicating significant differences between all three benefits (all  $ps < 0.001$ ). Bivariate correlations (with  $p < 0.05$  as the significance level) showed that the more a flyer emphasised environmental benefits, the more it emphasised communal benefits as well, while these emphases did not correlate with the emphasis of financial benefits in the flyers. Counter to our hypothesis, we did not find any significant relationship between the extent to which financial, environmental, or communal benefits were emphasised and membership ratio (all  $ps \geq 0.112$ ); Table 7).

Table 7. Bivariate correlations for Study 4.

	Environmental Benefits	Communal Benefits	Membership Ratio
Financial benefits	0.019	0.098	0.131
Environmental benefits		0.504 **	−0.018
Communal benefits			0.080
Membership ratio			

\*\* Correlation is significant at the 0.01 level (2-tailed).

## 6. General Discussion

We aimed to study the effects of financial, environmental, and communal appeals on promoting initiative involvement experimentally and in a real-world setting. Our study extends previous research comparing the effectiveness of financial and environmental appeals on private pro-environmental behaviours [25,27,34] in two ways. Firstly, we additionally examined the effectiveness of communal appeals, and secondly, we tested the effects of appeals on involvement in community environmental initiatives, a different type of pro-environmental behaviour. Notably, next to measuring interest to join an initiative, we examined behavioural measures of initiative involvement (e.g., choice to take a flyer) and the actual percentage of community members that joined an initiative.

The results of four studies provided no support for our hypothesis that environmental and communal appeals would promote involvement in community environmental initiatives more than financial appeals or a control condition in which no benefits were emphasised. Moreover, Study 2 did not provide evidence that a combination of environmental and communal appeals is more, or less, effective in promoting initiative involvement compared to only using single environmental or communal appeals. These results were consistent across the different indicators of initiative involvement, specifically interest to join, requesting more information, and actual initiative membership.

We did not find that financial appeals are effective in promoting initiative involvement relative to a control group, which corroborates research suggesting that financial appeals may not promote sustainable behaviour [10,21,26], likely because the financial benefits tend to be not worth the effort and financial motives are generally not uniquely related to initiative involvement [12]. This implies that appealing to financial motives is unlikely to be effective in promoting initiative involvement, although due to the small sample size of Study 3 these conclusions should be viewed with caution. More importantly, we found that none of the appeals were effective in affecting any of the indicators of initiative involvement, which is in contrast to earlier work that indicated that environmental appeals are effective in promoting pro-environmental behaviour [25,27]. Yet, some studies also indicate that environmental appeals may not be effective in promoting pro-environmental behaviour [46], and that more generally, information provision has limited effects on behaviour [47]. Notably, we also mostly found no evidence that appeals affected potential process variables through which appeals likely affect initiative involvement, including perceived message quality and beliefs about the benefits of joining. Whereas the results of Study 1 suggested that environmental and communal appeals may be perceived as higher in quality relative to financial appeals, we did not find differences in the perceived quality of different appeals in Studies 2 and 3. Hence, the single significant result for perceived message quality may have been found due to chance. Overall, this suggests that the appeals did not affect potential process variables either, which might explain the lack of effect on initiative involvement across our studies.

As Studies 1 and 2 did not include a no-appeal control group, we cannot firmly say that the environmental and communal appeals (and the combined appeal) were completely ineffective, as they could all have been similarly effective. Yet, the lack of difference of the appeals in relation to a control group in Study 3 suggests that appeals as such are unlikely to be very effective in promoting initiative involvement. However, future research could test this further, as Study 3 suffered from power issues.

So how can we explain that appeals to different motives do not seem to promote initiative involvement? It may be that people already acknowledged the benefits advertised in the appeals, making it unlikely that emphasising these benefits would have any added effect. This is supported by our findings that people indicated that the appeals emphasised all three benefits (and benefits were even perceived to be high in the control condition), suggesting that they already associate community environmental initiatives with the various benefits. Indeed, in all studies participants tended to perceive other benefits than the ones explicitly stressed in the appeals as well. Specifically, in Study 1, almost half of the people who were presented with a communal appeal also perceived environmental benefits as being emphasised. Similarly, in Studies 2 and 3, people generally rated all benefits as being emphasised (scores were around or slightly above the scale mid-point) even if they were not emphasised (e.g., in the control group where no benefits were emphasised at all). This suggests that people may already associate community environmental initiatives with different benefits (in particular with environmental benefits) even if they are not communicated explicitly. If merely describing an initiative name and its aims generates associations about various benefits, this could explain why we did not find any differences between the appeals and the no-appeals control condition, and that advertising the benefits has no added effects.

Alternatively, it could be that the appeals in Studies 1 and 2 emphasised benefits that could also be achieved without necessarily needing to join the promoted initiative. For example, the environmental appeal in Study 1 stated that (a) avoiding food waste is good for the environment and (b) people could protect the environment by joining the initiative. Recipients of the appeal may simply have chosen to engage in the targeted behaviour change (avoiding food waste) individually, without joining the initiative. In Study 3 we attempted to overcome this potential weakness by using an initiative that targeted a behaviour (clothes swapping) that could not be done individually. Results showed that, in this case, still neither environmental nor communal appeals promoted initiative involvement compared to financial appeals or a no-appeal condition (though these findings should be interpreted with care due to the small sample size). This suggests that the lack of effects of the appeals may not (solely) be due to the possibility that people choose to engage in the pro-environmental behaviour without joining the initiative.

Study 2 suggests that environmental appeals (and combined environmental and communal appeals) are somewhat effective in promoting initiative involvement among those with a stronger environmental self-identity, supporting the idea that appeals can be more effective when they are tailored to the target group. However, we did not replicate this moderation effect for the other outcome variables (i.e., perceived message quality and taking a flyer) in Study 2. Moreover, we neither replicated this finding in Study 1, in which we found that environmental appeals are not more effective among those with a stronger environmental self-identity, nor in Study 3 when examining the moderation effect of values. Study 1 showed that financial appeals were actually less effective in promoting interest to join among those with a strong financial self-identity, which is contrary to expectations. Further, we found no moderating effects of financial self-identity on perceived message quality or taking a flyer. We also did not find that the effect of financial appeals was moderated by egoistic values in Study 3 on any of the outcome measures. Additionally, no moderation effects were found for communal self-identity in Study 1 and identification with students in Study 2. In Study 3, none of the values moderated the effect of communal appeals. Overall, these results do not consistently indicate that tailoring appeals to pre-existing motivations is more effective in promoting initiative involvement. The few moderation effects we did find across the studies should be viewed with caution due to the relatively low sample sizes and multiple tests conducted.

These findings are in contrast to previous studies that have shown that the effectiveness of appeals may vary depending on how important someone personally finds the advertised benefits [34–36]. This may again be due to the finding that people generally already acknowledged the advertised benefits. It might also be that message tailoring



is more effective when tailored to values rather than self-identities. Indeed, research on tailored appeals has typically examined values as moderators of appeals' effectiveness [34,36,48], arguing that values determine how personally relevant information (e.g., appeals) is to someone [37]. Yet, in Study 3 we also did not find an enhancing effect of values on the effectiveness of appeals, although this might be because this study was severely underpowered. We expected that self-identities would affect information processing in a similar way, as these are closely related to values [49]. Self-identities reflect how people see themselves in general, which is likely to affect what type of information is important to them. Future research could aim to study whether self-identities and/or values moderate the effectiveness of appeals in promoting initiative involvement or different types of pro-environmental behaviour more generally by examining bigger samples that allow the detection of smaller effects.

In line with the reasoning that environmental and communal motives underlie initiative involvement, we found a main effect of environmental self-identity (in both Studies 1 and 2) and communal self-identity (in Study 1 but not Study 2) but not financial self-identity on interest to join (though not on perceived message quality), suggesting that interest to join is higher among those with a stronger environmental and communal self-identity. Though values were mostly not significantly related to initiative involvement, there was a weak indication that interest to join was higher when biospheric values were stronger. This corroborates research showing that people are more likely to be involved in community environmental initiatives when they have stronger environmental and/or communal motives, while financial motives are not uniquely related to initiative involvement [12].

Our findings have important practical implications. Though often employed by initiative takers as a means to motivate community members to join a new initiative, emphasising different benefits of joining an initiative through one-time flyers might not be effective in actually promoting such involvement. It could be that providing information on benefits is more effective when they are communicated via other channels. For example, it might be more effective to emphasise the environmental and communal benefits of joining via interpersonal contact cf. [50], for example via a door-to-door approach, in which familiar neighbours approach fellow community members in order to motivate them to become involved. This initial involvement could then be sustained through face-to-face community meetings, in which community members can meet, talk, and experience the benefit of being involved in one's community in a more direct way cf. [30]. Communicating communal benefits in a personal way might particularly leverage the effectiveness of such a personal approach, as the content of the appeal (i.e., emphasising the benefit of connecting to other community members) is aligned with how this benefit is communicated (i.e., through direct contact to other community members). Future research is needed to test if communal appeals in particular can promote involvement more effectively when communicated in a more personal manner than through flyers. More generally, future research could examine the effectiveness of alternative approaches to promote initiative involvement, such as more personal, face-to-face approaches.

In summary, across three experiments and a correlational study we found no evidence that environmental and communal appeals promote involvement in community environmental initiatives. Moreover, we found limited evidence that tailoring appeals to financial, environmental, or communal self-identities enhances their effectiveness. Thus, different approaches seem to be necessary to promote initiative involvement.

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**Institutional Review Board Statement:** The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of the University of Groningen, Department of Psychology.

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## Appendix A. Flyer Manipulations Used in Studies 1–3

### Appendix A.1. Study 1



**Figure A1.** Financial appeal. Translation of the Dutch text: "Avoiding food waste is good for your wallet. Join the movement and save money".



**Figure A2.** Environmental appeal. Translation of the Dutch text: “Avoiding food waste is good for the environment. Join the movement and protect the environment”.



**Figure A3.** Communal appeal. Translation of the Dutch text: “Avoiding food waste connects people. Join our movement and meet new fellow students”.

Appendix A.2. Study 2



Figure A4. Environmental appeal.



Figure A5. Communal appeal.



Figure A6. Combined appeal.

Appendix A.3. Study 3



Figure A7. Cont.



Figure A7. In order of appearance: financial appeal, environmental appeal, communal appeal, control condition (no appeal).

## Appendix B. Comparative Overview of Measures across Studies

Table A1. Comparative Overview of Measures across Studies.

	Study 1	Study 2	Study 3	Study 4
<b>Independent variables</b>	Financial, environmental, communal flyer appeal	Environmental, communal, combined flyer appeal	Financial, environmental, communal flyer appeal plus control (no appeal) condition	-
<b>Measures</b>				
<b>Rated appeal emphasis</b>				To what extent are the following aspects emphasised in the flyer? (1 = not emphasised at all, 7 = very strongly emphasised) - Saving money (for example saving money for heating, investments in sustainable energy, increasing the value of the home, subsidies) - Environmental protection (for example reducing CO <sub>2</sub> emissions, being green, protecting the environment) - Sense of community (for example, doing activities together with other community members, meeting other community members, learning from neighbours)
<i>Financial</i>				
<i>Environmental</i>				
<i>Communal</i>				
<b>Membership ratio</b>				Number of initiative members/number of households in the neighbourhood
<b>Interest to join</b>	What do you think about the flyer? (1 = completely disagree, 7 = completely agree) - I would like to receive more information on the Movement Against Food Waste - I would like to become a member of the Movement Against Food Waste - I am interested in the Movement Against Food Waste - I would like to attend a meeting to get more information on the Movement Against Food Waste  - I intend to take part in the Movement Against Food Waste in the future	Please answer the following questions on a scale from 1 to 7 (1 = completely disagree, 7 = completely agree) - I would like to receive more information on the Good Food Student Initiative - I am interested in joining the Good Food Student Initiative - I am interested in the Good Food Student Initiative - I am interested in attending a meeting of the Good Food Student Initiative - I am interested in checking out the website or social media accounts of the Good Food Student Initiative - I intend to join the Good Food Student Initiative	Please answer the following questions on a scale from 1 to 7 (1 = completely disagree, 7 = completely agree) - I would like to receive more information on the Clothes Swap Initiative - I am interested in joining the Clothes Swap Initiative - I am interested in the Clothes Swap Initiative - I am interested in joining a meeting of the Clothes Swap Initiative and try swapping clothes myself - I plan to check out the website or social media accounts of the Clothes Swap Initiative	

Table A1. Cont.

	Study 1	Study 2	Study 3	Study 4
<b>Behavioural DV</b>	Choice to provide an email address (yes/no)	Choice to take a flyer (yes/no)		
<b>Perceived message quality</b>	<p>What do you think about the flyer?</p> <p>(1 = completely disagree, 7 = completely agree)</p> <ul style="list-style-type: none"> <li>- I find the information on the flyer convincing</li> <li>- The message of the flyer is credible</li> <li>- I find the message on the flyer inspiring</li> </ul>	<p>Please answer the following questions on a scale from 1 to 7</p> <p>(1 = completely disagree, 7 = completely agree)</p> <ul style="list-style-type: none"> <li>- I find the message of the flyer convincing</li> <li>- The message of the flyer is credible</li> <li>- I find the flyer inspiring</li> <li>- I find the flyer appealing</li> </ul>	<p>Please answer the following questions on a scale from 1 to 7</p> <p>(1 = completely disagree, 7 = completely agree)</p> <ul style="list-style-type: none"> <li>- I find the information on the flyer convincing</li> <li>- The information on the flyer is credible</li> <li>- I find the flyer inspiring</li> <li>- I find the information on the flyer appealing</li> </ul>	
<b>Beliefs</b>				<p>To what extent do you think the initiative would . . .</p> <p>(1 = not at all, 7 = very much)</p> <ul style="list-style-type: none"> <li>save you money</li> <li>give you clothes for free</li> <li>benefit the environment</li> <li>reduce energy use and waste and save water</li> <li>bring students together</li> <li>connect you with fellow students</li> </ul>
<b>Financial</b>				
<b>Environmental</b>				
<b>Communal</b>				
<b>Environmental self-identity</b>	<p>Please answer the following questions on a scale from 1 to 7</p> <p>(1 = completely disagree, 7 = completely agree)</p> <ul style="list-style-type: none"> <li>- Acting pro-environmentally is an important part of who I am</li> <li>- I am the type of person who acts pro-environmentally</li> <li>- I see myself as an environmentally-friendly person</li> </ul>	<p>Please answer the following questions on a scale from 1 to 7</p> <p>(1 = completely disagree, 7 = completely agree)</p> <ul style="list-style-type: none"> <li>- Acting pro-environmentally is an important part of who I am</li> <li>- I am the type of person who acts pro-environmentally</li> <li>- I see myself as an environmentally-friendly person</li> </ul>		
<b>Communal self-identity</b>	<ul style="list-style-type: none"> <li>- Being a student at the (name of university) is an important part of who I am</li> <li>- I am the type of person who is a (name of university) student</li> <li>- I see myself as a (name of university) student</li> </ul>			
<b>Identification with students</b>	<ul style="list-style-type: none"> <li>- I identify with students at (name of university)</li> <li>- I feel committed to students of (name of university)</li> <li>- I am glad to be a (name of university) student</li> <li>- Being a student at (name of university) is an important part of how I see myself</li> </ul>			



Table A1. Cont.

	Study 1	Study 2	Study 3	Study 4
<b>Financial self-identity</b>	<ul style="list-style-type: none"> <li>- Being responsible about money is an important part of who I am</li> <li>- I am the type of person who is responsible about their money</li> <li>- I see myself as someone who is responsible about their money</li> </ul>			
<b>Altruistic values</b>			<p>Could you please rate how important each value is for you AS A GUIDING PRINCIPLE IN YOUR LIFE?</p> <p>(-1 = opposed to my values, 0 = not important at all, 1–5 = important, 6 = very important, 7 = of supreme importance)</p> <ul style="list-style-type: none"> <li>- EQUALITY: equal opportunity for all</li> <li>- A WORLD AT PEACE: free of war and conflict</li> <li>- SOCIAL JUSTICE: correcting injustice, care for the weak</li> <li>- HELPFUL: working for the welfare of others</li> </ul>	
<b>Biospheric values</b>			<ul style="list-style-type: none"> <li>- RESPECTING THE EARTH: harmony with other species</li> <li>- UNITY WITH NATURE: fitting into nature</li> <li>- PROTECTING THE ENVIRONMENT: preserving nature</li> <li>- PREVENTING POLLUTION: protecting natural resources</li> </ul>	
<b>Egoistic values</b>			<ul style="list-style-type: none"> <li>- SOCIAL POWER: control over others, dominance</li> <li>- WEALTH: material possessions, money</li> <li>- AUTHORITY: the right to lead or command</li> <li>- INFLUENTIAL: having an impact on people and events</li> <li>- AMBITIOUS: hard-working, aspiring</li> </ul>	
<b>Hedonic values</b>			<ul style="list-style-type: none"> <li>- PLEASURE: joy, gratification of desires</li> <li>- ENJOYING LIFE: enjoying food, sex, leisure, etc.</li> <li>- SELF-INDULGENT: doing pleasant things</li> </ul>	

## Appendix C. Overview of Findings for Studies 1–3

Table A2. Mean, standard deviations, and parameter estimates for Studies 1–3.

	Descriptive Statistics per Experimental Condition										Inferential Statistics		
	Financial		Environmental		Communal		Combined env/com		Control		ANOVA		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>df</i>	<i>p</i>
<b>Study 1</b>													
Interest to join	3.41	1.33	3.46	1.28	3.57	1.42					0.26	2, 228	0.772
Perceived message quality	3.31 <sup>a</sup>	1.02	3.95 <sup>b</sup>	1.14	3.72 <sup>b</sup>	1.19					6.74	2, 228	0.001
Request for more information	34%		40%		37%						$\chi = 0.62$	2	<0.733
<b>Study 2</b>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>df</i>	<i>p</i>
Interest to join			4.52	1.49	4.15	1.45	4.37	1.50			1.31	2, 247	0.272
Choice to take flyer	52%		48%		60%						$\chi = 2.45$	2	0.293
Perceived message quality			4.47	1.31	4.75	1.03	4.64	1.21			0.21	2, 247	0.809
<b>Study 3</b>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>df</i>	<i>p</i>
Interest to join	3.78	1.27	3.71	1.75	4.12	1.54			3.87	1.63	0.40	3, 120	0.751
Perceived message quality	3.63	1.03	3.88	1.35	3.82	1.24			3.61	1.29	0.35	3, 120	0.787
Belief: financial	4.95	1.21	4.94	1.51	5.50	0.95			5.41	1.11	1.81	3, 119	0.150
Belief: environmental	5.25	1.03	4.69	1.70	5.57	1.42			5.31	1.27	4.28	3, 119	0.087
Belief: communal	4.67	0.97	4.84	1.50	4.43	1.35			4.97	0.97	1.65	3, 119	0.381

Note. Different superscripts indicate significant (post-hoc test) differences across experimental conditions.

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