**Bringing the Conservation Conversation to Coffee Consumers on Campus:
An Applied Psychological Approach**

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Team Jaguar

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Executive Summary

Although the effectiveness of prompts and reminders for encouraging conservation behavior is well-documented, research directly comparing the effectiveness of different prompts is limited. Drawing upon the literature of conservation psychology, we applied empirically supported methods for encouraging environmentally friendly behavior to craft three unique messages designed to encourage the use of reusable mugs at the University of British Columbia (UBC), Canada. The purpose of this study was to determine which of these messages would be most effective, and how each message's persuasiveness would compare to that of a generic "control" message crafted without applying psychological principles. Café and coffee chain customers on the UBC campus were randomly assigned to read one these four messages. They were then asked to report how likely they were to begin using reusable mugs. Our results indicated that the three messages incorporating evidence-based persuasive techniques were more effective than the generic message. However, there were no significant differences between the effectiveness of these three messages. These findings indicate that the three messages we have crafted employing research-supported methods are likely to be more effective than a generic message at UBC.

Research Question

Prior research has shown that prompts and reminders are effective in encouraging conservation behavior (McKenzie-Mohr, 2000; Levy & Marans, 2012). Additionally, a recent UBC SEEDS student report indicated that 40% of UBC students believe that regular reminders to bring a travel mug to school would succeed in encouraging them to do so (Smith, 2015). The purpose of this study was not to confirm *whether* prompts are effective, as this has already been shown. Rather, this study's purpose was to explore *how* the effectiveness of prompts could be optimized. Specifically, we sought to investigate which of three empirically supported strategies for promoting environmentally friendly behavior (encouraging commitment to action, appealing to community identity, and emphasizing capacity for impact) was likely to be most effective in encouraging the use of reusable mugs instead of disposable cups for warm beverages at UBC, and how each of these would compare to a generic, non-evidence-based strategy.

Hypothesis

We hypothesized that the three persuasive appeals we crafted using these empirically supported strategies would elicit higher self-reported likelihoods of transitioning from using disposable cups to using reusable mugs than a generic appeal crafted without using any such strategies. Our capacity to confidently predict which of these three strategies would be most effective to this end was limited by the absence of prior research directly comparing them.

Method

Participants

Our sample consisted of 211 people standing in line at Starbucks and Tim Hortons coffee chains and at the Uppercase Café at UBC. Customers visibly bearing reusable mugs were not invited to participate. This was our sole exclusion criterion. We did not collect any demographic data from participants.

Procedure

Upon obtaining each participant's verbal consent to participate in the study, the attending researcher passed each participant an iPad, on which a survey (designed using the Qualtrics engine) was presented. The attending researcher also told participants at this point that they would simply be required to view an image and read all of the accompanying text—with emphasis on the word "all"—and then answer a single question. At this stage, the attending researcher averted his or her gaze from the iPad screen for the remainder of the procedure so as to remain blind to the condition to which each participant was assigned and minimize any possibility of influencing the study's results. Participants were guided through text on the screen to press a button to begin the study. Upon doing so, they were randomly assigned through our survey logic to one of the four conditions discussed below. The condition to which participants were assigned was our independent variable. Participants were then presented with and asked to read the poster corresponding to the condition to which they were assigned. Once they were finished viewing the poster with which they were presented, they pressed a button to proceed.

Finally, they were asked to rate how likely they would be to start using a reusable mug instead of disposable cups. Their responses to this question was our dependent variable. Upon submitting their response to this question, participants were thanked for their participation and dismissed. The details of this procedure, as relayed above, were carefully discussed prior to the commencement of data collection to ensure that they were understood and interpreted in the same manner be all involved researchers. All data was collected from March 9th to March 14th, 2017, during regular business hours (i.e., 9:00 a.m. to 5:00 p.m.) on weekdays.

Conditions

Our study employed four conditions. Participants in each condition underwent exactly the same procedures, as described above, except that participants in each condition were presented with a unique poster. The image displayed on the poster and all design features were held constant across conditions, as was the first sentence of text, which read, "Disposable cups contribute to climate change." The second sentence of text encouraged transitioning from using disposable cups to using a reusable mug in each condition as well, and the structure of this sentence was held as constant as possible across conditions, but each condition employed a unique approach to crafting this appeal. Participants in the control condition were presented with a generic persuasive appeal uninformed by psychological research, which simply read, "Use a reusable mug instead." This is an appropriate control condition because psychological principles are seldom employed in real-world efforts at encouraging conservation behavior (McKenzie-Mohr, 2000). Participants in each of our three experimental conditions were presented with a persuasive appeal crafted using a different psychological principle, each of which has received empirical support in the literature of conservation psychology. Firstly, commitment to action, which has been found effective in encouraging conservation behavior (McKenzie-Mohr, 2000; Levy & Marans, 2012), was implemented in the sentence, "Make a commitment to yourself to use a reusable mug instead." Secondly, identification with a group, which has also been found useful in motivating conservation behavior (Van Vugt, 2009), was implemented in the sentence, "Join the UBC community in using reusable mugs instead." Finally, it has been shown that emphasizing individuals' ability to leave a meaningful impact is a powerful motivator of pro-environmental behavior (Van Vugt, 2009; Kollmuss & Agyeman, 2002). We employed this approach in the sentence, "You can help create a greener world by using a reusable mug instead." The posters for the Control and Identification conditions are provided as examples in Appendix C.

Dependent Measure

After viewing the posters associated with the conditions to which they were assigned, participants were asked, "How likely would you be to start using a reusable mug instead of disposable cups?" There were six possible Likert scale responses to this question: "Extremely unlikely", "Unlikely", "Somewhat unlikely", "Somewhat likely", "Likely", or "Extremely likely". These were scored as 1, 2, 3, 4, 5 and 6 respectively. Note that the decision to use six scale points instead of a more traditional number such as seven was made because a seventh point titled "Neither likely nor unlikely" may have been confusing to some participants and is, arguably, a probabilistic impossibility.

It is almost certain that some degree of a gap existed between participants' self-reported likelihood of starting to use reusable mugs and their consequent rates of actually doing so. This near-certain belief-action gap represents neither an oversight on behalf of this paper's authors nor a caveat to our conclusions below, for two reasons. Firstly, it has been posited that intentions are the most reliable predictors of future action, particularly when one's perceived control over one's behavior is high (Ajzen, 1985)—which it is likely to be when the behavior in question is as mundane as bringing a travel mug to class. Thus, this gap may in fact be very small. Secondly, because we employed random assignment to condition, there was no reason to expect that the belief-action gap would be larger for participants in any one condition than any other. Therefore, to the extent that intention predicts action, differences in the perceived probability of transitioning to reusable mug usage between groups ought to translate into differences in actually transitioning to reusable mugs usage.

Results

A planned contrast revealed that the self-reported probability of starting to use a reusable mug was higher for those assigned to the Commitment ($M = 4.77$, $SD = .85$), Identification ($M = 4.74$, $SD = 1.12$) or Impact ($M = 4.71$, $SD = 1.11$) conditions than for those assigned to the Control condition ($M = 4.33$, $SD = 1.06$), $t(207) = 2.5$, $p = .01$, $d = .40$. Levene's test indicated equal variances ($F = 1.15$, $p = .33$), so it was not necessary to adjust degrees of freedom. A one-way analysis of variance revealed that there were no significant differences between groups, $F(3, 207) = 2.11$, $p = .10$. Please refer to Appendix B for a graph depicting differences between groups.

Discussion

This study has two important limitations. Firstly, although prior research indicates that prompts would *likely* be effective in promoting the use of reusable mugs at UBC, this study does not verify that this would be the case. Our study has served only to generate and compare messages that could be used in prompts to promote reusable mug usage at UBC, and future research would be required to explore such prompts' effectiveness on campus, likely through the use of behavioral measures. As discussed in the "Dependent Measure" section above, reported probabilities of starting to use reusable mugs should not be interpreted as actual probabilities of so doing, as we have no means of evaluating the accuracy of participants' probability estimates. Of note, however, is that so long as this inaccuracy was similar across conditions, differences between groups in estimated probability of starting to use travel mugs ought to reflect differences in actual probability. Whether participants in each group underestimated their probabilities of starting to use reusable mugs by one Likert scale point or overestimated it by three does not matter; so long as the direction and magnitude of inaccuracy was consistent across conditions, the differences between conditions—in terms of effect size—would remain unaltered.

Secondly, it is *plausible* that the magnitude of participants' inaccuracy may not in fact have been consistent across conditions. for example, the limited privacy that a café or coffee chain lineup affords may have put pressure on participants to respond in a socially desirable manner, and this may have affected the Identification condition more than others. The Identification condition, in which participants were asked to "Join the UBC community in using reusable mugs", uniquely made salient to participants their membership in a spatially defined

social group. Because research shows that people are especially sensitive to injunctive norms set by those spatially closer to them (e.g., Goldstein, Cialdini, & Griskevicius, 2008), participants assigned to this condition may have been particularly susceptible to socially desirable responding to the extent that they felt their responses were observed by others in line. None of the other three conditions had similar communal orientations. Further research could explore the extent of this possible social pressure by replicating this study in a controlled environment that affords greater privacy.

Recommendations for SEEDS Clients

In their efforts to encourage the use of reusable mugs across UBC's campus, we recommend that our SEEDS clients consider using prompts/reminders, which prior research has found are effective. Additionally, our research has found that encouraging commitment to action, appealing to community identity, and emphasizing capacity for impact are likely to maximize the persuasiveness of such prompts. Because differences in the effectiveness of each of these three approaches are negligible, we advise using a combination of all three. If, for any reason, this is not possible, we advise encouraging commitment to action, which appeared to be the most effective by a very small margin. Logistically, we recommend issuing such prompts via posters at or near cafés and coffee chains on campus, because this would be inexpensive, easy to implement, and conveniently targeted towards coffee drinkers. However, other options for distributing prompts, such as through social media, may be well worth exploring too.

The capacity in which our SEEDS clients choose to apply our findings is ultimately up to them. They may wish to retain all aspects of our poster designs—which we have sent them and which they are more than welcome to use—to retain only the text, or even to retain only the three broad strategies that our results indicate are likely to be effective in promoting reusable mug usage at UBC. We trust that our SEEDS clients will apply our research findings in such a way as to maximize their utility in helping to create a greener campus and a greener world, whatever that may entail.

Appendix A: References

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In *Action control* (pp. 11-39). Springer Berlin Heidelberg.

Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of consumer Research*, *35*(3), 472-482.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. *Environmental education research*, *8*(3), 239-260.

Levy, B. L. M., & Marans, R. W. (2012). Towards a campus culture of environmental sustainability: Recommendations for a large university. *International Journal of Sustainability in Higher Education, 13*(4), 365-377.

McKenzie-Mohr, D. (2000). Fostering sustainable behavior through community-based social marketing. *American psychologist*, *55*(5), 531.

Smith, L. (2015). A Baseline Assessment of Current Barriers to Bring Your Own Mug (BYOM)/container (BYOC) Among the Campus Community in Order to Increase Awareness and Support for Sustainable Waste Behaviours. *University of British Columbia*, *BIOL 345-201*.

Van Vugt, M. (2009). Averting the tragedy of the commons: Using social psychological science to protect the environment. *Current Directions in Psychological Science, 18*(3), 169-173.

Appendix B: Graph of Results
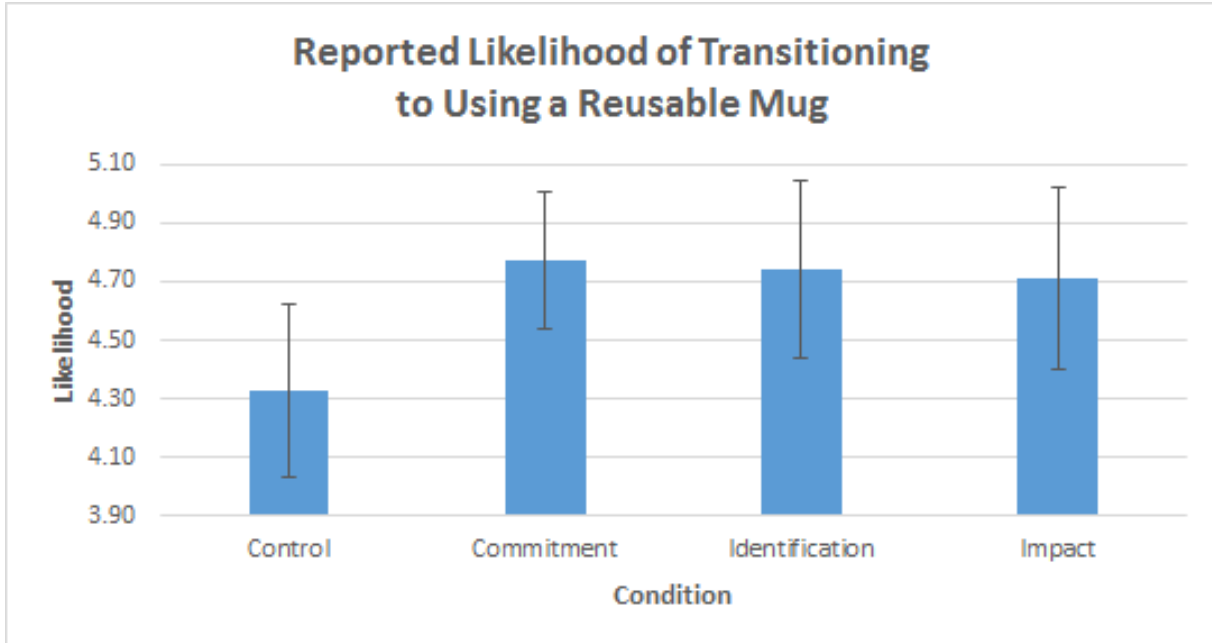
Error bars represent 95% confidence intervals of the mean.

A Likelihood score of 4.00 corresponds to "Somewhat likely" and 5.00 to "Likely".

A planned contrast revealed that the self-reported probability of starting to use a reusable mug was higher for those assigned to the Commitment, Identification or Impact conditions than for those assigned to the Control condition, $t(207) = 2.5$, $p = .01$, $d = .40$.

Appendix C: Examples of Posters
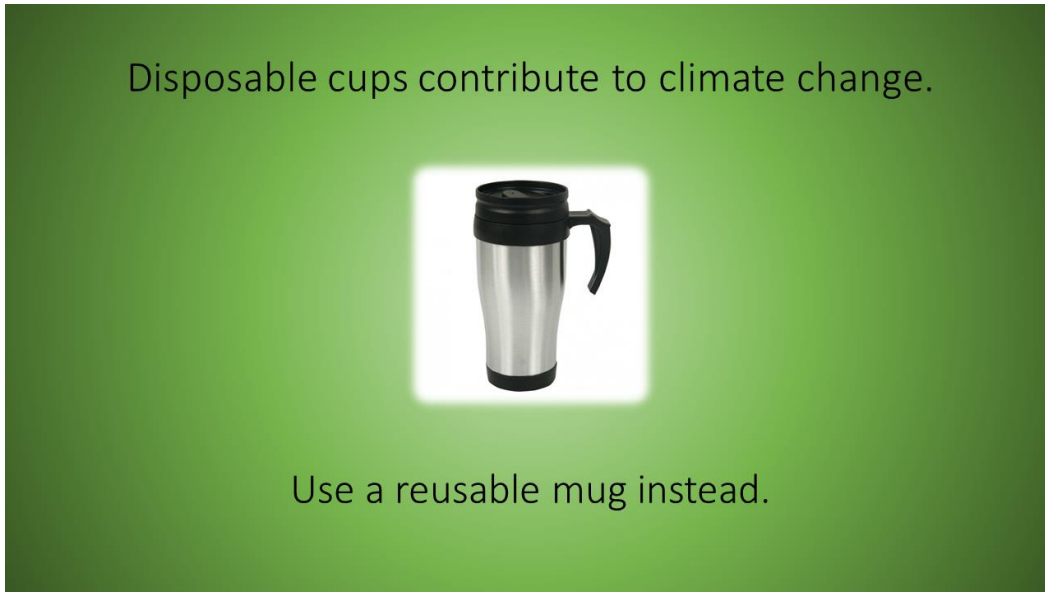
Control Condition Poster

Identification Condition Poster