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The effect of green influencer message characteristics: Framing, construal, and timing

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Abstract

This research explores the characteristics of green influencer messages on follower engagement by examining the interplay between message framing (gain vs. loss), construal level (high vs. low), and post timing (weekdays vs. weekends). Green influencers (also: greenfluencers or sustainable influencers) are considered a key agent for a change to more sustainable consumption. A pilot field study of 1000 green influencers, however, indicates that the current communication practices of green influencers (which strongly focus on gain frames, low construal, and posts during the week) are not ideal for maximizing engagement and sustainable behavioral intentions. Two experiments replicate this finding and establish the process through which green influencer posts affect engagement: gain frames increase fluency, which increases engagement; low construal levels decrease psychological distance, which increases engagement. Timing moderates these processes in that weekend posts increase the engagement with gain frames and week posts increase the engagement with low-construal frames. These findings highlight that there is no silver bullet in green influencer messages, but that green influencers need to adapt the framing and construal of their messages to the posts' timing to increase their contribution to more sustainable lifestyles and the greater good.

KEYWORDS

day-of-the-week effect, green consumption, greenfluencer, green influencers, influencer marketing, sustainable consumption

1 | INTRODUCTION

Marketing activities are increasingly used to promote the common good, such as marketing helping to induce more sustainable consumption and lifestyle choices (DeBerry-Spence et al., 2023). In this, green influencers are an increasingly important stakeholder group (Nonet et al., 2022), as many consumers use social media as an important (sustainable) lifestyle guide (Jans et al., 2018). Green influencers (or: "greenfluencers")

communicate about and promote an ecologically sustainable way of life (Pittman & Abell, 2021). Because green influencers are shaping consumers' intentions to engage in environmentally friendly consumption practices (Pittman & Abell, 2021), adopt greener lifestyles (Chwialkowska, 2019), or even engage in environmental activism themselves (Knupfer et al., 2023), the media even refers to them as "sustainability superheroes" (Townsend, 2022) or a "secret weapon for sustainability" (Ormesher, 2023).

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Green influencers design their messages not only to inspire sustainable behavior but also to engage their audience (Kapoor, 2023; Zhu et al., 2022). For instance, green influencers often copy the communication practices of nongreen influencers in using gain frames (i.e., the benefits and agency of sustainable behavior in fighting climate change vs. loss-framed messages about the dangers of climate change) and messages with low construal levels (i.e., specific recommendations and steps to take vs. high-level calls for action) that are actionable and create a strong emotional connection (Lee & Theokary, 2021). A post by @sustainabledaisy exemplifies this focus on gain frames and low construal: "[...] Investing in reusable glass containers and refilling them on routine is a way for you to help offset part of this massive waste problem. You've got the power to do a lot of good [...]" (see Supporting Information S1: Table A.1 for details).

Additionally, message timing is a key concern for many influencers, as practical guides and recommendations show (e.g., "When is the best time to post on Instagram?": Gagliardi, 2024). Currently, green influencers time their messages mostly during the week (De Gross & von Wangenheim, 2022; Rutz & Bucklin, 2008; Vries et al., 2012) and not on the weekend, in line with recommendations from the managerial literature (Cooper & Cohen, 2023; Gagliardi, 2024; Lang, 2024). However, these practices and recommendations ignore that timing might interact with other characteristics of a message, namely, the framing and construal level of the message. The present research, therefore, studies how each of the message characteristics (framing and construal) interacts with message timing (weekend vs. week) to optimize engagement and increase the sustainable behavioral intentions of the followers of green influencers.

Existing studies about nongreen marketing messages have explored the effectiveness of message characteristics. Message framing and construal feature prominently in extant research (Chang et al., 2015): Gain-framed messages are viewed as more credible than loss-framed posts, affecting consumers' behavioral intentions (Bradley et al., 2023). Low (vs. high) construal increases credibility and strengthens the relationship between influencer and follower (Balaji et al., 2021; Bradley et al., 2023). Additionally, extant research shows that the timing of influencer messages matters, in that posts on weekends increase engagement (Hughes et al., 2019). It is, however, difficult to transfer these findings from nongreen marketing messages and "normal" influencers to green influencers. First, audience expectations might differ: Green influencers are expected to promote environmental sustainability, which could require a different message-framing strategy (e.g., a more loss-framed message in the face of environmental crises). Second, environmental topics might require a higher construal level, as the issues are global and consequences of individual actions are relatively temporally and spatially distant (Reczek et al., 2018); on the other hand, a more low construal messaging might be necessary to initiate direct action (vs. more abstract nongreen influencer messages: Kapoor et al., 2023). Finally, we lack an understanding of the interaction of message framing and timing as well as of construal level and timing.

Specifically, posting on the weekend (vs. during the week) might require different message construal and frames—which has not been investigated.

Our research studies the effect of green influencer messages with changing framing (loss vs. gain), construal (low vs. high), and timing (week vs. weekend). We suggest that fluency and psychological distance mediate the effect of the message characteristics framing and construal for (green) influencers (Reczek et al., 2018; White et al., 2011). Additionally, we theorize that existing levels of fluency and psychological distance are perceived differently on the weekend (vs. the week): consumers on the weekend tend to favor fluent messages, while they appreciate low distance during the week. This, in turn, influences the engagement with different messages through a moderated mediation.

A pilot field study and two experiments find that green influencers currently employ messages that are suboptimal regarding followers' engagement and, in turn, environmental behavioral intentions. Our pilot field study shows that green influencers mostly focus on gain-framed, low-construal messages on the weekend (47% of all posts), while loss-framed, low-construal messages create more engagement during the week in our field and experimental studies. At the same time, green influencers rarely post on the weekend (21% of all posts), and then mostly with gain-framed, low construal messages—our data, in contrast, consistently show the gain-framed, high construal messages to be more effective on the weekend. These effects are mediated through fluency and psychological distance, whose effect is moderated by timing (weekend vs. week).

Our study contributes threefold to extant research: First, by establishing the effect of message framing and construal for green influencers; second, by showing that engagement with influencers is mediated by fluency and psychological distance and moderated by the timing of the message; and, finally, by providing an overview of current communication practices of green influencers.

2 | CHARACTERISTICS OF INFLUENCER MESSAGES IN EXTANT RESEARCH

Extant research established the positive effect of influencers on sustainable behavioral intentions (e.g., Johnstone & Lindh, 2022; Kapoor et al., 2023; König & Maier, 2024; Pittman & Abell, 2021; Zhang et al., 2021). In this, different characteristics of green influencer posts are increasingly in focus, such as the level of bragging of a post (Pittman & Milfeld, 2023), or the calibration of a post concerning ethical or monetary goals (Jacobson & Harrison, 2022) or informational (vs. entertaining) content (Zhao et al., 2024). This research focuses on how message characteristics that have been established as highly relevant for influencer marketing, namely, message framing and construal, each interact with the timing of the green influencer messages, because consumers' perception of consequences of framing and construal level are likely moderated by the timing of the message (Dai & Gong, 2024; see Figure 1).

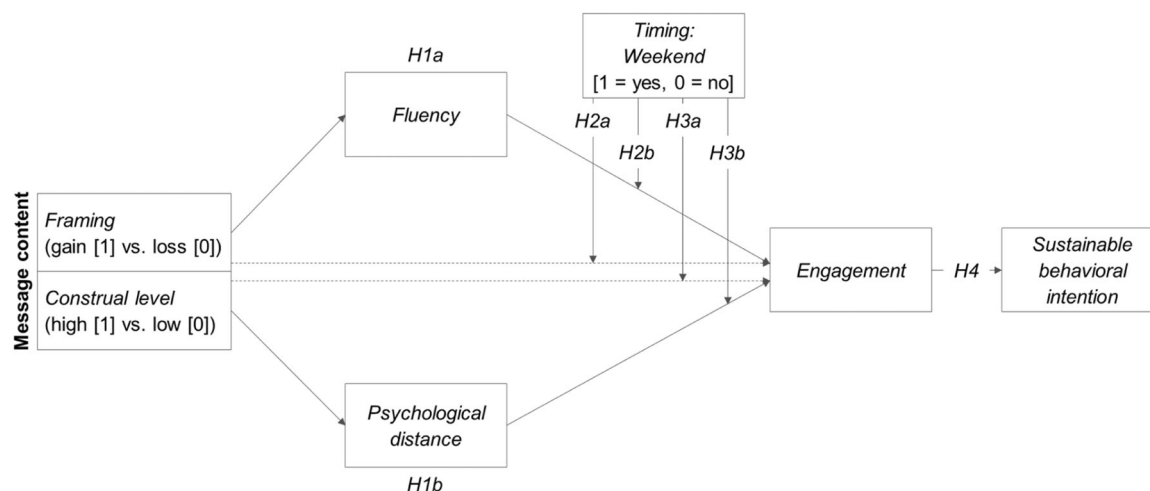


FIGURE 1 Conceptual model and hypotheses.

TABLE 1 Extant research on influencer message characteristics (framing, construal, and timing)—research on different message characteristics not included.

Reference	Framing (gain vs. loss)	Construal (high vs. low)	Timing (day of the week)	Sustainability focus	Mediator
Balaji et al. (2021)	✓	✓			Message credibility
Ballestar et al. (2022)	✓			✓	—
Lee and Theokary (2021)		✓			Influencer expertise
Bradley et al. (2023)		✓			—
Kapoor et al. (2023)		✓		✓	Message authenticity and sustainability image
Hughes et al. (2019)			✓		—
Chung et al. (2023)			✓		—
Our contribution	✓	✓	✓	✓	Fluency, psychological distance

2.1 | Message framing

Prospect theory suggests that people's responses to messages can vary based on whether they emphasize benefits (gain-framed) or disadvantages (loss-framed; e.g., Kahneman & Tversky, 1979). For instance, by framing a product as a solution to a problem (gain frame), consumers may be more likely to purchase it. As Table 1 highlights, also the framing of influencer messages alters consumers' responses to a message. Balaji et al. (2021) find that gain-framed messages of (nongreen) influencers are perceived as more credible than loss-framed posts, positively affecting consumers' behavioral intentions.

Message framing also matters among green influencers. Green influencers' gain frames highlight the enjoyability and positive potential of sustainable behavior (e.g., "[...] By embracing thrifting as a way of life, you can [...] make a difference in the world." by @allitav, see Supporting Information S1: Table A.1), while loss frames focus on the negative implications of nonaction (e.g., "We can't fix

our environmental issues if we don't stop them at the source. e.g., we'll never recycle our way out of our #plasticpollution crisis [...]" by @green4ema). While most greenfluencers use gain framing (Townsend, 2022), there are examples of loss framing, such as the activist and influencer Greta Thunberg, who mainly uses negative sentiments and words (e.g., "climate crisis": Ballestar et al., 2022). To the best of our knowledge, no studies to date investigate the effect of message framing in green influencer messages.

2.2 | Construal level

The Construal level theory describes how psychological distance from an object or event (temporal, spatial, social, and hypothetical) influences consumer behavior (Bar-Anan et al., 2006). High-level construals involve a big-picture perspective, focusing on overarching ideas, while low-level construals delve into details and differences. As

Table 1 highlights, the construal level of influencer messages alters consumers' responses to a message. Most research finds that specific, low-construal messages create favorable consumer reactions (e.g., Lee & Theokary, 2021), for instance by allowing influencers to build intimate, trusting relationships with their followers (Bradley et al., 2023). Lower construal messages of green influencers can involve specific and easy-to-implement calls for action (e.g., "[...] Wear secondhand and slow down your purchases. [...] Get into nature and get off screens [...]," by @rocket_science), see Supporting Information S1: Table A.1), while high-level-of-construal messages involve abstract calls for a behavior change (e.g., "[...] We may be separated, but remember: We are all in this together, and we're all on this planet together. [...] We are connected by our challenges and a fierce and urgent determination to overcome them [...]," by @sustainabledaisy. Green influencers frequently use low levels of construal messages, potentially presenting objective and context-specific sustainability information that can showcase their expertise (Knight et al., 2022).

There is limited research on message construal level with regard to sustainability: Kapoor et al. (2023) find that low-level messages in green influencer communication were more effective in driving sustainable consumption, due to the higher perceived authenticity of the message and the improved image of the product's sustainability. Also for sustainability messages beyond influencer communication, detailed, specific, and vivid information have been shown to raise consumers' authenticity perceptions (Alhouti et al., 2016; Pérez et al., 2020). Authenticity, in turn, is a key factor in shaping consumers' views on and intentions toward sustainable products (Akbar & Wymer, 2017; Joo et al., 2019; Zhu et al., 2022).

2.3 | Timing: Day of the week

The day-of-the-week effect (French, 1980) has been documented across many research areas. For instance, websites focusing on business are busier during the week and entertainment websites on weekends, implying that consumers focus on serious, utilitarian matters during the week and more hedonic pursuits on the weekend (Bussière, 2015). Twitter messages reveal that people tend to be in a better mood during the weekends (Mayor & Biatti, 2021). Findings on engagement and behavioral effects of the timing of social media effects are mixed: On the one hand, research establishes that social media and advertising messages during the week receive more engagement, potentially because on weekends consumers spend more time on leisure activities, friends, and family (Rutz & Bucklin, 2008; Vries et al., 2012). On the other hand, other research finds that influencer posts on the weekend generate more engagement and increase consumers' behavioral response, as consumers tend to allocate more time to social media activities during the weekends (Chung et al., 2023; Hughes et al., 2019; Lee et al., 2023). The mixed findings of message effectiveness on the weekend (vs. week) point to a potential interaction of message timing with variables that extant studies on message timing have not addressed

(e.g., framing or construal). To the best of our knowledge, there is no research on green influencer message timing, but an interaction between message characteristics (e.g., framing) and timing is likely (Dai & Gong, 2024).

In summary, extant research has not yet investigated how framing, construal level, and the timing of messages interact. While some studies consider only a single message construct (e.g., Florence et al., 2022), extant research calls for a joint investigation of framing and construal levels in driving consumer behavior (Chen et al., 2020; White et al., 2011). Furthermore, there is very limited research that studies message characteristics in the context of green influencers, where consumer behavior might differ from nongreen topics. Finally, there is limited transparency on the psychological process through which framing and construal levels drive consumer behavior and the way message timing affects this process.

3 | THEORY

We suggest that message framing and construal level influence engagement and, in turn, sustainable behavioral intentions, through two mediation processes (fluency and psychological distance), which are moderated by message timing (see Figure 1).

3.1 | Message framing and fluency

Several studies establish the positive behavioral effects of gain frames in advertising messages (e.g., Yan et al., 2010). We suggest that also the effect of message framing in green influencer messages is mediated by fluency (see Figure 1, upper part).

Gain frames might enable more fluent processing: Eye-movement measurement has shown evidence of a shorter total reading time for gain-framed messages, while loss frames were perceived as more complex; consequently, positively framed messages were easier processed, leading to improved recall (Liu et al., 2021). Furthermore, gain framing encourages people to specific behaviors such as donating to a good cause (Tugrul & Lee, 2018). We suggest that also gain-framed messages from green influencers should increase fluency.

Additionally, research also highlights the importance of a fit between message framing and content (e.g., White et al., 2011) in increasing message fluency and, in turn, improving downstream consequences such as persuasiveness (Lee & Aaker, 2004) or purchase intentions (Labroo & Lee, 2006). When a message is designed in a way that aligns with a user's expectations, it becomes easier to process the information (regulatory fit theory: Higgins, 1997). This fit is given when green influencers communicate about sustainability issues (Boerman et al., 2022).

Furthermore, the message framing can also fit with an audience's expectations. As influencer messages are mostly gain-framed (Breves et al., 2019; Hughes et al., 2019) followers of green influencers are likely to also expect gain-framed messages. Receiving such messages would fit consumers' expectations, increase fluent processing, and, in turn, foster engagement and more favorable sustainability intentions

and actions (White et al., 2011). In contrast, if a green message is less fluent, consumers want to receive more information and want to know how well the sustainability message aligns with their existing knowledge (Hanks et al., 2016).

We conclude that both a direct effect of gain-framed messages and their fit with audience expectations renders them easier to process for the audience, leading to more engagement (i.e., likes, shares, and comments). Formally:

H1a: Gain (loss) message framing increases (decreases) engagement with sustainable influencer messages through higher (lower) fluency.

3.2 | Construal level and psychological distance

Message construal levels influence consumers' perceived psychological distance (Adler & Sarstedt, 2021; Trope & Liberman, 2010). Marketing messages frequently employ low-construal-level calls for action to motivate consumers into a certain behavior (White et al., 2011). In this, a lower (higher) construal level reduces (increases) consumers' psychological distance and, in turn, increases (reduces) their willingness to engage in a target behavior (Yang et al., 2015).

Message construal level is also likely to influence reactions to messages of green influencers (see Figure 1, lower part). For instance, extant research shows that the manipulation of construal level can alter consumers' perceived psychological distance and, in turn, willingness to participate in sustainable behavior (here: second-hand purchasing; Liu et al., 2021). Furthermore, extant research suggests that distancing might reduce the perceived responsibility to act because consumers feel fewer emotions for more distant events (Wang et al., 2022). In contrast, if a potential environmental threat feels close, then consumers are more likely to act. For instance, Smith and Leiserowitz (2014) found that when individuals harbor apprehensions about climate change or experience analogous negative emotions, they tend to view it as a threat closer to them and, in turn, exhibit an increased willingness to engage in mitigation behavior. Furthermore, Reczek and colleagues (2018) show that concrete, low-construal communication can increase the appeal of a product if the latter is matched with detailed information about the product's sustainability capabilities. Consequently, we expect that low-construal messages should be more successful in green influencer messages, as these messages reduce perceived distance, leading to higher engagement. Formally:

H1b: High (vs. low) construal messages decrease (increase) engagement through higher (lower) psychological distance.

3.3 | The moderating effect of message timing

The effect of both message framing and construal level increases if the latter fits consumers' mindsets (Boerman et al., 2022; Reczek

et al., 2018; White et al., 2019). Consumer mindsets exhibit temporal fluctuations throughout the week, influenced by individual routines as well as broader cultural and societal dynamics (Charm et al., 2020). This likely affects consumers' responses to perceived fluency: The "Thank God it's Friday" effect describes that consumers associate the weekend with positive emotions (such as happiness, enjoyment, and laughter; Helliwell & Wang, 2014; Stone et al., 2012) and ease (Lasauskaite et al., 2017). As tasks associated with positive emotions seem easier, as proposed by the implicit-affect-primes-effort model (Gendolla, 2015), engagement with fluent influencer messages should be stronger. In line with this, posts from nongreen influencers—which are usually gain-framed and should, thus, be perceived more fluently—receive higher engagements on the weekends (Chung et al., 2023; Hughes, 2019).

We, therefore, suggest that on the weekend (vs. during the work week) consumers respond more positively to more (less) fluent messages, while they expect messages with low (high) psychological distance during the week. Our conceptual model (Figure 1) highlights this moderated mediation (PROCESS model 15). This moderated mediation should result in a moderation of the main effect of message framing (H2a): If the fluency effect on engagement is exacerbated on the weekend, we would expect that gain-framed messages, which we hypothesize to increase fluency (H1a), would lead to more engagement on the weekend (vs. during the week). At the same time, we suggest that the effect of the mediator (fluency) is larger on the weekend (H2b). Formally, we hypothesize:

H2a: Posting on the weekend moderates the effect of message framing on engagement, in that gain-framed messages create more engagement on the weekend.

H2b: Posting on the weekend moderates the effect of fluency from message framing on engagement, in that the fluency effect on engagement is more positive on the weekend.

Similarly, the perceived psychological distance is likely to interact with the timing of the (green) influencer message. Given that the weekend is a time when many people have more free time and fewer obligations, high-distance messages could work better, because a lack of immediate demands and distractions might allow for a greater focus on abstract features. In contrast, on weekdays, consumers often have many appointments and tasks to keep track of (Ellis et al., 2015), putting them into concrete problem-solving and structure-seeking mindsets (Huang & Zhang, 2022). During the week, consumers are, therefore, likely to engage in more low-level thinking and possess a "get things done" mindset, that fits well with a low perceived psychological distance of an influencer message. In contrast, abstract messages that induce high psychological distance might be perceived more negatively during the week. We, therefore, expect the low (high) psychological distance of an influencer message leads to more (less) engagement during the week (see Figure 1). H3a specifically addresses the moderation of the main effect of message

construal, while H3b focuses on the moderation of the mediator effect through message timing (PROCESS model 15). Formally:

H3a: Posting during the week (vs. on the weekend) moderates the effect of message construal level on engagement, in that high construal level messages create more (less) engagement during the week.

H3b: Posting during the week (vs. on the weekend) moderates the effect of psychological distance perceptions from message construal on engagement, in that high psychological distance reduces engagement more strongly during the week.

3.4 | Sustainable behavioral intention

Exposure to sustainability content on social media can influence consumer's sustainable habits and consumption behavior (Confetto et al., 2023). If individuals perceive they have control over their behavior, they are more likely to express sustainable behavioral intentions (Theory of planned behavior: Ajzen, 1991). We suggest that being able to demonstrate one's own opinion via engaging with green influencer messages might increase consumers' perceived behavioral control and, therefore, increase their sustainable behavioral intentions. Furthermore, when individuals feel more engaged and confident in their abilities, they are more likely to intentionally adopt sustainable behaviors (Yan et al., 2024). Additionally, when followers share a social media post with their friends and family, they signal interest in the topic and support for the posts' content. Therefore, we suggest that:

H4: Higher engagement leads to higher sustainable behavioral intentions.

4 | PILOT FIELD STUDY

4.1 | Design

The pilot study investigates the prevalence of message framing and construal in the field and offers a first indication of whether the usage of gain (vs. loss) frames and high (vs. low) construal level messages influences followers' engagement with influencer posts. In a mixed-method approach, the pilot field study offers externally valid observations from actual influencer posts, which are subsequently supplemented by two experimental studies, which, however, might be limited by their hypothetical setting (Karman & Lipowski, 2024).

At the time of the study, no comprehensive database of green influencers existed. We, therefore, utilized existing databases with limited reach to conduct a systematic search on Instagram. First, we compiled a list from two existing databases presenting a total of 200 green influencers without duplications (Amra & Elma, 2023, a full-service marketing agency, and the company Feedspot, 2023). We extended this

list by screening the followers of the initial list, as many green influencers follow each other—yielding another 200 influencers without duplicates. We classified the influencers into macroinfluencers (100,000 up to 1,000,000 followers), microinfluencers (10,000 up to 100,000 followers), and nanoinfluencers (1000 up to 10,000 followers). We then randomly selected 200 influencers, equally by class of followers. From each of these influencers, we collected the last five posts (i.e., 1000 posts in total; data available upon request).

We extracted the text of each post and calculated the engagement as the sum of likes and comments divided by the follower count (Fisher, 2009). Two independent coders classified the posts by framing (gain vs. loss: $K_{\text{MessageFraming}} = 0.72$) and construal level (low vs. high: $K_{\text{ConstrualLevel}} = 0.66$), and reconciled differences through discussion. We excluded 23 posts due to either missing text (only visual posts) or due to the lack of recognition of construal level or message framing because of too few words (e.g., only hashtags without text). The average green influencer in our sample had 134,762 (standard deviation [SD] = 1,042,110) followers, followed 1598 (SD = 1412) other influencers, had posted 925 (SD = 942) messages and an account age of 7.6 (SD = 3.3) years.

4.2 | RESULTS

Figure 2 summarizes the observed message characteristic frequencies of the pilot field study. First, the majority of green influencer posts occur during the week (79% of all posts), while only 21% happen during the weekend. Second, the post type does not vary depending on the timing: as expected, combinations of gain framing and low construal dominate (59% of all posts) both during the week (59%) and the weekend (57%), followed by gain frames with high construal (29% of all posts, 28% of the week posts, 33% of the weekend posts). Loss frames are rather uncommon (12% of all posts).

Figure 3 descriptively highlights the effects of different combinations of message framing, construal, and timing on engagement. Irrespective of timing (Panel A), we see that loss-framed messages with low construal generate the highest engagement ($M = 5.22\%$) while gain-framed messages with low construal show the lowest engagement ($M = 2.99\%$). Gain frames with high construal—

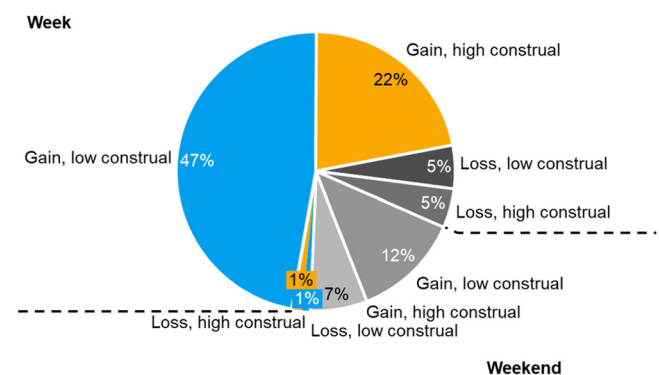


FIGURE 2 Message characteristic frequencies in the field study.

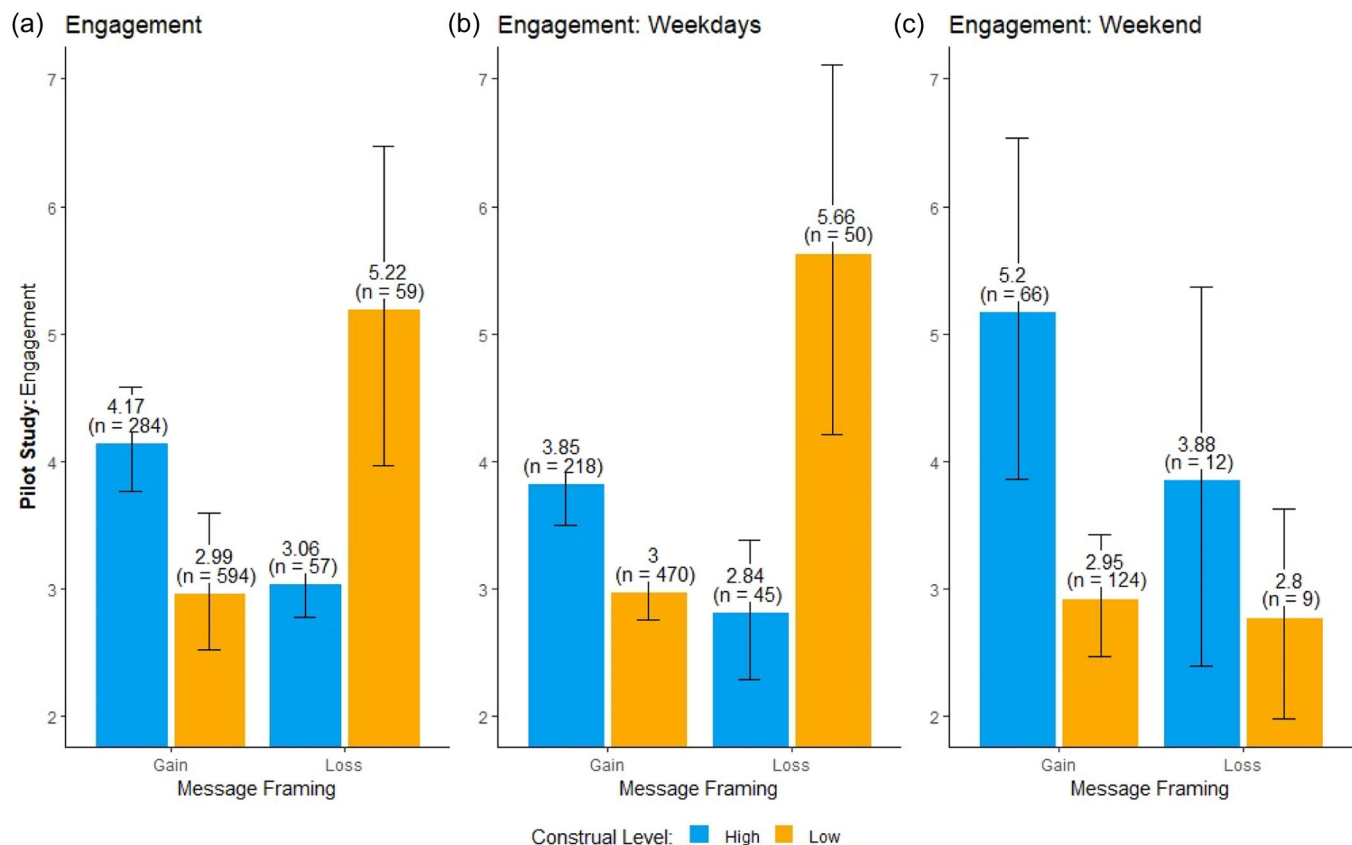


FIGURE 3 Results of the pilot field study: General engagement (a), engagement on weekdays (b) and on weekends (c). (Engagement in percent, bars represent 95% confidence intervals).

the most common post characteristic—generate the second lowest engagement ($M = 3.06\%$).

These effects reverse depending on the timing: while gain frames have higher engagement on the weekend, irrespective of the construal (Panel B: $M_{\text{HighConstrual}} = 5.20\%$ and $M_{\text{LowConstrual}} = 2.95\%$), low construal level posts work better during the week—irrespective of the framing (Panel C: $M_{\text{Loss}} = 3.85\%$ and $M_{\text{Gain}} = 5.66\%$). While these results align with our hypotheses, we refrain from formally testing our hypotheses due to (a) the nonrandomized nature of the observational data and (b) the limited sample size of some combinations of the message characteristics (e.g., $N_{\text{Loss, Low Construal, Weekend}} = 9$). The subsequent experiments will offer a causally more robust investigation of different message characteristics. In summary, the results of the field study offer a first indication that green influencers might not be posting with message characteristics that are not ideal for the goal of increasing message engagement.

5 | STUDY 1

5.1 | Design

Study 1 uses a 2 (message framing: gain vs. loss) \times 2 (construal level: high vs. low) \times 2 (timing: weekend vs. week) between-subject design.

Participants were randomly assigned to message frames and construal levels, to ensure message exposure was not biased by personality-driven self-selection into following certain influencers (e.g., perceived life control [Zhang et al., 2023] or age [Casalegno et al., 2022], which might also relate to sustainable consumption). The timing of the messages was nonrandomized, but conducted on two subsequent days; we published the same survey at two different time points on the platform Prolific: on a Sunday afternoon (weekend) and a Monday afternoon (weekday).

As stimuli, we designed four types of posts from fictional influencers (using the design of Instagram) with different framing (gain vs. loss) and construal levels (high vs. low) across four topics (travel, DIY, upcycling, and zero waste). We used the text of the posts as well as the images (generated through Adobe Firefly) to manipulate the message characteristics while keeping as many elements of the post as possible consistent. For example, in the travel category (which we also selected based on a subsequently reported prestudy), all posts show a beach (see Figure 4). However, while the gain-framed beaches are natural and unspoiled, the loss-framed beaches are covered with waste, and the adjacent forest is destroyed. The text and hashtags underline the framing (gain: “save the environment,” or loss “you destroy our environment”). We manipulated low construal levels through (a) the presence of a specific solution/cause of the problem (a train or an airplane), and (b)

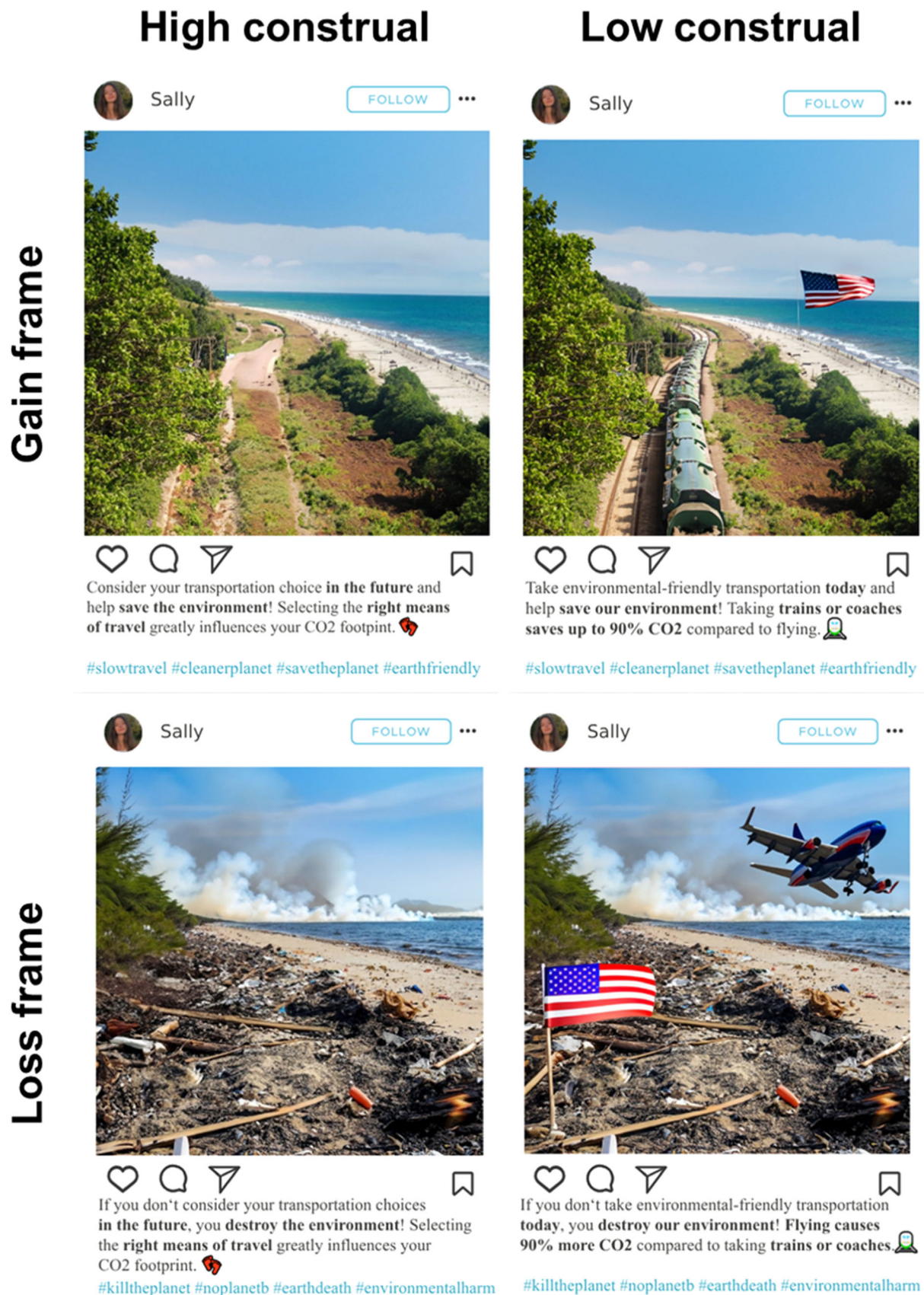


FIGURE 4 Post types in the experiments.

an indication of spatial proximity (i.e., a US flag). The text changed accordingly either low (taking trains or coaches saves up to 90% CO₂/now) or high (right means of travel/in the future) construal levels.

The length of the post messages was constant and short (<20 words), as studies found that participants preferred short, simple posts (Pancer et al., 2019). Emoji ($n = 1$) and hashtag number ($n = 4$) were constant across post types, as the latter affect engagement (Smith, 2019).

We conducted a prestudy ($n = 53$, $M_{\text{age}} = 32.49$ years, 76.92% female, Amazon MTurk) to select one of the four topics that created the desired manipulation. Each participant evaluated four posts (one for each topic), across which framing and construal levels were randomized, and evaluated perceived framing (Malloch & Feng, 2022) and construal level on a 7-point Likert scale (Stöber & Borkovec, 2002). We selected the travel posts because their contrasts between perceived framing and construal level were highest ($p_{\text{framing}} < 0.001$ [for gain vs. loss conditions] and $p_{\text{construal}} < 0.1$ [for gain vs. loss conditions]), while Do It Yourself ($p_{\text{message}} < 0.01$ and $p_{\text{construal}} = 0.338$), Upcycling ($p_{\text{message}} < 0.01$ and $p_{\text{construal}} = 0.991$) or Zero Waste ($p_{\text{message}} < 0.01$ and $p_{\text{construal}} = 0.337$) were directionally perceived as expected, but with less significant outcomes. Additionally, we employed computational image analysis to verify that the visual complexity did not differ within the four stimuli, because low-complexity images contribute to a low level of fluency and might, thus, bias the mediation process (Mayer & Landwehr, 2018; Mayer, 2021). The four target stimuli did not differ in terms of complexity ($M_{\text{gain, high}} = 0.48$, $M_{\text{gain, low}} = 0.47$, $M_{\text{loss, high}} = 0.50$, $M_{\text{loss, low}} = 0.52$).

We conducted another prestudy ($n = 151$, $M_{\text{age}} = 33.4$ years, 59% female, Amazon MTurk) to ensure that the presence of a flag, which we used to manipulate psychological distance and, in turn, perceived construal level for the US-based participants in Study 1, did not affect country-of-origin perceptions (e.g., Harris et al., 1994) or result in psychological reactance (Wang & Zuo, 2017) that might affect the post evaluation. Consumers evaluated one of four post types (two of which contained a flag) regarding their perceptions of the country-of-origin of the post (e.g., "The post was originally written in the United States." based upon country-of-origin identification of social media posts by Heikinheimo et al., 2022), perception of a persuasion attempt by the influencer (e.g., "To what extend do you think is this post an attempt to persuade you?" by Wang & Zuo, 2017), and reactance (e.g., "This post forces me to do something, I feel like doing the opposite." by Hong & Page, 1989). Results show that the presence of the flag in two of the posts did not alter participants' perception of the country of origin of the post ($M_{\text{flag}} = 5.78$ vs. $M_{\text{noflag}} = 5.56$, $t = 1.21$, $p = 0.22$), the perceived attempt to persuade ($M_{\text{flag}} = 5.56$ vs. $M_{\text{noflag}} = 5.76$, $t = 1.15$, $p = 0.25$) and reactance to the post ($M_{\text{flag}} = 4.86$ vs. $M_{\text{noflag}} = 4.59$, $t = 0.91$, $p = 0.36$). Thus, the presence of the flag to manipulate perceived construal level does not lead to undesired country-of-origin perception differences or psychological reactance to the post.

In the main study, we captured consumers' green attitudes before seeing the influencer post as the control variable (adapted from Haws et al., 2014; 7-point Likert-scale; see Supporting Information S1: Table B.1 for an overview of the constructs). As our dependent variables, we measured social media engagement by asking whether participants would like, share, or comment on the post, recommend the influencer to their families and friends, or talk about the influencer (adapted from Carroll and Ahuvia (2006); Levin et al. (2023), 7-point Likert scale ranging from 1 [*strongly disagree*] to 5 [*strongly agree*]) and specifically the sustainable behavioral intention after seeing the post (adapted from Bennett et al. (2002); Laroche et al. (2001): three items on a 7-point Likert scale; e.g., "I would behave in a more resource- and energy-saving manner in the future").

5.2 | RESULTS

The main study consisted of 334 participants from the consumer panel Prolific, who participated in exchange for a small compensation. The sample size was based on a power calculation.¹ We restricted the panel to US citizens who regularly used Instagram. To increase external validity, panelists could only participate in the survey on mobile phones, because engagement with (green) influencers usually happens on the phone. We excluded 21 participants who did not answer two instructional attention checks correctly (final sample: $M_{\text{age}} = 38.31$ years, 62.96% female).

The descriptive results of Study 1 align with our findings from the pilot field study (see Figure 5): on the weekend (Panel C), gain messages work best, irrespective of high ($M = 4.68$) or low construal level ($M = 3.87$), while loss messages show lower engagement ($M = 3.11$ and $M = 2.30$). High-construal level increases engagement on weekends. The results reverse during weekdays (Panel B): low-construal messages show the highest engagement, irrespective of gain ($M = 3.24$) or loss framing ($M = 3.89$). In contrast, high construal-level messages perform worse across both framing types.

To formally test our hypotheses, we ran ordinary least squares (OLS) regression models, controlling for participants' prior green attitudes, as these might influence message engagement. In line with H2a, the main effect of message framing (Model 2: $\beta = -0.53$, $p < 0.1$, Cohen's $f = 0.19$) depends on the message timing, as gain frames create significantly more engagement on the weekend ($\beta = 2.03$, $p < 0.001$, $f = 0.44$). In line with H3a, the main effect of construal level ($\beta = -0.67$, $p < 0.01$, $f = 0.01$) depends on the message timing, as high

¹A priori estimation of a required sample size should be based upon the effect size of the hypothesized interaction effect, which depends on the nature of the interaction (cross-over/reverse vs. attenuation: Blake & Gangestad, 2020; Giner-Sorolla et al. 2024). In line with our hypotheses and the cross-over effects in our pilot study, we assumed a medium cross-over effect (Cohen's $f = 0.25$) for each of the two-way interactions H2a and H3a (this corresponds to equally large simple effects that fully reverse), with $\alpha = 5\%$, power = 80% and numerator $df = 1$. For each of the interactions, we would required 128 participants, following G-Power calculations, that is, 256 in total (Giner-Sorolla, 2016). We decided to exceed this sample size to ensure sufficient power after filtering. Our final sample size of $n = 313$ (after filtering participants with a failed attention check) corresponds to a power value of $1 - \beta = 86\%$. Put differently, also smaller effects (Cohen's $f > 0.19$) would have sufficed to reach 80% power.

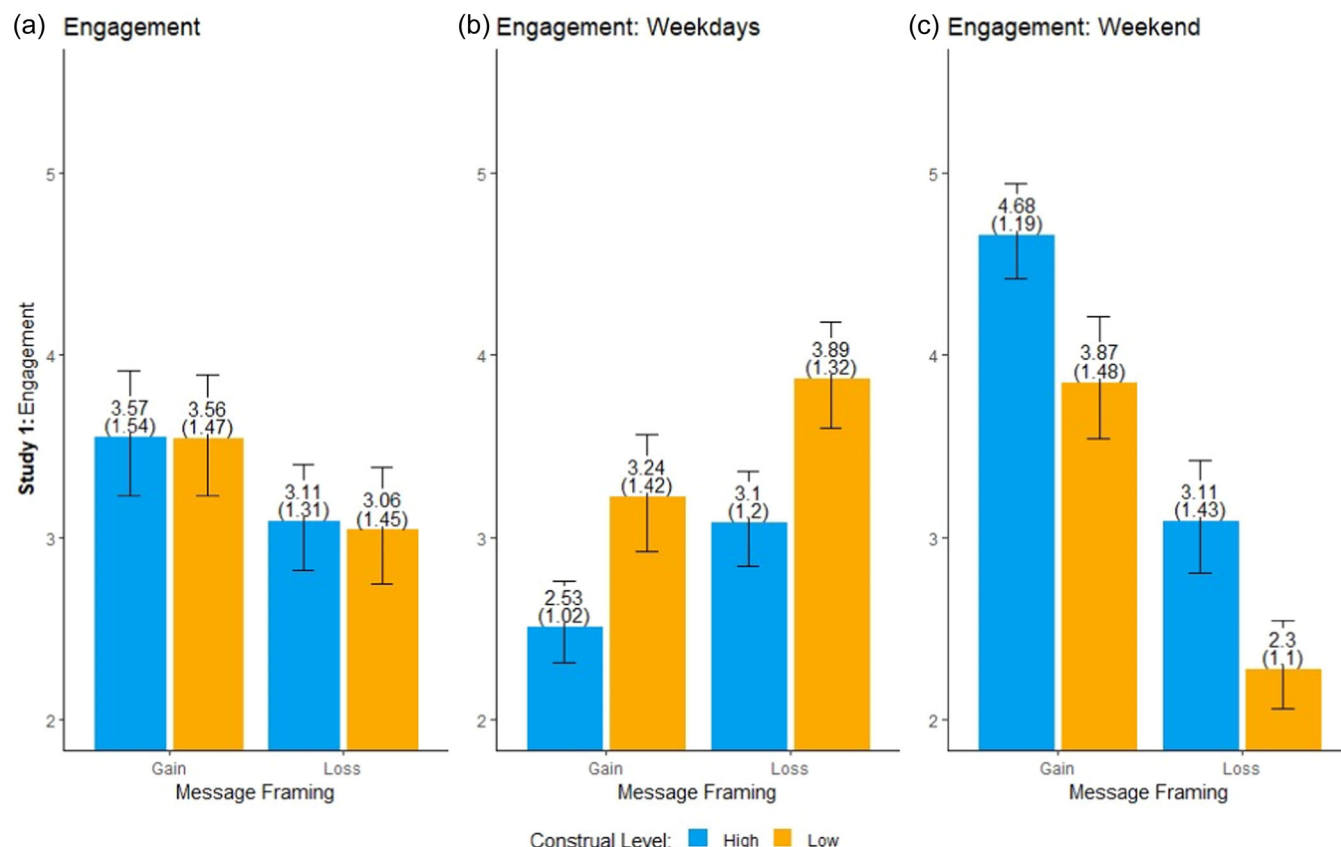


FIGURE 5 Empirical results in Study 1: General engagement (a), engagement on weekdays (b) and on weekends (c). Means, standard deviation in parentheses, and bars represent 95% confidence intervals.

construal messages create significantly more engagement on the weekend ($\beta = 1.43$, $p < 0.001$, $f = 0.32$). In line with H4, engagement has a direct positive effect on green behavioral intention (Model 3: $\beta = 0.27$, $p < 0.001$). There is no three-way interaction between framing, construal, and timing.

In summary, Study 1 replicates the indications from our pilot field study and supports H2a, H3a, and H4. However, Study 1 does not allow us to study the process through which the effect of message characteristics on engagement arises (Table 2).

6 | STUDY 2

6.1 | Design

Study 2 replicates the results of Study 1, while also investigating the mediation process through perceived fluency and psychological distance. The design of Study 2 remains consistent with Study 1 (stimuli, manipulations, timing, and question items), but we measured perceptions of the mediating variables fluency and psychological distance. We measured fluency by questions about the easiness of processing, reading, and understanding the posts (7-point Likert scale; adapted from Graf et al., 2018). We measured psychological distance by questions about participants' feelings about the proximity

of climate change and temporal influence (now vs. future; adapted from Azadi et al., 2019; Wang et al., 2019; Yu et al., 2017).

6.2 | Results

Two hundred four participants of the consumer panel Prolific completed the experiment in exchange for a small compensation. The sample size was based on a power calculation.² We excluded five participants who did not finish the survey or did not answer both attention checks correctly (final sample: $M_{\text{age}} = 35.92$ years, 56.28% female).

Descriptively, we see, in line with H1a, that a message with gain framing and low construal level leads to the highest fluency (Figure 6a: $M = 6.39$), while loss framing and low construal level leads to the lowest fluency ($M = 4.05$). Furthermore, in line with H1b, we see that high construal level messages increase the perceived psychological distance (Figure 6b: $M = 4.81$ and $M = 4.28$), while low

²We use the effect sizes of the interactions in Study 1 to calculate sample size for Study 2. As the interaction effects in Study 1 are medium to large (Cohen's $f = 0.44$ [H2a]/ 0.32 [H3a]), the resulting required sample sizes are small ($n = 43 + 79 = 122$). We decided to exceed this sample size to ensure sufficient power after filtering, targeting a sample of $n = 200$. Our final sample size of $n = 199$ (after filtering participants with a failed attention check) corresponds to a power value of $1 - \beta = 92\%$.

TABLE 2 Model results in Study 1.

	Engagement		Behavior Model 3
	Model 1	Model 2	
Gain frame	0.52* (0.23)	-0.53 [†] (0.29)	
High construal	0.07 (0.22)	-0.67* (0.29)	
Gain frame × high construal	-0.10 (0.32)	-0.14 (0.41)	
Timing: Weekend		-1.53*** (0.28)	
Weekend × gain frame		2.03*** (0.41)	
Weekend × high construal		1.43*** (0.40)	
Weekend × gain frame × high construal		0.24 (0.57)	
Engagement			0.27*** (0.05)
Prior green attitudes	0.22*** (0.06)	0.21*** (0.06)	0.69*** (0.05)
Intercept	1.98*** (0.34)	2.83*** (0.34)	-0.13 (0.28)
R ²	0.07	0.28	0.44
Adj. R ²	0.05	0.27	0.43
Num. obs.	313	313	313

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;[†] $p < 0.1$.

construal level messages feel closer, irrespective of the framing ($M = 3.25$ and $M = 2.82$). These effects are consistent across different timings of the post (not visualized in Figure 6).

The main effects of the message characteristics on engagement follow a similar pattern to the prior studies, in that the effects of framing and construal level depend on the timing. On weekends (Panel C), gain-framed messages have higher engagement, but only for messages with high construal levels ($M = 4.14$). During weekdays, loss frames have higher engagement. Furthermore, low construal-level messages lead to higher engagement within each frame (Figure 7).

To formally investigate the hypotheses, we again ran a series of OLS regression models of engagement on the post characteristics (see Table 3). In line with H1a, Model 1 shows that gain frames have a positive effect on fluency ($\beta = 2.35$, $p < 0.001$, $f = 0.37$). In line with H1b, Model 2 shows that high construal levels increase perceived psychological distance ($\beta = 1.45$, $p < 0.001$, $f = 0.75$).

In line with H2a, gain framing has a positive effect on engagement during the weekend (Model 4: $\beta = 2.06$, $p < 0.001$, $f = 0.42$). As expected, fluency has a positive impact on engagement (Model 5: $\beta = 0.21$, $p < 0.01$). In contrast to H3a, message construal level and timing do not interact significantly (Model 4: $\beta = 0.83$, $p > 0.10$, $f = 0.21$). However, as expected, higher perceived psychological distance reduces engagement ($\beta = -0.23$, $p < 0.05$). Finally, in line with H4, engagement positively influences sustainable behavioral intention (Model 6: $\beta = 0.11$, $p < 0.05$).

To investigate the mediation hypotheses (H2b and H3b), we conducted a mediation analysis (Preacher & Hayes, 2008: PROCESS Model 4), using bootstrapped confidence intervals ($n = 5000$). In line with H1a, fluency significantly mediates the relationship between message framing and engagement (95% confidence interval [CI] = [lower limit, mean, upper limit] = [0.08, 0.26, 0.49]), as the confidence interval does not include zero. In line with H1b, psychological distance significantly mediates the relationship between message construal level and engagement (95% CI = [0.17, 0.57, 0.96]).

Next, we conducted a moderated mediation analysis (PROCESS Model 15) that explored whether the effects of fluency and psychological distance depended on the timing of the message. In line with H2b, we find that the effect of message framing through fluency on engagement depends on the timing: while the mediation is insignificant during the week (95% CI = [-0.16, 0.07, 0.30]), the mediation is larger and significant on the weekend (95% CI = [0.14, 0.38, 0.69]). This highlights that fluency from gain framing only generates a positive effect on the weekend and explains the process behind the moderation of the framing main effect (H2a). In line with H3b, we find that also the effect of message construal through psychological distance depends on the timing: while the mediation is insignificant for posts on the weekend (95% CI = [-0.91, -0.30, 0.37]), the mediation is significantly negative during the week (95% CI = [-1.17, -0.71, 0.21]). This implies that high construal increases psychological distance, which, in turn, lowers engagement during the week—which aligns with our observed moderation of the main effect (i.e., low construal level messages work better during the week).

7 | CONCLUSIONS

This research investigates whether the engagement with green influencer posts depends on a post's framing (gain vs. loss), construal level (high vs. low), and timing (weekend vs. work week). Across a pilot field study and two experiments, we find that current communication practices of green influencers might result in suboptimal engagement and, in turn, low behavioral intentions. Specifically, most green influencers use gain frames and low levels of construal (59% of all posts in our field study) and post mainly during the week (79% of all posts). Gain frames with low levels of construal, however, are in all studies a condition with low engagement—irrespective of the timing. The second most frequent message type, gain frames with high construal

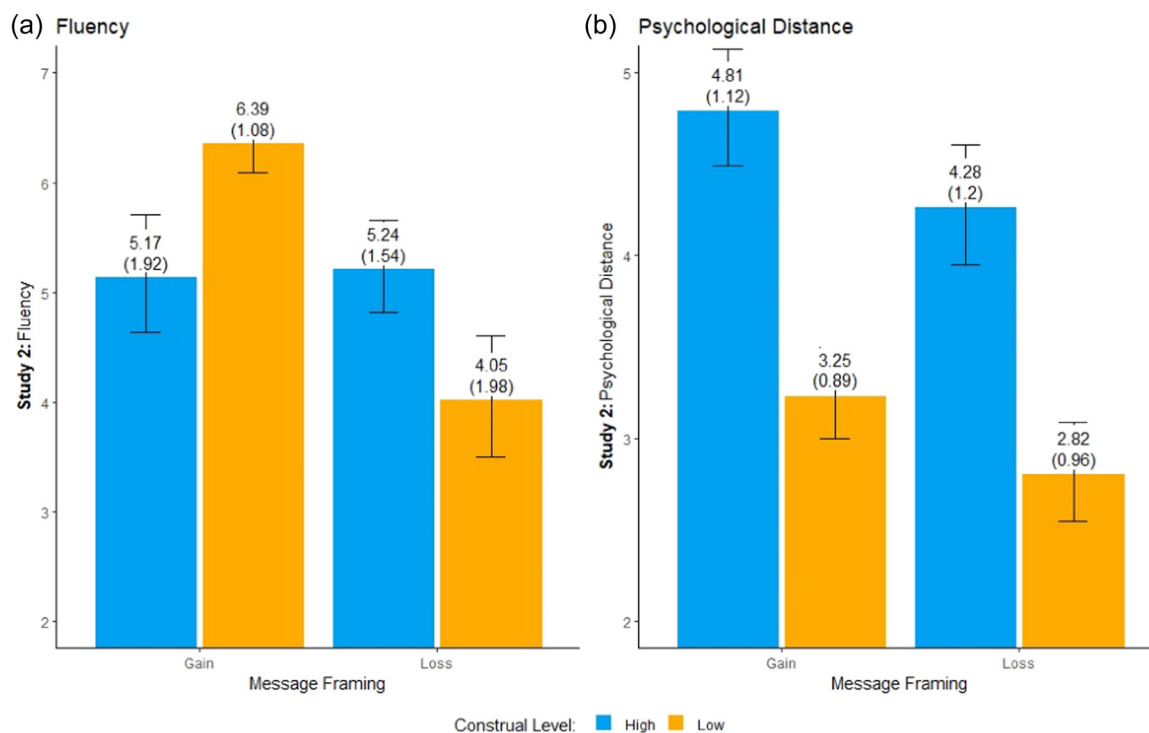


FIGURE 6 Empirical results in Study 2: Mediators Fluency (a) and Psychological Distance (b). Means, standard deviation in parentheses, and bars represent 95% confidence intervals.

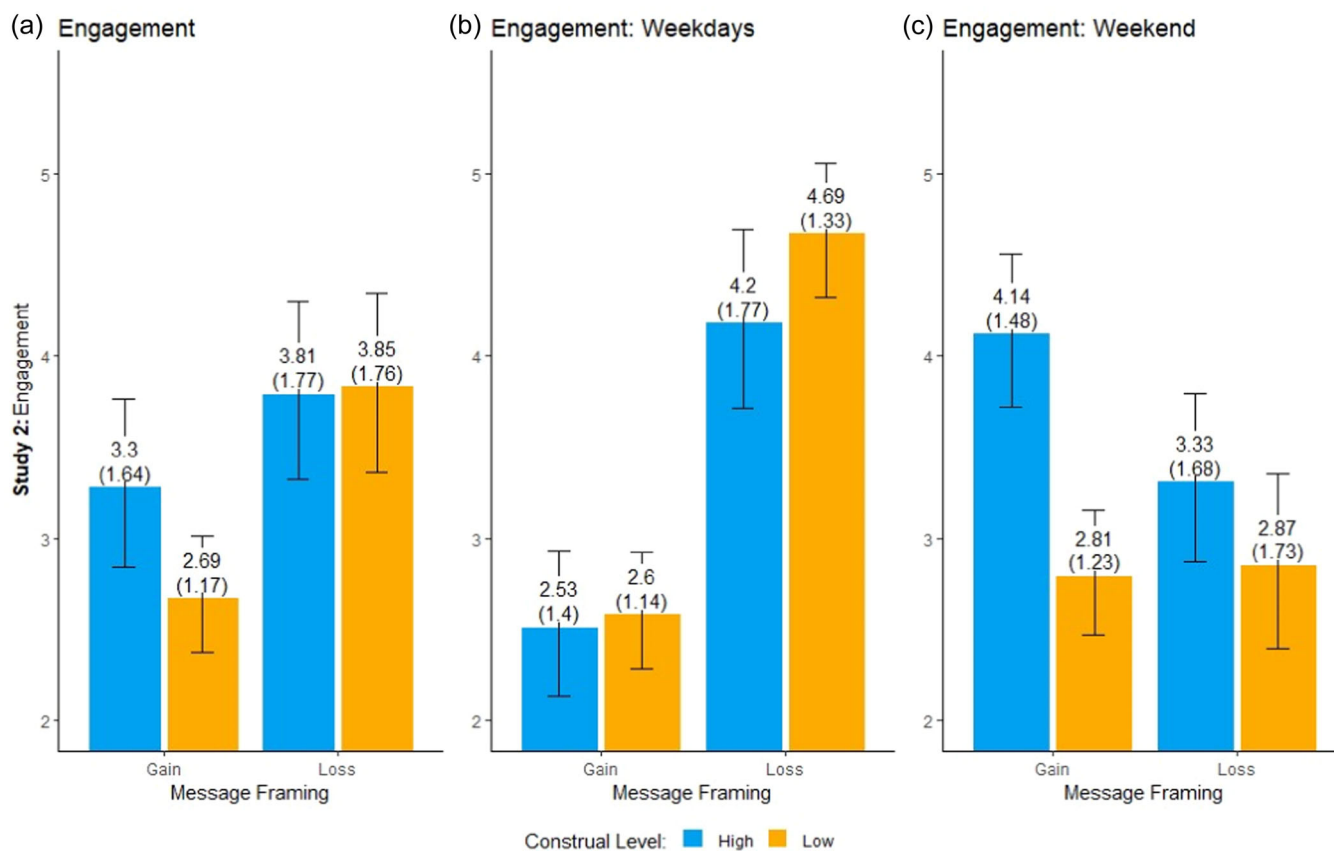


FIGURE 7 Empirical results in Study 2: General engagement (a), engagement on weekdays (b) and on weekends (c). Means, standard deviation in parentheses, and error bars represent 95% confidence intervals.

TABLE 3 Model results in Study 2.

	Fluency Model 1	Distance Model 2	Engagement			Behavior Model 6
			Model 3	Model 4	Model 5	
Gain frame	2.35*** (0.33)	0.43* (0.21)	-1.14*** (0.32)	-2.07*** (0.39)	-2.38*** (0.39)	
High construal	1.20*** (0.33)	1.45*** (0.21)	-0.02 (0.32)	-0.40 (0.39)	-0.35 (0.40)	
Gain frame × high construal	-2.42*** (0.47)	0.10 (0.30)	0.63 (0.45)	0.26 (0.56)	0.79 (0.55)	
Weekend				-1.88*** (0.41)	-1.73*** (0.40)	
Weekend × gain frame				2.06*** (0.58)	1.86** (0.56)	
Weekend × high construal				0.83 (0.58)	0.89 (0.56)	
Weekend × gain frame × high construal				0.72 (0.82)	0.73 (0.79)	
Fluency					0.21** (0.06)	
Psychological distance					-0.23* (0.10)	
Engagement						0.11* (0.05)
Prior green attitudes			0.21* (0.08)	0.27*** (0.08)	0.19* (0.08)	0.73*** (0.06)
Intercept	4.05*** (0.24)	2.82*** (0.15)	2.86*** (0.47)	3.42*** (0.46)	3.56*** (0.60)	0.26 (0.30)
R^2	0.20	0.36	0.11	0.28	0.34	0.48
Adj. R^2	0.19	0.35	0.09	0.25	0.30	0.47
Num. obs.	199	199	199	199	199	199

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

levels (29% of all posts), creates only high engagement on the weekends, but the green influencers we observed rarely post it at this time (7% of all posts). Generally, posting on the weekend (vs. during the week) substantially changes the effectiveness of green influencer posts in terms of follower engagement: while gain-framed messages create more engagement during the weekend (irrespective of the construal), low construal messages create more engagement during the work week (irrespective of the framing). These effects are driven by the mediating variables fluency (from framing) and psychological distance (from construal), which are, in turn, moderated by the timing (high fluency has a stronger positive effect on engagement on the weekend;

low psychological distance has a stronger positive effect on engagement during the work week). These findings suggest that the timing of the influencer posts interacts with both message framing and construal in a way that suggests that green influencers should alter their communication practices.

7.1 | Practical implications

Our findings offer three main implications for green influencers interested in increasing their engagement or marketers cooperating with these influencers.

1. There is no silver bullet message type for engagement: Of the message characteristics we studied (gain/loss framing, high/low construal) none always maximizes engagement. Rather, influencers should be aware that both framing and construal interact with the timing of the message. This contrasts with observed green influencer practices, which focus on gain frames (88% of posts), low construal (65% of posts), and posting during the week (79%). Based upon data from our experiments, we find that only 12% of all posts are designed in a way that maximizes engagement (gain-framed high construal messages on the weekend: 7% of all posts; los-framed low construal messages during the week: 5%).
2. Mind the timing: Our data imply that weekend posts should be gain-framed, ideally with a high construal level. Posts during the work week should have a low construal level, with specific details and steps that fit consumers' low-construal mindset, ideally combined with a loss framing. As a side effect, low construal mindsets, with specific appeals and detailed actionable information, can showcase a greeninfluencer's expertise (Knight et al., 2022). Furthermore, green influencers should consider posting more frequently on the weekend, because engagement then can be as high or even higher than during the week. Due to the currently limited competition from other influencers, the reach of these weekend posts might even be higher.
3. Use processing fluency and psychological distance to craft the right message: Both higher perceived fluency and lower psychological distance increase follower engagement with a post. While their effects are moderated by timing, influencers should know how to alter consumer perceptions. Positive, gain-framed messages (e.g., about the opportunities in sustainable behavior, the individual contribution possibilities, the beacons of sustainable hope) will generate higher fluency, while negative, loss-framed messages (e.g., about the risks of climate change, the irrevocability of climate change, or doomsday scenarios) will lower fluency. Furthermore, actionable recommendations (e.g., how-to-guides, immediate next steps, detailed explanations) and visual cues that are associated with proximity will reduce psychological distance and, in turn, increase engagement.

This can be illustrated with a hypothetical ad copy supporting the use of a reusable coffee mug. A gain-framed message (keeping low construal level constant) would focus on the positive consequences of behavior ("The new reusable 'Evergreen Mug' is not just an environmentally-friendly coffee cup, it is a step towards a sustainable future. Get your reusable mug to start reducing your carbon footprint and contribute to a greener planet."), while a loss-framed message would highlight the negative consequences ("... it prevents the destruction of our planet. Get ... or our rising carbon footprint will have severe consequences for all of us."). At the same time, altering construal level influences perceived psychological distance (e.g., high [vs. low] level of construal: "Using reusable products [vs. The new reusable 'Evergreen Mug'] is not just...").

But our findings also have implications for brands working with sustainable influencers to support their products: brands cannot only

design the product and its packaging in a way that helps sustainable consumption (e.g., Pichierri & Pino, 2023; Techawachirakul et al., 2023), but they can pick those influencers that communicate favorably or try to influence the communication style of influencers, for instance by asking them to post specific content during a certain time of the week.

7.2 | Theoretical implications

Our research offers multiple theoretical implications. First, we align with extant research on the positive effect of influencers on sustainable behavioral intentions (e.g., Johnstone & Lindh, 2022; Kapoor et al., 2023; König & Maier, 2024; Pittman & Abell, 2021; Pittman & Milfeld, 2023; Zhang et al., 2021). How to design a green influencer message to maximize its effect (e.g., on engagement, or behavior), remains an area of substantial research interest (e.g., Jacobson & Harrison, 2022). Our research studies the communication practices of green influencers in terms of message framing and message construal—but in interaction with the timing of the influencer message. Our results replicate findings from extant research that message construal and framing matter for posteffectiveness (e.g., Balaji et al., 2021; Bradley et al., 2023; Kapoor et al., 2023).

Second, we provide an overview of the communication practices of 1000 green influencers with strongly varying follower numbers (nano, micro, and macro by follower number), where extant content analyses focused on selected green macroinfluencers (i.e., Bill Gates and Greta Thunberg: Ballestar et al., 2022). We find that the different framing approaches that extant research documents also exist in a wider sample of green influencers—although the positive gain frames dominate here.

Our key contribution lies in establishing the novel interaction of green influencer message (a) framing and (b) construal level with the timing of the posts. Following calls for research on a multivariate perspective on (green) influencer message characteristics (Chen et al., 2020; White et al., 2011), concurrent evidence from the pilot field study and two experiments highlights that the effect of framing and construal level depends on the timing of the post—which, to the best of our knowledge, has not been documented in extant research. Specifically, we show that gain (vs. loss) framed messages work better on the weekend (vs. the week) because they exacerbate the effect of fluency on engagement. Similarly, we show that low (vs. high) levels of construal work best during the week (vs. the weekend), because they attenuate the effect of psychological distance on engagement. These interactions of timing and framing/construal might be an explanation for the conflicting evidence in extant research concerning message timing (with either the weekend [Chung et al., 2023; Hughes et al., 2019] or week posts creating more engagement [De Rutz & Bucklin, 2008; Vries et al., 2012]). Furthermore, we specify extant research on the favorability of low construal level messages for green influencers (Lee & Theokary, 2021; Reczek et al., 2018), in that we would suggest that the positive effect of low construal levels is

exacerbated for messages posted during the work week (vs. the weekend). Note that we do not hypothesize, test for nor find a three-way interaction of framing, construal level, and timing—rather, timing interacts with each message dimension in two two-way interactions.

7.3 | Limitations and future research

We acknowledge several limitations related to the design of our studies. First, our investigation focuses on posts of green influencers on Instagram (vs. e.g., TikTok). There might also be cultural influences on followers' expectations of green influencer posts, which our focus on reactions to influencer posts in the United States does not allow us to explore. Furthermore, posts are only one means of communication for green influencers; different types of content (e.g., blog posts, Twitter/X posts, videos) and behaviors (e.g., endorsing green products, participating in green initiatives) are likely to also affect consumer engagement and behavior. Second, while the pilot field study aligns with our experimental findings, the dependent variables in the latter were hypothetically measured and not incentive-aligned, which might affect the well-documented (green) intention-behavior gap (e.g., Frank & Brock, 2018; Hinsch et al., 2021). Third, our research did not analyze the role of brands in green influencers' posts (Gerrath & Usrey, 2021). Brands might require influencers to use a certain message framing (e.g., gain frames with low construal to highlight the brand as a solution). Furthermore, visible or officially disclosed brand support might influence follower engagement through accusations of greenwashing (Lee et al., 2018). Finally, another fruitful area for future research is the relationships between green influencers and their followers, as bonds between influencers and followers play a crucial role in (green) influencer effectiveness (e.g., Dekoninck et al., 2023). In this, future research could explore if consumers would accept virtual green influencers (e.g., Gerrath et al., 2024; Gutuleac et al., 2024) that create the perfect messages convincing consumers to live a more sustainable lifestyle—and these influencers might also be happy to post messages during the (free) weekend.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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