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# The world needs less plastic: the role of psychological distance and self-efficacy in environmental messages

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This study examines the role of lowering psychological distance and increasing self-efficacy around plastic pollution through environmental media messages. Participants ( $N = 215$ ) were randomly assigned to watch a short video (30–60 s) that was either generalized or localized to the state of the participant's residency and that did or did not include a self-efficacy message in this  $2 \times 2$  between-subjects experiment. Results indicate that message localization lowers psychological distance and including self-efficacy messages increase self-efficacy. Both led to increased message-consistent attitudes and thus increased behavioral intentions to reduce plastic waste and promote the same behaviors in others.

## KEYWORDS

plastic pollution, psychological distance, localized messaging, self-efficacy, theory of planned behavior

## 1 Introduction

Every year, the average American produces 218 pounds of plastic waste, all of which takes up to 1,000 years to fully degrade ([Environmental Protection Agency, 2023a](#)). Plastic is toxic to humans and animals and is not biodegradable. Despite the environmental problems created by plastic use, people have become increasingly dependent on the material for everyday life ([Al-Salem et al., 2009](#)), and plastic use in the United States has quadrupled since 1980 and continues to grow. Plastic waste is now a top priority of the U.S. Environmental Protection Agency, as evidenced by their recent national efforts to reduce plastic pollution ([Environmental Protection Agency, 2023b](#)).

Pro-environmental behaviors (PEBs) are behaviors that benefit the environment or aim to minimize harm to the environment ([Steg and Vlek, 2009](#)). More than one third of Americans are worried “a great deal” about the quality of the environment (36%), and 31% are worried “a fair amount,” according to the most recent Gallup polling data ([Evans, 2024](#)). However, only 20% of Americans report consistently trying to engage in PEBs in their daily lives ([Anderson, 2017](#)). Why is there a mismatch between what people say matters to them and what they actually do about it?

In the context of plastic waste, one potential cause of this mismatch is the personal relevancy of the issue. Although plastic waste affects all humans and animals, much of the rhetoric in environmental advocacy campaigns (e.g., [Ocean Conservancy, 2023](#)) around plastic waste has focused on how it impacts marine wildlife, such as animals getting entangled in debris and gastrointestinal blockage. While the concern for oceans is certainly warranted, it is an oversight to focus plastic pollution messaging on marine wildlife alone because “only people who live directly on the coast may imagine that their litter could end up there if not properly

disposed of” (Moss, 2021, p. 38). Because people often base their decisions about whether to engage in PEBs on how personally connected they feel to a given issue, it is critical to develop effective communication strategies to promote plastic waste reduction among these populations.

One strategy to accomplish this goal is to create messages that reduce psychological distance. Psychological distance refers to how distant a person believes something is from themselves in the present moment (Spence et al., 2012; Trope and Liberman, 2010). There are four dimensions of psychological distance that can influence how a person will feel towards an issue: spatial, temporal, social, and hypothetical distance.

Spatial distance is how physically close a person feels relative to the location where an issue is occurring (Wang et al., 2019). For example, the effect of plastic waste on ocean life may be spatially distant for those who do not live in coastal areas. Temporal distance is how close in time a person feels the current moment is in relation to when an issue will have negative consequences. For example, those who believe that plastic waste will not affect their lives until far into the future are temporally distant from the issue. Social distance is how close an individual feels towards the social group that is being impacted by an issue. For example, an individual who believes that plastic waste does not impact people like themselves is socially distant from the issue. Finally, hypothetical distance is an individual's perception of the likelihood of an event occurring. For example, if an individual believes that they are unlikely to ever be negatively impacted by plastic waste, they have a high hypothetical distance from the issue. Previous research indicates that the spatial dimension is the most influential, as it can prime perceived distance along the other dimensions but not vice versa (Zhang and Wang, 2009). A key method to reduce spatial distance is to localize an environmental message to where an individual lives (Moss, 2021).

The relationship between psychological distance and behavioral intentions is nuanced (Brügger, 2020; Kim, 2023). According to Construal Level Theory, changes in psychological distance affect the criteria people use to perceive the world and make decisions (Trope and Liberman, 2010). Reduced psychological distance leads individuals to think about an issue like plastic waste in a more concrete way, which is associated with higher cognitive and emotional engagement with the issue compared to the abstract construals that are associated with greater psychological distance (Lorenzoni et al., 2007; Weber, 2006). Messages designed to manipulate perceived psychological distance may impact people differently based on individual differences, such as political orientation, and message framing (Chu and Yang, 2020; Duan et al., 2021; Roh et al., 2015).

Another strategy to promote plastic waste reduction is increasing self-efficacy, which is an individual's belief about their own ability to successfully perform relevant behaviors (Ajzen, 1991; Chao, 2012). In the context of PEBs, self-efficacy is positively correlated with an individual's willingness to perform pro-environmental behaviors and the amount of effort they put towards doing so (Oreg and Katz-Gerro, 2006). Previous research has shown that efficacy framing increases climate change mitigation PEBs at close spatial distances (Chu and Yang, 2020).

Self-efficacy (or perceived behavioral control) is also a key factor in the Theory of Planned Behavior (TPB), which seeks to predict behavioral intentions. The other two key factors of TPB are attitudes toward the behavior and social norms (Ajzen, 1991). Favorable attitudes

towards a given behavior increase behavioral intentions to perform that behavior. Social norms are a person's perception of the prevalence of a certain behavior among their peers and of the approval or disapproval they will receive from peers as a result of performing the behavior (Ho et al., 2015). Social norms are influenced by both personal references, such as friends and family members, and societal references, such as those learned through social media (Sanne and Wiese, 2018).

Social media has become a permanent fixture in people's everyday lives, with the average American spending over 2 h daily on social media, with the most engaging type of content being short-form videos (Wong, 2023). As the use of social media continues to increase, so does people's reliance on it for information about a range of issues.

The TPB has been used to test the effectiveness of social media messages in various contexts (e.g., Namkoong et al., 2017). Social media facilitates all three primary tenets of the TPB: it allows individuals to share their *attitudes* on environmental issues with friends, family, and the general public; it provides information about *social norms* by letting a person know what others closest to them condone; and it can increase *self-efficacy* by providing information about how to perform desirable behaviors. Social media is therefore becoming an increasingly powerful medium for promoting and encouraging PEBs.

Within the context of plastic pollution, the current study tests how localized messages and the inclusion of self-efficacy information can influence behavioral intentions after viewing a short social media video.

To test the impact of manipulating psychological distance, participants in this study were people who are presumed to have a high psychological distance from the issue of plastic waste because they reside in non-coastal states. Previous research suggests that localized messages will reduce psychological distance, making individuals feel closer to the proposed issue (Moss, 2021). Therefore:

*H1:* Participants who view a video that contains a localized message will have lower psychological distance regarding plastic waste than will participants who view a video that contains a general, non-localized message.

An abundance of literature suggests that lowering psychological distance will lead to message-consistent attitudes towards an issue (e.g., Jones et al., 2016). Therefore:

*H2:* There is a positive relationship between reduced psychological distance and message-consistent attitudes.

The TPB states that attitudes are a strong indicator of behavioral intentions (Ajzen, 1991). Therefore:

*H3:* There is a positive relationship between message-consistent attitudes and behavioral intentions to reduce plastic waste.

When an individual perceives higher social norms in favor of a behavior, that person is more likely to perform the behavior themselves (Ho et al., 2015). Therefore:

*H4:* There is a positive relationship between perceived social norms in favor of reducing plastic waste and behavioral intentions to reduce plastic waste.

Previous literature suggests that giving individuals knowledge about and providing demonstrations of how to accomplish a behavior can increase self-efficacy (Meinhold and Malkus, 2005). Therefore:

*H5: Participants who view a video containing a self-efficacy message will have higher self-efficacy regarding plastic waste than will those who view a video that does not contain a self-efficacy message.*

According to the TPB, self-efficacy is consistently associated with increased intention to perform a behavior (Ajzen, 1991; Chao, 2012). Therefore:

*H6: There is a positive relationship between higher self-efficacy towards reducing plastic waste and behavioral intentions to reduce plastic waste.*

## 2 Materials and methods

The study utilized a 2 (generalized or localized message) X 2 (self-efficacy message present or absent) between-subjects experimental design ( $N = 215$ ). Participants were paid \$1.50, recruited through Amazon Mechanical Turk, and screened before engaging in the experiment to only select those who live in the Western U. S. states of Wyoming, Idaho, Montana, and Utah. These states were selected because they have no ocean coastlines. Participants were then randomly assigned one of four experimental conditions and watched a 30–60 s video that was either generalized or localized to their state of residence and included a brief self-efficacy message or not (see FigShare for videos). The videos presented a slideshow of photographs depicting the environmental consequences of plastic waste, along with written text over the images that explained the magnitude and consequences of plastic waste. All videos end by encouraging people to do their part in reducing plastic waste. After viewing the video, participants completed a questionnaire that measured the study's dependent variables and socio-demographics. The study was approved by authors' university institutional review board, and data collection occurred in February and March 2020. See the [Supplementary materials](#) for detailed differences among the four conditions.

### 2.1 Measures

The full survey questions used to construct the measures, attention check questions, and face validity questions can be found in the [Supplementary materials](#).

#### 2.1.1 Control variables

Slightly more than half of the sample (54.4%) was female. The mean age was 38 years old ( $SD = 12.4$ ). Most participants were White or of European origin at 91.6%. About three-quarters of the sample (78.2%) reported some college education. The average participant's income fell between \$35,000 and \$49,999. Two items were used to assess political ideology by asking participants to identify how liberal or conservative they are about social and economic issues,

respectively (1 = *extremely liberal*, 7 = *extremely conservative*). These items were averaged into a single measure of political ideology ( $M = 3.92$ ,  $SD = 1.69$ ,  $r = .783$ ). Participants were also asked how strongly they self-identified as an environmentalist and how frequently they use social media.

#### 2.1.2 Psychological distance

Psychological distance was measured using four items adapted from previous research (Spence et al., 2012). Each item measured one of the four dimensions of psychological distance. These items were assessed on a seven-point Likert agreement scale (1 = *strongly agree*, 7 = *strongly disagree*) and combined to create an overall measure of psychological distance, with higher values indicating greater psychological distance ( $M = 2.69$ ,  $SD = 1.07$ ,  $\alpha = .780$ ).

#### 2.1.3 Attitude

Attitude towards reducing plastic waste was measured using six items adapted from previous research (Sanne and Wiese, 2018). These items were assessed on a seven-point Likert agreement scale and combined into an overall measure of message-consistent attitude (i.e., in favor of reducing plastic waste), coded such that higher values on the scale represent more message-consistent PEB attitudes ( $M = 6.23$ ,  $SD = 0.84$ ,  $\alpha = .893$ ).

#### 2.1.4 Social norms

Social norms related to reducing plastic waste were measured using four items adapted from previous research (Sanne and Wiese, 2018). These items were assessed on a seven-point Likert agreement scale and combined into an overall measure of social norms related to plastic waste reduction, with higher values indicating more favorable social norms towards reducing plastic waste ( $M = 4.73$ ,  $SD = 1.28$ ,  $\alpha = .891$ ).

#### 2.1.5 Self-efficacy

Self-efficacy towards reducing plastic waste was measured using five items adapted from previous research (Sanne and Wiese, 2018). These items were assessed on a seven-point Likert agreement scale and combined into an overall measure of self-efficacy towards reducing plastic waste, with higher values indicating greater self-efficacy ( $M = 5.65$ ,  $SD = 1.04$ ,  $\alpha = .857$ ).

#### 2.1.6 Behavioral intentions

Behavioral intentions were measured on a seven-point Likert agreement scale using six items adapted from previous research (Sanne and Wiese, 2018) that were combined into an overall measure of behavior intentions ( $M = 5.45$ ,  $SD = 1.06$ ,  $\alpha = .847$ ).

## 2.2 Data analysis

Ordinary-least-squares (OLS) regression was used to test the hypotheses and address the research question based on theoretically derived causal order. The proposed model described in the hypotheses was tested using Model 6 of the SPSS PROCESS macro (Hayes, 2022) as two multi-step regression models that involved mediation and serial mediation. The variables that were controlled for are included in the tables for each analysis described below.

### 3 Results

#### 3.1 Localized message, psychological distance, and attitude

The first statistical model involved serial mediation from the localized condition to psychological distance to attitude to behavioral intentions and was tested in three separate steps. Table 1 presents the results of each step of the first statistical model as a separate column based on the outcome variable predicted.

Hypothesis 1 predicted that participants who view a video that contains a localized message will have lower psychological distance regarding plastic waste than will participants who view a video that contains a general, non-localized message. This hypothesis was supported ( $b = -0.36$ ,  $p \leq 0.01$ ); viewing a localized message ( $M = 2.48$ ,  $SD = 1.05$ ) resulted in lower psychological distance compared to the generalized message ( $M = 2.88$ ,  $SD = 1.09$ ), independent-samples  $t(213) = 2.70$ ,  $p$  (one-sided) = 0.004.

Hypothesis 2 predicted that there is a positive relationship between reduced psychological distance and message-consistent attitudes, and it was supported ( $b = -0.17$ ,  $p \leq 0.01$ ).

Hypothesis 3 predicted that there is a positive relationship between message-consistent attitudes behavioral intentions to reduce plastic waste, and it was supported ( $b = 0.24$ ,  $p \leq 0.001$ ). This third and final step of the model explains 59.9% of the variance in behavioral intentions,  $F(15, 199) = 19.78$ ,  $p \leq 0.001$ .

#### 3.2 Self-efficacy message and self-efficacy

The second statistical model tested the effect of the self-efficacy condition on behavioral intentions, mediated by participants'

perceptions of their own self-efficacy around reducing plastic waste. Table 2 shows the results of each step of this analysis.

Hypothesis 5 predicted that participants who viewed videos containing a self-efficacy message would have higher self-efficacy regarding plastic waste reduction than would those who viewed videos that do not contain a self-efficacy message, and it was supported ( $b = 0.29$ ,  $p \leq 0.05$ ). The self-efficacy message yielded greater self-efficacy ( $M = 5.78$ ,  $SD = 0.97$ ) compared to the message without self-efficacy ( $M = 5.51$ ,  $SD = 1.09$ ), independent-samples  $t(213) = -1.92$ ,  $p$  (one-sided) = 0.028.

Hypothesis 6 predicted that there is a positive relationship between higher self-efficacy towards reducing plastic waste and behavioral intentions to reduce plastic waste, and it was supported ( $b = 0.32$ ,  $p \leq 0.001$ ).

#### 3.3 Social norms

Hypothesis 4 predicted that there is a positive relationship between perceived social norms in favor of reducing plastic waste and behavioral intentions to reduce plastic waste, and it was not supported—social norms were not a significant predictor of behavioral intention ( $b = 0.08$ ,  $p = n.s.$ ).

Figure 1 illustrates the combined results of all analyses predicting behavioral intentions.

### 4 Discussion

Plastic pollution is increasingly on the radar of regulators (e.g., Environmental Protection Agency, 2023b), legislators (e.g., Save Our Seas 2.0 Act, 2020), environmental groups (e.g., Plastic Pollution

TABLE 1 Multiple linear regressions predicting the effect of psychological distance and attitude on behavioral intentions to reduce plastic waste.

Variables	Psychological distance <i>b</i> (SE)	Attitude <i>b</i> (SE)	Behavioral intentions <i>b</i> (SE)
Constant	5.25 (0.60)***	5.09 (0.61)***	1.18 (0.69)
Localized condition (0 = generalized, 1 = localized to state)	−0.36 (0.12)**	−0.04 (0.10)	0.11 (0.10)
Efficacy condition (0 = no efficacy message, 1 = efficacy message)	0.20 (0.12)	(0.03) (0.10)	0.07 (0.10)
Age	−0.01 (0.01)*	0.00 (0.00)	0.00 (0.00)
Sex (male coded high)	0.17 (0.12)	−0.06 (0.11)	−0.14 (0.10)
Race (white coded high)	−0.22 (0.22)	0.14 (0.19)	0.03 (0.18)
Education level	−0.02 (0.05)	−0.06 (0.04)	−0.03 (0.04)
Income	0.02 (0.04)	0.06 (0.04)	0.03 (0.04)
Political ideology (conservative coded high)	0.15 (0.04)***	−0.04 (0.03)	−0.07 (0.03)*
Environmental identity	−0.27 (0.05)***	0.06 (0.05)	0.23 (0.05)***
Freq. of visiting social media	−0.01 (0.06)	0.02 (0.05)	−0.02 (0.05)
Freq. of activity on social media	−0.04 (0.06)	−0.04 (0.05)	0.10 (0.05)*
Social norms	−0.17 (0.06)**	0.08 (0.05)	0.08 (0.05)
Self-efficacy	−0.11 (0.06)	0.24 (0.05)***	0.32 (0.05)***
Psychological distance	---	−0.17 (0.06)**	−0.11 (0.06)
Attitude	---	---	0.24 (0.07)***
Variance explained (adjusted $R^2$ )	.452	.305	.599

Unstandardized coefficients reported. \* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\* $p \leq 0.001$ .



TABLE 2 Multiple linear regressions predicting the effect of self-efficacy on behavioral intentions to reduce plastic waste.

Variables	Self-efficacy <i>b</i> ( <i>SE</i> )	Behavioral intentions <i>b</i> ( <i>SE</i> )
Constant	2.55 (0.89)**	1.18 (0.69)
Localized condition (0 = generalized, 1 = localized to state)	0.06 (0.14)	0.11 (0.10)
Efficacy condition (0 = no efficacy message, 1 = efficacy message)	0.29 (0.13)*	0.08 (0.10)
Age	0.00 (0.01)	0.00 (0.00)
Sex (male coded high)	−0.05 (0.14)	−0.14 (0.10)
Race (white coded high)	−0.69 (0.24)**	0.03 (0.18)
Education level	0.07 (0.05)	−0.03 (0.04)
Income	−0.02 (0.05)	0.03 (0.04)
Political ideology (conservative coded high)	0.07 (0.04)	−0.07 (0.03)*
Environmental identity	0.05 (0.06)	0.23 (0.05)***
Freq. of visiting social media	−0.10 (0.06)	−0.02 (0.05)
Freq. of activity on social media	−0.03 (0.07)	0.10 (0.05)*
Psychological distance	−0.07 (0.08)	−0.11 (0.06)
Attitude	0.39 (0.09)***	0.24 (0.07)***
Social norms	0.08 (0.06)	0.08 (0.05)
Self-efficacy	---	0.32 (0.05)***
Variance explained (adjusted $R^2$ )	.252	.599

Unstandardized coefficients reported. \* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\* $p \leq 0.001$ .

Coalition, 2024), and journalists (e.g., Jones, 2023). Yet, many media messages and campaigns aimed at reducing plastic pollution have focused on coastal areas and marine life (Moss, 2021) while overlooking other waterways and aquatic environments, such as those in the Mountain West. Millions of people who do not live within driving distance to beaches may not see the value of reducing plastic pollution because of heightened psychological distance (Moss, 2021). Another barrier to pro-environmental behaviors (PEBs) could be lack of self-efficacy, or the belief that one can successfully engage in the PEBs. With that in mind, this study examined the influence of a localized message and the presence of a self-efficacy message in relation to psychological distance, attitude, social norms, and self-efficacy in environmental messages that encourage plastic waste reduction.

The first manipulation in this study looked at the impact localized messages have on psychological distance. Indeed, participants who viewed a video with images of identifiable landscapes and animals from the participant's state of residence were more likely to believe that the issue of plastic waste is something that could affect them and others like them in their home state now or in the near future.

Importantly, this study showed that psychological distance can be influenced by short media messages. In less than a minute, the localized videos resulted in lower psychological distance compared to those who viewed the non-localized videos, which is a necessary first step to getting people to care about environmental issues. Lower psychological distance was significantly associated with message-consistent, pro-environmental attitudes about plastic waste. This finding suggests that in certain contexts, communicators should aim to reduce psychological distance when promoting pro-environmental attitudes and behaviors. By making people believe that an issue such as plastic waste may have a direct impact on themselves, localized

messages have the potential to overcome many barriers to PEBs. However, a recent review of Construal Level Theory research on climate change communication found that psychological distance was not consistently associated with changes in pro-environmental behaviors and intentions due to the moderating effects of individual difference variables like political ideology (Kim, 2023; Roh et al., 2015). The link between reduced psychological distance and behavioral intentions found in the present research aligns with previous findings that efficacy messages are most impactful when spatial distance is perceived as low (Chu and Yang, 2020).

The effectiveness of the short videos used in this study highlights the utility of disseminating environmental messages through social media. The videos used in the experiment consisted of relatively simple photo slideshows accompanied by text and music. Similar videos could easily be created by environmental advocacy groups. By swapping in different images and making slight text adjustments, organizations can efficiently localize their messages to better connect with specific audiences. This approach can reduce psychological distance and make environmental issues feel more relevant with little additional effort. Although this study did not investigate whether participants engaged with the videos by liking, sharing, and/or commenting, environmental communicators can also benefit from using social media interactions to assess message exposure and issue involvement (Oeldorf-Hirsch and Sundar, 2015). In addition, this study demonstrated that short media messages that provide information about how to engage in PEBs can increase an individual's belief in their own ability to perform them. As predicted, higher self-efficacy was associated with increased behavioral intentions to reduce plastic waste, which is consistent with the Theory of Planned Behavior (TPB). This study demonstrates that the inclusion of simple, straightforward self-efficacy messages can promote PEBs.

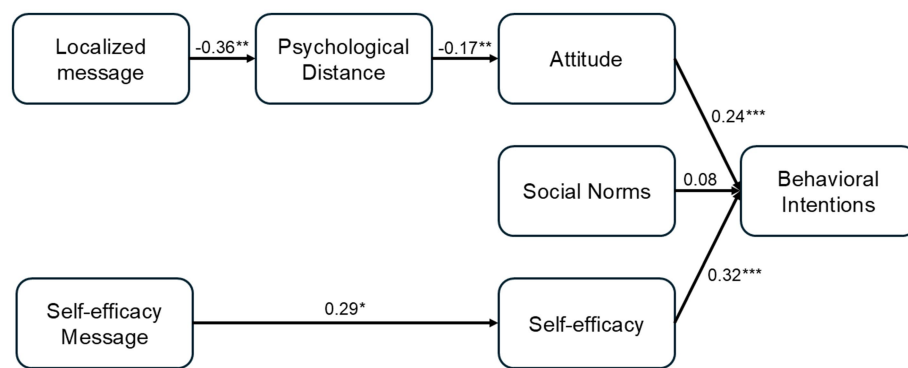


FIGURE 1

Model predicting behavioral intentions to reduce plastic waste. Unstandardized coefficients (b) shown. \* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\* $p \leq 0.001$ .

The TPB posits a positive relationship between social norms and behavioral intentions; however, in this study social norms did not influence behavioral intentions. Previous scholars have suggested that one way to improve the TPB is by adding personal norms to the model (Schwarz, 1977). Personal norms are self-expectations based on an individual's values. If an individual's personal norms create a strong moral conviction towards performing a behavior, social support for the behavior will have little influence on the individual's decisions about performing the behavior (Schultz et al., 2016). Some scholars have suggested that personal norms are important to performing PEBs because PEBs can be considered moral behaviors (Harland et al., 1999). This is consistent with the results of this study, which found that environmentalist identity was a strong predictor of behavioral intentions (see Table 1). In this case, environmentalist identity could have functioned as a proxy for personal norms in favor of PEBs.

An interesting finding from this study relates to the influence of political ideology on behavioral intentions towards reducing plastic waste. Political ideology was a significant predictor of behavioral intentions ( $b = -0.07$ ,  $p \leq 0.05$ ) such that participants who identified as more liberal had stronger intentions to perform plastic waste reduction behaviors than did those who identified as more conservative. In addition, political ideology had a statistically significant relationship with psychological distance such that participants who identified as more liberal had lower psychological distance than did participants who identified as more conservative. This supports other research that shows that people who identify as conservative tend to hold less favorable attitudes towards the environment and tend to perform fewer PEBs (Cheung et al., 2019). However, while political ideology did influence parts of the model, overall, it had a small impact on behavioral intentions. This indicates that the messages were generally effective for both conservatives and liberals.

## 4.1 Limitations and future directions

This study tested behavioral intentions and not actual behaviors related to plastic waste reduction. However, behavioral intentions have consistently been identified as significant predictors of actual behavior (Ho et al., 2015). Future research should attempt to develop better

methods to study people's actual behavior following exposure to pro-environmental messages, while also measuring behavioral intentions to examine the correlation between behavioral intentions and actual behavior.

Another limitation to the study is that the results are not fully generalizable because the experiment did not use a representative sample. However, past studies have determined that Mechanical Turk samples are more generalizable than other types of traditional samples (Buhrmester et al., 2011).

Finally, this study did not include baseline measures of participants' plastic use or the specific structural barriers they may face when trying to reduce plastic waste, such as individual state policies or availability of recycling centers. Future research should investigate the relationship between psychological distance and pro-environmental behavior in the context of local policies that enable or inhibit the performance of these behaviors.

Future research should seek to identify how visual and written information in a video each uniquely affect attitudes and behavioral intentions in social media contexts (e.g., Hooker and Cooper, 2022) to gain a more nuanced understanding of how each factor contributes to the effectiveness of pro-environmental messages. Additionally, future research should test the effects of manipulating the temporal, social distance, and hypotheticality dimensions of psychological distance in addition to the spatial dimension.

## 4.2 Conclusion and practical implications

This study illustrates the importance of creating localized environmental messages as a way to promote action and overcome barriers to PEBs. This suggests that science communicators should develop localized messages that reduce psychological distance by demonstrating how environmental problems impact an individual's own community. Based on the findings of this study, environmental communicators would be wise to create multiple localized variations of a message aimed at promoting PEBs rather than distributing a single generalized message to a large population. This can be accomplished by microtargeting audiences on social media, for example. However, communicators who create messages that aim to influence psychological distance should carefully pre-test the

messages to ensure that the interaction of other variables does not result in boomerang effects.

This study also illustrates the importance of including a self-efficacy message that provides the audience with concrete ways that they can help when promoting PEBs. Self-efficacy messages are effective in promoting a variety of behavioral intentions and are important to include in messages when discussing environmental issues. Communicators should be direct in telling the audience how they can accomplish PEBs and should emphasize behaviors that can be performed easily, when appropriate.

In summary, this study demonstrates that localizing environmental messages and including information that increases self-efficacy are effective strategies that communicators can use to potentially increase pro-environmental behaviors like plastic waste reduction.

## Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found below: [https://osf.io/xtj6p/?view\\_only=6b154e54f0c24a89ab461cf1896074a9](https://osf.io/xtj6p/?view_only=6b154e54f0c24a89ab461cf1896074a9).

## Ethics statement

The studies involving humans were approved by University of Wyoming Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

## Author contributions

KC: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. LB: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. KL:

Formal analysis, Investigation, Methodology, Visualization, Writing – review & editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Generative AI statement

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## Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fcomm.2025.1579912/full#supplementary-material>

### SUPPLEMENTARY TABLE 1

Detailed description of stimuli, full questionnaire, and attention and face validity checks.

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