Why a Single Pro-Environmental Appeal Works to Promote Behavioral Change

On Social Media, One Tip versus Many Is More Effective for Nongreen Consumers

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Some brands, not-for-profit organizations, and social media influencers post tips to encourage prosocial behaviors. This is particularly prevalent in the context of environmental sustainability. Through a series of three studies, including a field experiment using a real brand to investigate click-through rates and cost per click, this research finds that a single green tip (versus many tips) enhances brand attitudes among consumers with low environmental concern. By contrast, the number of tips is less consequential for consumers with high environmental concern. Perceived brand authenticity is the mediating mechanism behind the effect. These findings hold across different product categories and different manipulations for the number of tips.

INTRODUCTION

Brands, not-for-profit organizations, and social media influencers frequently post green tips or hacks to promote sustainable behaviors. Love Mother Earth tweeted 35 eco-friendly home cleaning tips, REI promoted 25 ways to take climate action, and Dr. Bronner's posted five tips for turning your outdoor space into a healthy ecosystem (See Appendix B for examples). These tips include using sustainable wrapping paper, ditching single-use plastics, and buying eco-friendly laundry detergent. Although advertising research has examined message content strategies such as message framing (White, MacDonnell, and Dahl, 2011), delivery style (Yang, Lu, Zhu, and Su, 2015), and visual-verbal congruence (Hur, Lee, and Stoel, 2020), no research has investigated the number of distinct messages or appeals. The current research asks: How many tips are optimal to encourage sustainable behavior?

The Cambridge Dictionary defines a tip as "useful information or advice, especially something secret or not generally known." The authors propose that a tip is an advertising appeal that specifies a desired behavior using an indirect and informal language style. A related appeal type is an

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- Consumers with low environmental concern are significantly more receptive to one (versus many) prosocial green tips posted on social media. The number of tips is less consequential for consumers with high environmental concern.
- The use of many green tips (versus one) inhibits behavioral change, as evidenced by a live, real-world field experiment using Instagram.
- Consumers with low environmental concern perceive the message source as less authentic when that source promotes more tips, adversely affecting brand attitudes. Focused recommendations are critical to enhancing perceived authenticity and behavioral outcomes.
- When posting green tips on social media, aligning the number with the intended audience is essential.

Keywords: Green advertising; message framing; message appeals; environmental concern; sustainability; brand authenticity; field experiment

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assertive appeal, which uses an imperative to direct behavior, such as Coca-Cola's "Don't buy Coca-Cola if you don't help us recycle" and Plant for the Planet's "Stop talking, start planting" (Kronrod, Grinstein, and Wathieu, 2012). Tips and assertive appeals differ in two critical ways. First, assertive appeals use a more direct communication style to convey information. Second, tips are generally "useful information or advice," offering an explicit or implicit benefit to the message recipient. The direct nature of assertive appeals may not include a benefit; instead, it specifies a requested behavioral action from the message source (Milfeld and Pittman, 2023). The authors explore how the number of tips promoted on social media affects attitudes and behavioral intentions depending on the individual's level of environmental concern.

The current study makes several contributions. First, the authors answer the call to expand research on green communication by investigating the underexplored area of how the number of tips affects consumer response (Finisterra do Paço and Reis, 2012; Parguel, Benoit-Moreau, and Russell, 2015). They thus extend extant research on green advertising strategies to behavioral tips for green product advertisements. Through online and field experiments, the authors identify two distinct strategies on the basis of the individual's level of environmental concern. These findings offer immediate and tangible recommendations for brands, not-for-profit organizations, and social media influencers. Second, the authors apply motivated reasoning and connect it to perceived brand authenticity to explain how the number of tips differentially influences brand attitudes depending on the consumer's level of environmental concern. Individuals assign perceived brand authenticity depending on the number of presented tips and their level of environmental concern. Third, the authors provide field evidence for the observed effect on nongreen consumers, addressing the pressing research need to complement self-report measures with behavioral data (Matthes, 2019). Finally, the study's findings suggest that the number of tips shapes the consumer's perceived prosocial motivation. Prosocial advertising raises awareness about social, environmental, and health issues (Bagozzi and Moore, 1994). Prosocial advertising effectiveness depends on involving the audience in the issue to foster behavioral compliance (Bartsch and Kloß, 2019). The current research suggests that the number of appeals in a prosocial advertisement is critical for behavioral compliance. Too many appeals in the same advertisement may inhibit behavioral change for certain consumers.

THEORETICAL FRAMEWORK

Green Advertising and Motivated Reasoning

Green advertising is a marketing communication that promotes environmentally oriented consumption behavior (Kilbourne, 1995). It generally targets consumers who are open to new green behaviors or products (Barbarossa and De Pelsmacker, 2016). Green consumers, hereinafter referred to as high-environmental-concern (HEC) consumers, are more likely to see green advertising as relevant (Chang, Zhang, and Xie, 2015); pay more for environmentally friendly products (Rahman, Park, and Chi, 2015; Royne, Levy, and Martinez, 2011); adopt green behaviors, such as using public transportation or seeking to reduce greenhouse gas emissions (Bhatnagar and McKay-Nesbitt, 2016); and believe that green advertisements have greater informational utility (Matthes and Wonneberger, 2014) than are nongreen or low-environmental-concern (LEC) consumers (Newman, Howlett, Burton, *et al.*, 2012). Beyond their environmental attitudes, these consumers differ in prosocial values and openness to new experiences (Matthes and Wonneberger, 2014; Stern, Dietz, and Guagnano, 1995). These attitudes and beliefs shape how they interpret green messages, a process known as motivated reasoning (Kunda, 1990).

A fundamental goal is maintaining existing opinions; thus, new information is selectively assimilated to conform with existing beliefs.

Motivated reasoning is a cognitive processing strategy for "accessing, constructing, and evaluating beliefs" (Kunda, 1990, p. 481). The theory proposes that individuals do not objectively or rationally evaluate information; instead, they accentuate information congruent to their goals while dismissing incongruent information (Kunda, 1990). A fundamental goal is maintaining existing opinions; thus, new information is selectively assimilated to conform with existing beliefs (Kunda, 1990; Lebo and Cassino, 2007). The political arena is one context in which motivated reasoning has been empirically shown to affect attitudes toward the message source. Notably, voters tend to "explain away" incongruent information and weigh it much less in the decision process (Redlawsk, 2002). Thus, motivated reasoning is self-serving, allowing individuals to preserve their identity (Nir, 2011).

Consumers identify along the continuum of environmental concern, and this identification shapes their receptivity to green messages. HEC consumers, those higher on the continuum of environmental concern, often have various motivations to purchase green products (Lee and Haley, 2022). HEC consumers see green advertisements as credible when the advertiser uses believable persuasive attempts, and they indicate more positive affect

toward green advertisements (Lee and Haley, 2022; Schmuck, Matthes, Naderer, and Beaufort, 2018). LEC consumers tend to be more skeptical of green advertising, scrutinizing green advertisements more closely (Finisterra do Paço and Reis, 2012; Lee and Haley, 2022; Magnier and Schoormans, 2015). High-effort green claims cultivate disbelief and discomfort among individuals who are ambivalent about the environment (Chang, 2011); thus, green advertisements intrinsically appeal to HEC consumers but not so much to LEC consumers (Chang *et al.*, 2015). In line with extant research, the authors therefore propose a linear relationship between environmental concern and brand attitudes. Their first hypothesis aims to corroborate this foundational relationship toward distinguishing how these distinct consumers perceive green tips. Thus:

H1: Environmental concern will be positively related to brand attitudes when viewing a green advertisement.

Message Design Strategies and Assertive Appeals

Because green advertisements are inherently unappealing to LEC consumers, designing effective messages targeting these individuals is challenging yet critical for achieving collective goals (Matthes, Wonneberger, and Schmuck, 2014). Green advertising typically appeals to HEC consumers; therefore, more needs to be known about creating effective green-message strategies that positively influence LEC consumers (Pittman, Read, and Chen, 2021; Rathee and Milfeld, 2023). Instead, research has focused on the negative or backfire effects for LEC consumers. "Assertive appeals," imperatives to guide the target audience toward a specific behavior, are one appeal type that backfires among LEC consumers, entrenching existing behavior (Kronrod *et al.*, 2012). This finding led to the recommendation of subtler language for LEC consumers. More broadly, assertive appeal effectiveness depends on the consumer's environmental concern.

Although research on imperatives and assertive appeals has focused on changing the language in the message (Kronrod *et al.*, 2012), no research has yet examined the number of appeals within the same post. This gap is particularly salient, given that the number of tips varies widely by the source. Tentree (a lifestyle apparel brand), for instance, offers five tips to celebrate the holidays sustainably: Use a live tree, turn off your holiday lights at nighttime, leave Santa some nondairy milk, take a snowy walk to your destination, and try sustainable wrapping paper alternatives. REI offers 25 tips for climate action (See Appendix B). The authors propose that the number of tips may differentially affect HEC and LEC consumers because of their distinct motivations, influencing the perceived authenticity of the message source.

Perceived Brand Authenticity

One of the ways consumers express their identities is through interaction with brands. Consumers search for authentic objects, brands, or events and make authenticity judgments on the basis of their beliefs and attitudes (Beverland and Farrelly, 2010). From the brand perspective, authenticity is critical for their image and identity and allows them to transcend the actual qualities of any product or service they offer (Conejo and Wooliscroft, 2015; Pittman and Sheehan, 2021). An event's perceived authenticity thus will be judged differently, depending on the individual's goal because of motivated reasoning (Beverland and Farrelly, 2010). In a similar manner, voters assign different levels of authenticity to politicians: Those who agree with a politician's position are more likely to report the politician as more authentic than those who do not agree (Pillow, Crabtree, Galvan, and Hale, 2018).

The authors extend these authenticity findings into the green advertising domain, proposing that an individual's level of environmental concern is likely to interact with the number of green tips to influence perceived brand authenticity, "a subjective evaluation of genuineness ascribed to a brand by consumers" (Napoli, Dickinson, Beverland, and Farrelly, 2014, p. 1091). These subjective evaluations of the message source reinforce an individual's (green) self-identity (Kumar and Kaushik, 2022). Because green advertising prompts consumers to reflect on their green identity, the number of tips in a green message will cause consumers to reflect on their green attitudes and affect their perceptions of the message source's authenticity (Lin, Lobo, and Leckie, 2017).

Because individuals seek to maintain congruence between new information and their identities, the authors propose that LEC (HEC) consumers will indicate lower (higher) levels of authenticity depending on their beliefs, behaviors, and attitudes (Beverland and Farrelly, 2010; Campagna, Donthu, and Yoo, 2023); specifically, multiple tips will enhance perceived brand authenticity for HEC consumers for three reasons. First, HEC consumers place high importance on the environment, so the authors expect multiple tips to be easily assimilated, because they are congruent with existing beliefs (Kronrod *et al.*, 2012; Pittman *et al.*, 2021). Second, HEC consumers reward companies that invest in product-level environmental initiatives (*e.g.*, eco-seals), attributing greater environmental commitment (Bickart and Ruth, 2012). Multiple tips will create the perception that the advertiser has abundant information and ideas about the subject, which should connote perceptions of authenticity. Third, individuals tend to seek information that is consistent with their views. Green consumers proactively seek brands with green credentials and engage in pro-environmental behaviors and product purchasing (Bickart and Ruth, 2012; Lee and Haley, 2022); they also pay more attention to green advertisements (Chang *et al.*, 2015).

More tips will contain more details and greater environmental concern, reinforcing their green identity and leading them to ascribe a more authentic impression (Lebo and Cassino, 2007). In brief, HEC consumers will judge the advertising source as more authentic when it features multiple tips (versus a single tip), because the ideas and information are congruent with their values and require little effort to process (Pittman *et al.*, 2021). Thus:

H2a: HEC consumers are more likely to indicate higher levels of perceived brand authenticity for multiple tips.

For LEC consumers, the authors expect multiple tips to entrench existing attitudes and depress perceived brand authenticity for several reasons. First, presenting multiple tips could backfire for these consumers, because they are unmotivated to process numerous pieces of information on a low-interest topic. Incongruent information leads to counterarguing to preserve existing beliefs and attitudes (Nir, 2011; Redlawsk, 2002). Empirical research has documented the backfire effect of assertive appeals with LEC consumers (Kronrod *et al.*, 2012); thus, multiple assertive appeals would only exacerbate the adverse source reaction. Although tips are more indirect and informal, the multiple behavioral requests will create an incongruence with their identities, leading them to devalue the message source.

Second, LEC consumers are inherently skeptical of the truthfulness of green advertising (Chang *et al.*, 2015). The authors expect that LEC consumers will be more likely to question the accuracy of the tips and conclude that they are weaker, a phenomenon known as motivated skepticism, negatively influencing authenticity perceptions (Lebo and Cassino, 2007). This skepticism is mitigated when a green message is perceived as useful (Kim, Kwon, Hong, *et al.*, 2023), and LEC consumers will likely consider too many tips to be impractical.

Third, multiple tips may lead LEC consumers to question the brand's motivation and authenticity. LEC consumers are more likely to support a third-party versus manufacturer eco-seal because they perceive it as less biased (Bickart and Ruth, 2012). Similarly, many brand-sponsored tips may lead the LEC consumer to perceive the advertiser as biased. The authors draw additional support for this premise from empirical advertising literature revealing that excessive advertising repetition leads some consumers to question product quality (*i.e.*, the advertiser is trying to cover up a defect; Kirmani, 1997). For these reasons, many tips may cultivate questions about the advertiser's motivations.

Fourth, too many choices can create consumer paralysis (Iyengar and Lepper, 2000). Because environmental sustainability is a low-involvement issue for these consumers (Lee and Cho, 2022), they will likely perceive the number of choices (tips) as incongruent with their involvement in the issue. Thus:

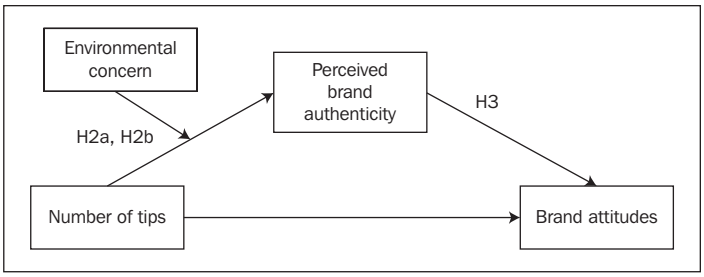

Figure 1 Conceptual Model

H2b: Low environmental concern consumers are more likely to indicate higher levels of perceived brand authenticity for a single tip.

Following the empirical research on authenticity, the authors expect downstream effects of perceived brand authenticity. Empirical research has documented that perceived brand authenticity enhances marketing outcomes such as brand trust (Portal, Abratt, and Bendixen, 2019), willingness to pay (Kadirov, 2015), purchase intentions (Pittman, Oeldorf-Hirsch, and Brannan, 2022), and word of mouth (Kumar and Kaushik, 2022). They thus expect higher levels of perceived brand authenticity to lead to more favorable brand attitudes (See Figure 1 for the conceptual model).

H3: Perceived brand authenticity will mediate the effect of the number of tips and environmental concern on brand attitudes.

To test these hypotheses, the authors now turn to the experimental studies. In line with previous green advertising research, they chose coffee mugs (Green and Peloza, 2014; Han, Baek, Yoon, and Kim, 2019) for Study 1, beverages (juices) (Yang *et al.*, 2015) for Study 2, and cell phone cases for the field experiment in Study 3. They then discuss their findings, considering their theoretical and practical implications, and conclude with suggestions for future research.

STUDY 1

Method

Participants, Design, and Procedure. The purpose of Study 1 was to provide an initial test of the conceptual model. The authors recruited 160 participants from Amazon Mechanical Turk (MTurk) who received monetary compensation for their participation. To ensure data integrity and follow best practices for this platform, the authors only recruited participants who lived in the United States, used robot and attention checks, and screened participants for a 90 percent or greater human intelligence task approval rate

percentage (Kees, Berry, Burton, and Sheehan, 2017). Nine participants were excluded from the sample because they either failed the attention check question or failed to complete the online experimental survey. The authors thus retained 151 participants: 70.2 percent male (n = 106); average age = 34.56 (SD = 9.7).

The authors used a single-factor—number of green tips: low (one) versus high (three)—between-subjects experimental design. Although many social media posts feature five tips or more, the authors selected three for a more stringent hypothesis test. Participants were asked to read a consent form and confirm their agreement by starting the online experiment. Then, participants indicated their level of environmental concern. Next, participants were randomly assigned to one of the two experimental conditions—the number of green tips: low (*e.g.*, one) versus high (*e.g.*, three). After the advertising exposure, participants indicated their perceived brand authenticity and brand attitudes. An attention check ("Please tell us you are a human so we can pay you") was included before demographic information was collected with multiple-choice options.

Manipulations. In the single-tip condition, the advertising copy read: "Our new line of mugs is made with 100% sustainable materials and keeps your coffee hotter, longer! Here is a tip: Keeping a reusable or eco-friendly mug at work lets you enjoy your coffee without putting extra plastic into the environment 🌎." The multiple-tips condition had the same text but with two additional tips after the first tip: "Brewing your own coffee is best, but if you're going to buy, buy fair trade to ensure that the beans are grown sustainably ☕," and "Composting is a natural way of recycling your ground coffee beans. You can turn the waste into mulch to fertilize your yard or garden 🌼" (See Appendix A). All tips used the personal-benefit frame, which is theoretically more appealing to LEC consumers than the other-benefit frame (Stern *et al.*, 1995).

To confirm their tip manipulation, the authors conducted a separate pretest on Mturk (62 percent male; n = 116; M_{age} = 38.7, SDage = 11.1), using the same screening procedure as in the main study and checking the manipulation's effectiveness with a single item, "This [advertisement] is trying to give me a lot of tips," which was rated on a scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Results confirm that participants were more likely to agree that the one-tip advertisement (M = 4.23, SD = 2.42) had fewer tips than the three-tip advertisement (M = 5.53, SD = 1.55), $t(77) = -2.835$, p = .003. Thus, the authors' number-of-tips manipulation was confirmed.

Measures. Environmental concern (M = 5.56, SD = 1.26; α = 0.78) was measured with two items ("I am worried about the state of the world's environment" and "I am willing to make sacrifices to protect the environment") on a scale ranging from 1 ("do not agree at all") to 7 ("strongly agree"), adapted from Schmuck *et al,* 2018. Attitude toward the brand was measured with two items (bad/good and unfavorable/favorable; M = 5.92, SD = 0.92; α = 0.67) on a 7-point bipolar scale where 1 = "bad/unfavorable" and 7 = "good/favorable" (Spears and Singh, 2004). Perceived brand authenticity was measured with three items adapted from Pittman and Sheehan (2021): "____ seems like a brand that: reflects important values people care about/connects people to what's important/is authentic" (M = 5.68, SD = 1.00; α = 0.78).

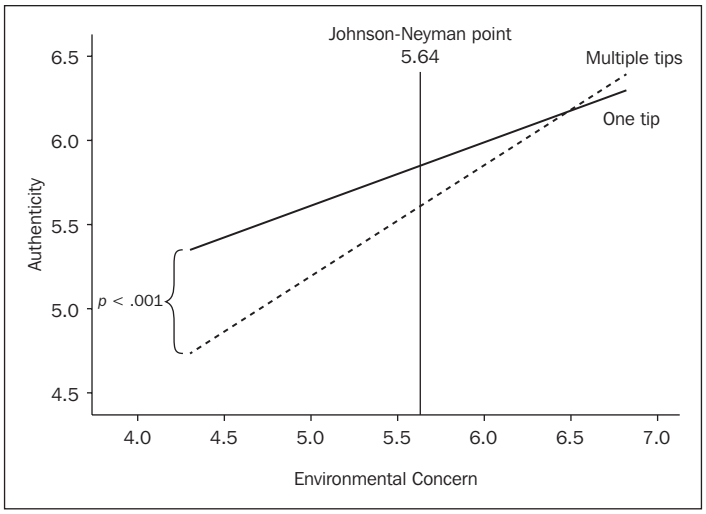

Figure 2 Study 1 Results

Results

To test Hypothesis 1, the authors utilized a simple linear regression. As expected, the result of the simple linear regression indicated that environmental concern was positively associated with brand attitudes; that is, HEC consumers indicated higher brand attitudes than LEC consumers (b = .45, SE = .05). The overall model fit was 37.9 percent of the variance of brand attitudes, $F(1, 149) = 91.05$, $p < .001$). Thus, Hypothesis 1 was supported.

Next, to test the effect of green tips on authenticity depending on the individual's level of environmental concern (Hypotheses 2a and 2b), the authors used Hayes's PROCESS Model 1 (Hayes, 2017). The model included the number of tips as the predictor variable, environmental concern as a continuous moderator, and perceived brand authenticity as the dependent variable. The authors evaluated demographic information such as age, gender, and income as covariates in their analyses, but none were significant (ps > .05). Thus, the authors did not include them as covariates.

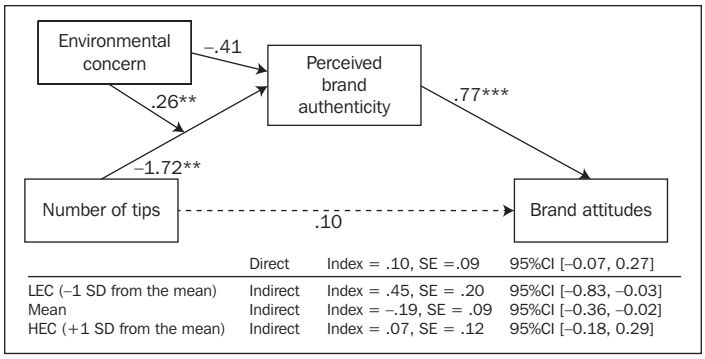

Figure 3 Study 1 Model Results

Note: Values reflect unstandardized path coefficients; solid line indicates $p < .05$; dotted line indicates a nonsignificant effect. CI = confidence interval; HEC = high environmental concern; LEC = low environmental concern.
*$p < .05$. **$p < .01$. ***$p < .001$.

As predicted, environmental concern moderated the effect of the number of tips on perceived brand authenticity ($b = .26$, $SE = .09$, $p < .01$) (See Figure 2). For HEC consumers (1 *SD* above the mean), there was not a significant difference between the two conditions ($M = 6.83$, $b = –.09$; $SE = .16$), $t(147) = .54$, $p = .59$; which failed to support Hypothesis 2a. LEC consumers (1 *SD* below the mean), however, indicated higher levels of authenticity for a single tip, which supported Hypothesis 2b ($M = 4.31$, $b = –.58$, $SE = .17$), $t(147) = –3.50$, $p < .001$. The Johnson-Neyman significance region (Spiller, Fitzsimmons, Lynch, and McClelland, 2013) was below 5.64.

Last, to test the full model (Hypothesis 3), the authors utilized Hayes's (2017) PROCESS Model 7 (5,000 bootstrapped samples), with the number of green tips as the predictor, environmental concern as the moderator, perceived brand authenticity as a mediator, and brand attitudes as the dependent variable. There was no direct effect on brand attitudes ($b = .10$, $SE = .09$), $t(148) = 1.20$, $p = .23$; 95 percent confidence interval (CI) = –.07, .27. As the authors had predicted, higher levels of authenticity led to more favorable brand attitudes ($b = .77$, $SE = .04$), $t(148) = 18.05$, $p < .001$; with conditional indirect effects at 1 SD below the mean ($M = 4.31$, $b = –.45$, $SE = .20$; 95 percent CI = –.83, –.03) and at the mean ($M = 5.57$, $b = –.19$, $SE = .09$; 95 percent CI = –.36, –.02). There was no significant conditional direct effect, however, at 1 *SD* above the mean ($M = 6.83$, $b = .07$, $SE = .12$; 95 percent CI = –.18, .29), leading to an insignificant index of moderated mediation ($b = .21$, $SE = .11$; 95 percent CI = –.02, .41). Thus, Hypothesis 3 was partially supported. (See Figure 3 and Table 1.) One possibility behind the nonsignificant effect for HEC consumers is that they may not perceive three tips to be significantly different from one, a premise that the authors explore in the next study. Study 1, however, establishes the adverse impact of multiple tips on LEC consumers in line with motivated reasoning.

Discussion

Study 1 corroborates the association between environmental concern and brand attitudes when consumers view a green advertisement. LEC consumers report less favorable brand attitudes, presenting a significant challenge for advertisers. It is interesting that LEC consumers report significantly higher perceived brand authenticity when presented with one tip (versus multiple tips). Adding just two more tips to the same message adversely affects the brand attitudes of these consumers, demonstrating how a relatively subtle green advertising change can adversely impact brand attitudes. The results also reveal that for HEC consumers, the difference between one and three tips may be too subtle. The authors explore this possibility in Study 2.

STUDY 2

In Study 2, the authors further tested their conceptual framework by adopting a more stringent test of their hypotheses. An alternative explanation for the observed results in Study 1 could be the varying lengths of the messages. The authors propose that the perception of the number of tips causes this effect. To address this

Table 1 Study 1 Model Statistics

	M (Perceived Brand Authenticity)			Y (Brand Attitudes)		
Antecedent	**Coefficient**	***SE***	***p***	**Coefficient**	***SE***	***p***
X (the number of tips)	–1.72	0.53	<.01	0.10	0.09	.23
W (environmental concern)	–0.41	0.34	.23	—	—	—
M (perceived brand authenticity)	—	—	—	0.77	0.04	<.001
Interaction 1 (X × W)	0.26	0.09	<.01	—	—	—
Constant	8.84	1.94	<.001	1.51	0.25	<.001
	$R^2 = .51$, $MSE = .50$ $F(3, 147) = 51.91$, $p < .001$			$R^2 = .69$, $MSE = .27$ $F(2, 148) = 164.06$, $p < .001$		

Note: M = perceived brand authenticity as a mediator; Y = brand attitudes as the dependent variable; X = the number of green tips as the predictor; W = environmental concern as the moderator; MSE = mean squared error.

potential explanation, they present tips as a number in Study 2, making message length invariant across the conditions and using juice instead of coffee mugs as the product.

Method

Participants and Design. The authors recruited 240 participants from MTurk, and they received monetary compensation for their participation. Participants from Study 1 were ineligible to complete this study. Following the same exclusion criteria as Study 1, 12 participants were excluded; thus, the authors retained 228 participants (62.3 percent male; n = 142; average age = 36.93, SD = 10.75). Study 2 used a between-subjects design with three experimental conditions.

Procedure. After providing their informed consent, participants indicated their level of environmental concern and were randomly assigned to one of three conditions: for number of green tips, low (one tip) versus middle (10 tips) versus high (25 tips). The authors selected these numbers on the basis of real-world tweets (tentree promoted 10 tips for a decluttered life, and REI offered 25 tips for climate-friendly action). The advertising copy stated, "Our cold-pressed organic juices will keep you feeling energized and healthy all day long! Click here for [1/10/25] surprising and easy sustainability tip/s!" (See Appendix A). Participants then responded to questions about perceived brand authenticity and brand attitudes, which were followed by an attention check. Last, participants' demographic information was collected.

To confirm their tip manipulation, the authors again conducted a pretest on Mturk (the same procedure as in Study 1). Results confirmed that participants were more likely to agree that the one-tip advertisement (M = 4.21, SD = 2.51) had fewer tips than the 10-tip advertisement (M = 5.15, SD = 1.48), $t(77) = -2.05$, $p = .02$; which had fewer tips than the 25-tip advertisement (M = 6.16, SD = 1.05), $t(76) = -3.45$, $p < .001$. Thus, the authors' information-as-tips manipulation was confirmed.

Measures. Environmental concern (M = 5.35, SD = 1.38; α = .82), attitude toward the brand (M = 5.75, SD = 1.21; α = .80), and perceived brand authenticity (M = 5.55, SD = 1.13; α = .84) were all measured with the same items as those used in Study 1.

Results

The authors used simple linear regression to test Hypothesis 1 and corroborate Study 1's finding. As predicted, HEC participants showed higher brand attitudes than LEC participants (b = .56). The overall model fit was 40.3 percent of the variance of brand attitudes, $F(1, 226) = 152.59$, $p < .001$). Thus, Hypothesis 1 was supported.

Table 2 Experimental Condition Coding

No. of Tips in Advertisement	D1: Single vs. Multiple Tips	D2: More vs. Fewer Tips
1	1	0
10	0	0
25	0	1

Note: D = dummy variable.

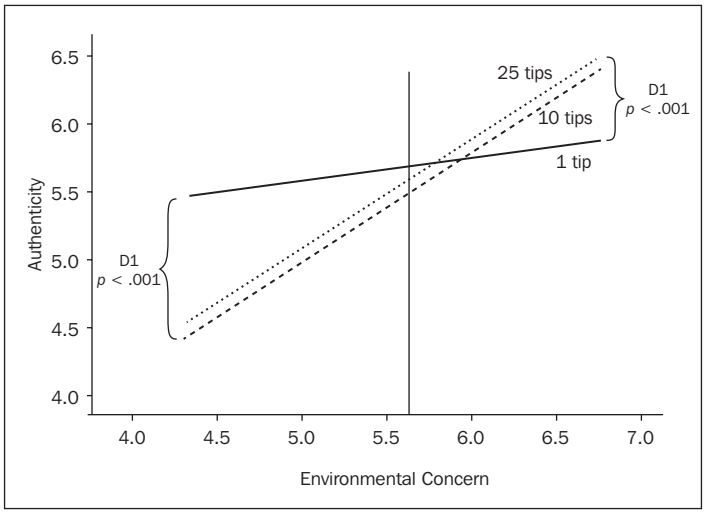

Figure 4 Study 2 Moderation Effect
Note: D = dummy variable.

Next, to test the interaction effect between the number of tips and environmental concern (Hypotheses 2a and 2b), the authors used Hayes's PROCESS Model 1 (Hayes, 2017), with environmental concern as a continuous moderator. They created two dummy variables, D1 and D2, for the condition following an established procedure (Solak, Reifen Tager, Cohen-Chen, *et al.*, 2017): D1 (1 = one-tip advertisement, and 0 = 10- and 25-tip advertisements) represented single versus multiple tips, and D2 (1 = 25-tip advertisement, and 0 = one- and 10-tip advertisements) represented more versus fewer tips (See Table 2). Environmental concern was the moderator, and perceived brand authenticity was the dependent variable. The experimental conditions were coded (See Table 2).

As expected, the results for D1 indicated a significant interaction ($b = -.58$, SE = .09), $t(222) = -6.23$, $p < .001$ (See Figure 4). Significant conditional effects were observed at 1 SD below the mean (M = 3.96; b = 1.08, SE = 0.18), $t(222) = 6.01$, $p < .001$; at the mean (M = 5.35, b = .28, SE = .13), $t(222) = 2.17$, $p < .05$; and at 1 SD above the mean (M = 6.73, $b = -.52$, SE = .18), $t(222) = -2.85$, $p < .01$, supporting Hypotheses 2a and 2b.

As expected, the results for D2 did not reveal a significant interaction ($b = -.03$, SE = .09), $t(222) = -0.37$, p = .71. Nonsignificant conditional effects were observed at 1 SD below the mean (M =

Table 3 Study 2 Model Statistics

	M (Perceived Brand Authenticity)			Y (Brand Attitudes)		
Antecedent	**Coefficient**	***SE***	***p***	**Coefficient**	***SE***	***p***
D1	3.37	.51	<.001	0.07	.11	.55
D2	0.32	.52	.54	–0.02	.11	.85
W (environmental concerns)	0.73	.07	<.001	—	—	—
M (perceived brand authenticity)	—	—	—	0.89	.04	<.001
Interaction 1 (D1 × W)	–0.58	.09	<.001	—	—	—
Interaction 2 (D2 × W)	–0.03	.09	.71	—	—	—
Constant	1.48	.37	<.001	0.79	.23	<.001
	R^2 = .52, *MSE* = .63 $F(5, 222)$ = 48.07, p < .001			R^2 = .70, *MSE* = .44 $F(3, 224)$ = 173.75, p < .001		

Note: D1 and D2 = multicategorical independent variables; W = environmental concern as the moderator; M = perceived brand authenticity as a mediator; Y = brand attitudes as the dependent variable.

3.96; *b* = .19, *SE* = .19), *t*(222) = 1.00, *p* = .32; at the mean (*M* = 5.35, *b* = .14, *SE* = .13), *t*(222) = 1.07, *p* = .29; and at 1 *SD* above the mean (*M* = 6.73, *b* = .09, *SE* = .18), *t*(222) = .50, *p* = .62. Thus, a critical threshold appears to be advertising one versus multiple tips.

Last, to test the full model (Hypothesis 3), the authors utilized Hayes's (2017) PROCESS Model 7 (5,000 bootstrapped samples), with multicategorical independent variables D1 and D2, environmental concern as the moderator, perceived brand authenticity as a mediator, and brand attitudes as the dependent variable (See Table 3).

For D1, conditional indirect effects were significant at 1 *SD* below the mean (*b* = .96, *SE* = .23; 95 percent CI = .43, 1.35); at the mean (*b* = .25, *SE* = .12; 95 percent CI = .01, .47); and 1 SD above the mean (*b* = –.47, *SE* = .17; 95 percent CI = –.79, –.10). The index of moderated mediation did not cross zero, indicating a significant model (index = –0.52, *SE* = .12; 95 percent CI = –.71, –.24) (See Figure 5). Hypothesis 3 was thus supported.

For D2, conditional indirect effects were not significant at 1 SD below the mean (*b* = .17, *SE* = .22; 95 percent CI = –.26, .59); at the mean (*b* = –.12, *SE* = .11; 95 percent CI = –.09, .33); and 1 *SD* above the mean (*b* = –.08, *SE* = .14; 95 percent CI = –.19, .36). The index of moderated mediation was not significant (index = –0.03, *SE* = .11; 95 percent CI = –.24, .18). As expected, more (versus fewer) tips and environmental concern do not enhance brand attitudes through authenticity.

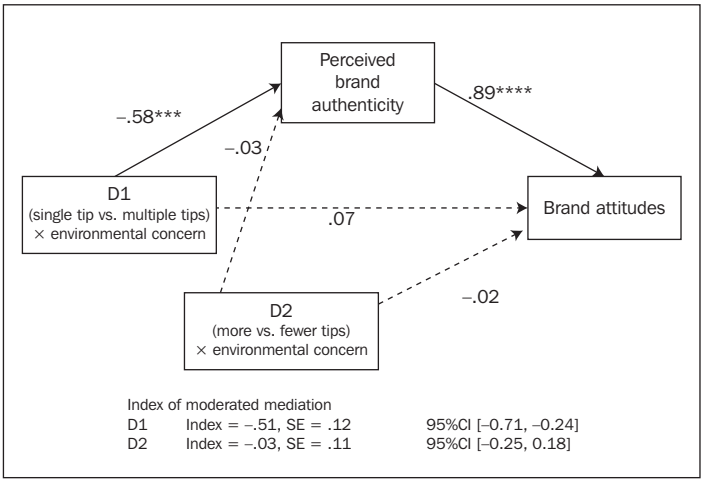

Figure 5 Study 2 Model Results
Note: Values reflect unstandardized path coefficients. Solid line indicates $p < .05$; dotted line indicates a nonsignificant effect. D1 and D2 = multicategorical independent variables. CI = confidence interval. *p < .05. **p < .01. ***p < .001.

Discussion

Study 2 tested the authors' hypotheses more stringently by manipulating only the stated number of tips. The findings corroborated Study 1's results, revealing more robust support for the hypothesis that a single tip (versus multiple tips) will enhance brand attitudes through perceived brand authenticity among LEC consumers. Study 2's findings present compelling evidence that fewer tips and the perception of less information are better for LEC consumers. It is interesting that LEC consumers were influenced not by the *presence* of too many actual tips, as in Study 1, but by just the *mention* of too many tips. In contrast, this manipulation of the stated number of tips generated higher levels of brand authenticity among HEC consumers, suggesting that, in some cases, multiple tips may have appeal. Study 3 extends these findings into the field.

STUDY 3: FIELD EXPERIMENT

Study 3 was a social media field experiment designed to test the authors' hypotheses in a real-world setting. This study examined online engagement with three different Instagram advertisements for Pela, a brand of sustainable cell phone cases. The authors also sought to test the actual behavior of LEC consumers, given

the observed effects in Studies 1 and 2. The authors extend their hypothesis about the adverse response of LEC consumers to multiple tips (versus one tip) to a behavioral outcome:

H4: LEC consumers will have higher (lower) click-through rates toward a green advertisement with a single tip (multiple tips).

For this study, each advertisement was given a maximum allowance of $2 per day, and the overall budget was set to $75. The campaign ran for 15 days, and then engagement data were analyzed. This process follows the dynamic and iterative budget allocation process of actual branded social media campaigns (Luzon, Pinchover, and Khmelnitsky, 2022).

Method

Participants and Design. To test Hypothesis 4, the authors targeted LEC consumers. One real-world limitation is that target audience demographic characteristics are only available in the pro or supportive form: You can choose to target people who have expressed an interest in, for example, light beer or running shoes in the past, but you cannot target people who dislike or avoid light beer or running shoes. Thus, to target LEC consumers, the authors used personal values and interests as proxies for targeting characteristics. As discussed earlier in the article, LEC consumers are lower on openness to experience, higher on self-versus-other benefits, and less socially integrated (Shamdasani, Chon-Lin, and Richmond, 1993), leading to a lower likelihood of buying green products (Schuhwerk and Lefkoff-Hagius, 1995). LEC consumers are also characterized by collective values of security, conformity, and tradition (Verain, Bartels, Dagevos, *et al.*, 2012).

Using these and other nongreen purchase antecedents (Barbarossa and De Pelsmacker, 2016), the authors selected the following demographic preferences: men and women in the United States, ages 25 to 65 years old, who were interested in tradition, personal finance, and fossil fuels. Instagram estimated that the audience for these demographics was 43.1 million to 50.8 million users; that is, between 43 and 50 million Instagram users have clicked on content related to (or expressed interest in) those topics in the past 30 days.

The authors focused the content on self-benefit messages to test their hypotheses more stringently, given that the target audience tends to be more self- versus other-oriented. Each advertisement had the same image (a woman holding a cell phone case close to the camera) with only the captions modified to test the authors' hypotheses: a control advertisement (no tips), a single tip, or three tips (See Appendix A). The control advertisement caption was, "Check out all our new styles! Pela cases are more sustainable than all others." The single-tip condition had that same caption and added this tip: "Unplug your charger when you go out of town to save quite a bit of electricity." The three-tip condition had that same caption and tip but with two additional tips: "Setting your washing machine to use only cold water will also save you on your electric bill," and "Whenever you can, walk instead of drive to put far less CO_2 in the air (and more cash in your pocket)."

Table 4 Study 3 Key Performance Indicators

	Advertisement		
Indicator	**Control**	**1 Tip**	**3 Tips**
Reach	1,193	1,122	1,173
Impressions	1,593	1,419	1,513
Website visit (clicks)	19	38	26
Total spent	$21.69	$30.01	$22.01
Cost per click	$1.14/click	$ 0.78/click	$ 0.85/click
Click-through rate	2.0%	3.8%	2.3%

Results

Overall, the campaign generated 83 clicks and 4,525 impressions for a total spend of $73.71, making the overall average cost per result (clicking through to the Pela Case website) $0.89. The spending per advertisement was nearly identical, with $21.69 spent on the control advertisement, $30.01 spent on the single-tip advertisement, and $22.01 spent on the advertisement with three tips (See Table 4 for all key performance indicators). Instagram's algorithms determined these spending numbers; typically, they favor (or keep running) the advertisements that get the most engagement. Despite reaching fewer consumers than the other two advertisements, the single-tip advertisement generated more clicks than the others: The number of clicks was 19 for the control advertisement, 38 for the one-tip advertisement, and 26 for the three-tip advertisement. This led to a significant difference in click-through rate, such that the single-tip advertisement had a higher click-through rate (3.8 percent) than the control advertisement (2.0 percent) and three-tip advertisement (2.3 percent), $\chi^2(3, N = 83) = 8.21$, $p = .016$. The average click-through rate on social media across industries ranges from .89 percent to 1.2 percent. Thus, the authors' advertisements performed comparably with other paid social campaigns (Irvine, 2022), and Hypothesis 4 was supported.

It is important to note that, because the cost per click was lower for the single-tip advertisement, a brand running this campaign could generate higher return on investment using a single-tip message appeal. In other words, when LEC consumers are targeted with green products on social media, companies may be able to drive traffic to a website or sell a product more efficiently by using a single-tip message, compared with using multiple tips or no tips. Extrapolating these findings to a large-scale campaign, a

Table 5 Summary of Hypotheses Tested and Results

		Hypothesis				
Study	**Number of Tips**	**1**	**2a (HEC)**	**2b (LEC)**	**3**	**4**
1	1 vs. 3	✓	N/S	✓	✓(Partial)	
2	1 vs. 10 vs. 25	✓	✓	✓	✓	
3	1 vs. 3					✓

Note: Shaded boxes denote hypotheses that were not tested. HEC = high environmental concern; LEC = low environmental concern; N/S = not significant.

3.8 percent click-through rate with a $0.78 cost per click would result in above-average social media metrics. The field experiment findings align with results from the online studies, suggesting that fewer tips are more effective for LEC consumers.

GENERAL DISCUSSION

Green tips, hacks, or ideas are a popular way to encourage sustainable behaviors. Many brands have embraced this concept when communicating their environmental sustainability tips. Although advertising research has investigated message content (*e.g.*, message framing, delivery style, and visual-verbal congruence) for assertive appeals, little research has explored how the number of tips influences consumer response. The authors propose that the number of tips, whether stated or suggested, can have a differential effect on perceived brand authenticity and brand attitudes, depending on the individual's level of environmental concern. Through three empirical studies in different product categories, they found that advertisements that use one tip (versus many or none) consistently enhance brand attitudes for LEC consumers. For LEC consumers, more tips are perceived to be less authentic. The difference is less significant for HEC consumers, indicating that those who care the most about the environment are receptive to a brand offering any number of tips (See Table 5 for a summary of hypotheses and results). Given the challenge of changing behavior in LEC consumers, the study nevertheless provides actionable guidance on a frequently used messaging strategy.

The current study makes several contributions. Primarily, it explores how sustainable tips might promote sustainable behavior. The authors show that the number of tips affects LEC consumers differently than HEC consumers. Although many green advertisements target already-green consumers, the authors offer new insight into green advertisements for LEC consumers who may care less about the environment. Because changing behaviors among LEC consumers present a significant challenge for advertisers (Rathee and Milfeld, 2023), the findings reveal how a subtle change makes a substantive impact. In this way, the authors expand the green communication discourse to the number of appeals in a green advertisement. Second, they connect motivated reasoning and perceived brand authenticity to explain why HEC and LEC consumers respond differently to the number of tips. The authors extend motivated reasoning into the green advertising context, showing that consumers' distinct environmental concerns manifest in varying perceptions of authenticity for the same stimuli. Third, the authors provide real-world evidence using a live field study, answering a pressing call to provide behavioral data that complement self-report measures (Matthes, 2019). Key performance metrics for an Instagram advertising campaign reinforce the adverse effects of multiple tips for LEC consumers. Finally, the findings suggest that the number of behavioral appeals may be a critical factor in prosocial advertisements. One appeal may be more effective for low-issue-involvement consumers than multiple behavioral requests. In fact, multiple appeals may create a backfire effect, entrenching existing behaviors (Kronrod *et al.*, 2012). Thus, this research expands the prosocial discourse to consider the number of message appeals.

Theoretical Implications

Motivating LEC consumers to adopt sustainable behaviors remains a critical challenge. The current research expounds on how providing multiple tips to these consumers has adverse consequences for the message source. Motivated reasoning offers insight into this phenomenon: LEC consumers are less inclined to process multiple tips and unlikely to assimilate the information because of the incongruence with their identity. The authors demonstrate that a consumer's motivation affects how they process a message and perceive the message source.

The current research also establishes a critical link between perceived brand authenticity and the number of tips. Inauthentic brands may advertise green messages, but consumers attribute a profit-driven motivation (Pittman and Sheehan, 2021). On the other hand, consumers perceive a brand as authentic when its mission and values align with the advertisement (Pittman *et al.*, 2022). In the green advertising context, an authentic brand's motivations are part profit and part prosocial. It is interesting that the authors' findings suggest that the number of tips shapes a consumer's perception of authenticity. For LEC consumers, more tips lead to lower levels of perceived brand authenticity. These consumers may view

more appeals as evidence of profit motivation, a valuable topic for future research. To the authors' knowledge, this is among the first studies to connect the amount of green information with perceived brand authenticity, opening a new corridor for future research.

Although the current research observed an adverse effect for multiple tips and LEC consumers, another motivation-related theory would predict an opposing effect. Motivational theory (Miller and Rollnick, 1991), a therapeutic approach that emphasizes presenting myriad choices to promote individual agency (Cunningham, Faulkner, Selby, and Cordingley, 2006; Miller, 1996), predicts that increasing choice will encourage behavior change. Traditionally, motivational theory has been used in health-related behavioral interventions. Smokers rated one message with multiple tips as more effective, for instance, regardless of whether they wanted to quit (Loud, Gallegos-Carrillo, Barrientos-Gutiérrez, *et al.*, 2021). Similarly, framing health information as safer smoking tips got respondents to smoke fewer cigarettes over three months, compared with a control condition (Cunningham *et al.*, 2006). Contextual differences may be one reason why the authors do not find support for motivational theory. Smokers or heavy users of alcoholic beverages may be motivated to change their behaviors because they recognize a problem. LEC consumers have low motivation to act more sustainably and may not see an immediate need to change their behavior. Thus, the current research contributes to motivational theory by providing a boundary condition for its expected effects.

Practical Implications

Brands, not-for-profit organizations, and social media influencers offer tips to adopt more sustainable behaviors. The authors' findings have several significant implications for these groups. First, aligning the number of tips with the target audience is essential. Advertisers should recognize that the optimal efficacy of the number of tips in a green campaign depends on the individual's level of environmental concern. The number of tips or suggestions might be less important for HEC consumers, who presumably appreciate (and are motivated to process) any green tips, but minimizing sustainability behavior tips is vital when brands target consumers who are less concerned about the environment. If a shoe company promotes an advertisement for a new shoe, for example, it could mention how consumers can reuse the shoebox, donate their old shoes to a charity, or recycle the packaging, but if the advertisement is targeting LEC consumers, it should not mention all three at once. Although high-involvement consumers process all information in a message relevant to them (Haley and Pittman, 2022), the authors found that messages with as few as three tips may impede the adoption of the recommended behavior among LEC consumers. This research builds on previous green advertising findings that consumer characteristics—specifically, environmental concern—affect message effectiveness (Matthes, 2019).

Second, the findings suggest that a relatively substantial amount of information, even the thought of it, may inhibit message resonance with low-involvement consumers. Even when the length of a caption was the same, merely the idea of processing "too much" information was enough to depress brand outcomes for LEC consumers. Minimizing the information in a message can enhance brand attitudes and click-through rates while maximizing overall return on investment for these consumers. A social media post with calls to process more information (*e.g.*, "click the link in bio to learn more!") or a carousel-style post where swiping is required to view the full message may lead LEC consumers to disengage, thus discouraging an opportunity to influence more sustainable behaviors.

Finally, LEC consumers perceive more tips as less authentic. One explanation may be that they think the message source is trying too hard to cultivate green behaviors. Another may be that a single tip allows message recipients to focus on practical, useful change (Kim *et al.*, 2023) instead of making them feel paralyzed with myriad options. Future research should examine these possible explanations. The current findings, however, reveal that one tip is perceived as more authentic for LEC consumers.

Limitations and Future Research

The current research has several limitations. First, the authors focused on lower involvement products (coffee mugs, juice, and cell phone cases). LEC consumers may be more skeptical of green advertising in higher involvement product categories (Haley and Pittman, 2022), so the authors expect even more pronounced effects in this context. Future research, nevertheless, should examine different product contexts for the number of tips.

Second, the authors did not measure information overload or individual agency, two potential mediating mechanisms that could affect their theorizing. In the current research, the authors aimed to investigate a main effect with a brand-relevant mediating variable. Future research should further examine these variables to identify the psychological process behind these effects. Authenticity is a complex and multifaceted construct with many implications for prosocial brand/consumer communication.

Third, the authors compared green and nongreen consumers on the basis of their reported level of environmental concern for the lab studies (Studies 1 and 2), but the field test (Study 3) relied on different categorical "moderators." Although the authors targeted consumers who were interested in tradition, personal finance, and fossil fuels on Instagram, future research should examine other psychological and behavioral indicators and values to reach nongreen consumers.

Finally, the authors did not examine the impact of creative execution on advertising effectiveness. Future research should consider how creative strategies can enhance LEC consumers' receptivity to multiple tips. In summary, prosocial advertisers should take note that the use of many tips may inhibit behavioral change. JAR

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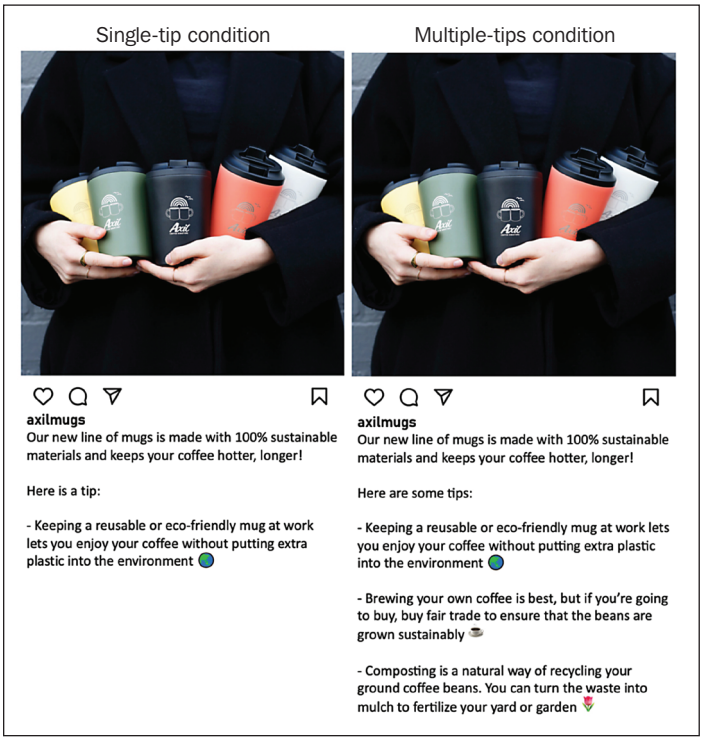
APPENDIX A

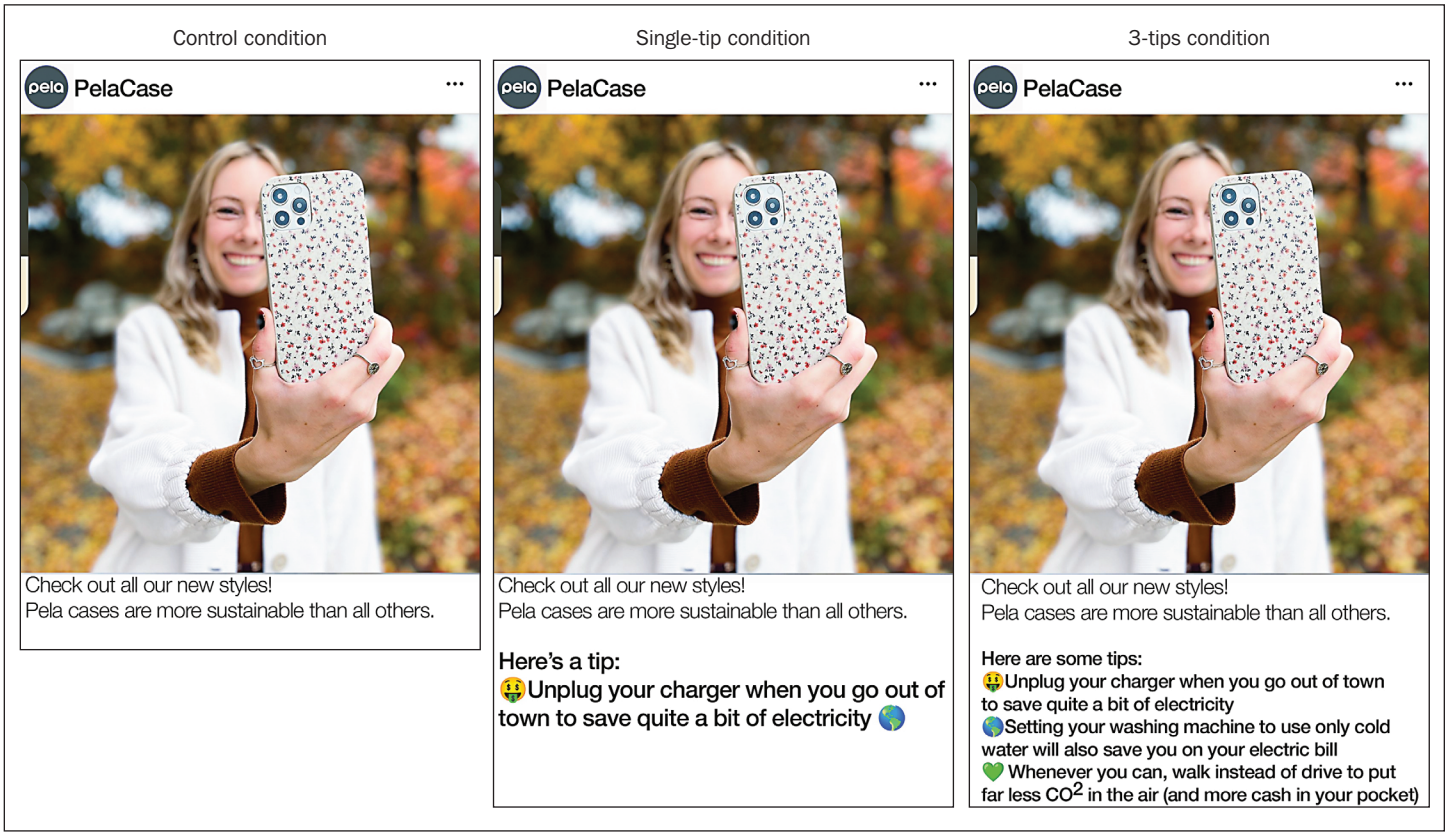
Study 1 Stimuli



Study 2 Stimuli



Study 3 Stimuli



APPENDIX B

Real-World Examples of Single- and Multiple-Tip Messages

1 tip



5 tips



12 tips



25 tips



6 tips



35 tips

