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Environmental Communication on Twitter: The Impact of Source, Bandwagon Support, and Message Valence on Target Audiences

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Abstract: The goal of the research is to empirically examine how different factors affect the dissemination of environmental protection messages on social media. The theoretical foundation of the research is based on the literature on heuristics. Perceived bandwagon support, valence of message framing, and source of information (i.e., source credibility) were examined as the independent variables. The dependent variables were perceived information credibility, intention to share the message, and intention to read the article attached to the message. Four online experiments were conducted, and college students were sampled. Overall, the findings suggest that the impact of source, bandwagon support, and message valence affect behavioral intentions and perceived information credibility in various ways, and the extent of such impacts is context-dependent. The findings of the study would advance our theoretical understanding of how we use psychological heuristics to process information related to environmental communication. The findings would also help environmental organizations and activists to better communicate with their potential audiences.

Keywords: environmental communication; Twitter; source credibility; bandwagon support; message valence

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1. Introduction

People can learn about environmental issues via media outlets. Among various outlets, social media is vital since people around the world are spending a considerable amount of time using the platforms [1]. Environmental activists and organizations understand the prevalence of social media usage among contemporary media users, and hence, activists and organizations are using social media to reach their target audiences [2].

Existing studies have demonstrated the importance of using digital media platforms, such as social media, in communicating environmental protection messages. Burksiene and Dvorak [3] did a comprehensive review of the literature about how environmental NGOs (ENGOs) used online media platforms. The researchers found that social media plays a crucial role in disseminating environmental information. Di Tullio and colleagues [4] reported in the study that social media are beneficial for environmental activists or organizations to engage and educate the audiences of a message about sustainability through interactive, two-way communication. Jönsson et al. [5] believed that social media are more effective and efficient channels to communicate pro-social messages (e.g., environmental protection) than legacy media platforms. Thus, the current research focuses on examining environmental communication strategies that can be applied in conducting pro-environment social media campaigns. Communication strategies, in this study, are defined as a plan of action that can be used by message senders on social media to achieve communication goals such as increasing message exposure or improving message persuasiveness [6]. The specific strategies investigated in the current study are (1) communicating the message with the help of different types of sources; (2) framing messages positively or negatively; and (3) manipulating messages that receive either low or high levels of support from the public.

A challenge that environmental advocates and their communication campaigns face is to entice and engage potential target audiences. To many people, educational information about environmental protection seems uninteresting. Fortunately, there are various ways that environmental advocates (or organizations) can employ to entice and engage audiences. One of the simple techniques is employing an entertaining figure, such as a celebrity, to serve as a spokesperson (or a source) for the communicated information. The goal of using such a figure is to utilize a celebrity's charismatic image with the hope that audiences may unconsciously associate the image with the message posted by the celebrity. Empirical studies have shown the success of using celebrities as campaign ambassadors in brand-consumer communication [7,8]. However, the efficacy of the practice in the context of environmental communication is debatable [9]. Thus, the main goal of the current research is to empirically ascertain the effectiveness of employing celebrities as a source of information in environmental communication campaigns on social media.

In addition to the use of celebrity, two potential cues on social media may instantly attract audiences' attention: the framing of a message and the overall support a message receives. Social media are unique in that audiences can discern how others think of a post by observing the popularity metrics such as likes, shares, and comments. The metrics, similar to message framing, can be manipulated to the advantage of the message sender. Thus, another goal of the study is to examine how the framing of a message (i.e., message valence) and the level of support a message receives (i.e., bandwagon support) affect environmental communication effectiveness on social media.

Four online experiments were conducted. In the experiments, a series of mock social media campaign messages were created. Undergraduate college students were sampled in the experiments. Young adults are more likely to adopt a novel idea since they are still at an early stage of life with their worldview forming, and such a worldview formed in the early ages may serve as an anchor to guide their later life decisions [10]. A social media educational campaign about environmental issues that targets young audiences may have a longer-lasting effect on the audiences. As stated earlier, the purpose of the study is to examine how the source of information, support a social media message receives, and message valence affect audience perception. The research question is how source type, level of bandwagon support, and message valence affect audiences' behavioral intentions and perceived information credibility.

2. Literature Review

Three independent variables (IVs), bandwagon support, message valence, and source type (i.e., source credibility), have been examined since the factors are the keys to engaging audiences on social media. The dependent variables (DVs) are the perception of information credibility, intention to share a message, and intention to read the article associated with the message. The DVs have been examined as benchmarks to assess the efficacy of the tested communication strategies. When audiences/consumers consider a piece of information credible, the persons are more likely to be persuaded by the information [11] Moreover, if the goal of an environmental communication campaign is to educate the public, the information presented in the campaign needs to be credible. Furthermore, a person's intention to read more about a campaign message is an indicator of the person's degree of interest in the issue portrayed in the message [12]. Finally, a person's intention to share a message further indicates the person's level of interest in an issue [13].

The theoretical foundation of the current research has been constructed upon the literature on heuristic processing [14,15] Heuristics are created based on personal experience or knowledge, and information cues trigger the use of heuristics [15]. We, in general, have the tendency to use minimal cognitive effort to process information [16]. Heuristics are cognitive/judgmental shortcuts that accelerate the processing speed [14]. Thus, the current study focuses on examining how information cues, such as bandwagon support metrics or source types, affect information processing outcomes from a heuristic processing perspective.

Extant studies about environmental communication and green marketing have examined heuristic processing from the angles of green product labels. Specifically, the impact of the color of eco-labels [17], the source of labels [18], and the explicitly of labels [19] were examined as cues that prompted individuals to process information using heuristics, which in turn, affected behavioral intention and attitude. The existing literature has also examined how the overall image of a country (i.e., a heuristic) affected purchase intention, product attitude, and product quality evaluation [20,21]. Furthermore, a few other studies have focused on studying heuristics tied to a country's ecological image (i.e., COO ecological image) and its influence on consumer perception of a product [22,23].

2.1. The Perceived Bandwagon Support

Empirical evidence shows that people are easily influenced by others' opinions or behaviors [24,25]. Scholars have proposed a few constructs that are, in essence, depicting social influence in the digital realm. One of the constructs is the perceived bandwagon support [26]. The perceived bandwagon support represents an individual's perception of how much support (or disapproval) a digital entity receives from fellow users. For instance, a product review score reveals a product's popularity, and consumers, who have never bought the product, can utilize the review score to help them infer product quality and make purchase decisions.

2.2. The Impact of Message Framing

The main, introductory text of a social media post is a person's first contact with the issue portrayed in the post. The overall tone (i.e., valence) of the message is important. since it affects an individual's general impression of the perceived information [27]. Thus, another focus of the current research is to examine how the valence of a social media message affects audiences.

According to the negativity bias literature, the negatively framed message may be seen as more important in the eyes of audiences. The negativity bias is a psychological phenomenon that which negative events are regarded as more significant or more salient than positive ones [28,29]. The cause of the bias is either due to our loss-aversion mentality or the scarcity of the occurrence of negative events in comparison to positive ones [30,31]. Thus, it is reasonable to deduce that a social media post that discusses the damage or loss caused by an environmental issue may seem more astounding in the eyes of audiences than a post that discusses the same issue in a positive light (e.g., the benefits of environmental protection).

2.3. Source of Information

Celebrities have been employed by many marketers to improve the efficiency of brand-consumer communication especially when the brand or marketer is communicating with younger audiences [32]. Celebrity endorsement has been discussed by existing studies from various angles [33,34]. Some studies demonstrated the benefits of using celebrity spokesperson in marketing activities [7,8,35], while a recent study conducted by Olmedo et al. [9] cast serious doubt on the overall effectiveness of celebrity endorsers in promoting environmental causes.

Olmedo and colleagues analyzed 79 celebrity-involved environmental campaigns and 15 academic studies about the topic. Three key findings were summarized. First, most campaigns that utilized celebrity spokespersons were conducted in China. Second, few, if any, studies have examined how attributes of celebrity—a widely examined perspective in the marketing literature—affected green advertising effectiveness. Third, and most importantly, the study revealed that none of the campaign objectives were measurable. The lack of measurable objectives renders it impossible to determine whether the claimed campaign outcomes are a result of celebrity involvement. It is unclear how many, or if any, marketing agencies and environmental protection organizations have employed empirical research methods to evaluate the impact of celebrity involvement in a social media environmental communication campaign. Thus, the main goal of the current study

is to empirically ascertain if a celebrity, as the source of information, is more effective in disseminating environmental campaign messages than a regular source of environmental information such as the U.S. Environmental Protection Agency (EPA).

Source-related information reminds an individual to recall an experience, impression, or memory related to the source, and the individual associates the impression with their evaluation of the current encounter such as a tweet about climate change [14,36,37]. One of the impressions associated with the source is whether the source is credible. Source credibility is chosen as the conceptual foundation to differentiate the types of sources manipulated in the current research because the construct is likely to affect behavioral intention and believability of information [38].

3. Hypotheses and Research Methodology Overview

Social influence is a prominent factor that affects how individuals think and behave. A notable academic example to demonstrate the impact of social influence is the social conformity experiment conducted by Asch [39]. In the experiment, subjects were seen as influenced by others' opinions even when the opinion was inaccurate or incorrect. Scholars have followed Asch's footsteps in the next few decades and unearthed more evidence that corroborates the existence of social conformity and social influence in the digital age [15,40]. For instance, Metzger and colleagues [38] found that individuals, who routinely process information heuristically, rely on others to help them assess the validity or credibility of the information. Today, research findings suggest that social influence cues, such as the number of likes, shares, or comments, associated with a social media post are also considered indicators of the bandwagon support received by a post [41]. Extant research uncovers a positive correlation among bandwagon support indicators, perceived information credibility, and behavioral intention [38,42].

The bandwagon support construct has been manipulated as varying numbers of likes, shares, and comments in the current research. The perceived bandwagon support, which is a form of social influence, affects how individuals think and behave. Empirical evidence shows that people are easily influenced by others' opinions or behaviors, and a positive association between bandwagon support and one's perception of an entity was uncovered by researchers [24,26]. In other words, the more support an entity receives from the public, the more likely other individuals in a society would perceive the entity as appealing. Hence, the following hypotheses were proposed.

H1a. *The greater the bandwagon support received by a social media post, the more likely a person will read the article shared in the post.*

H1b. *The greater the bandwagon support, the more likely a person will share a social media post with others.*

H1c. *The greater the bandwagon support, the more likely a person will believe a social media post is credible.*

Social networks such as Twitter, Facebook, LinkedIn, Reddit, and Instagram all allow users to post texts or messages. One of the important factors that may affect user perception is the overall tone of a message. Specifically, the valence of a message determines the tone of the message [27]. Thus, the construct of message framing has been conceptualized and examined as the valence of social media posts in the current study. The reviewed literature on the negativity bias claims that negative events may seem more salient and impactful than positive ones [28,29]. Therefore, negatively framed messages may be more impactful than positively framed messages.

The construct of message valence discussed in this study resembles the loss and gain frames proposed in studies about message framing [43,44]. The gain-frame focuses on discussing the benefits or positive outcomes of performing an action or achieving a goal, while the loss-frame focuses on discussing the negative consequences of not performing an action or not achieving a goal [45]. The same message would influence an individual

differently if the message is framed differently [46]. In line with what has been reported in the negativity bias literature, empirical evidence suggests a stronger influence of the loss-frame on individuals [31,47]. Hence, the following hypotheses were proposed.

H2a. *Negatively framed social media messages may seem more credible than positively framed messages.*

H2b. *Negatively framed messages induce a stronger intention to read an article associated with a social media post than positively framed messages do.*

H2c. *Negatively framed messages induce a stronger intention to share a social media post than positively framed messages do.*

Extant research unearthed evidence to support the notion that the perceived credibility of the source affects audience perception. Li et al. [48] studied sponsored social media advertisements and found the perceived credibility of the source (i.e., different companies), along with bandwagon cues, significantly affected consumer attitudes and behavioral intentions. Edwards et al. [49] discovered that information cues, such as one's Klout scores (i.e., the level of social media influence), affected the perceived source credibility and message credibility. Some studies examined how the source credibility affected environmental communication effectiveness. Cai and colleagues [50] unearthed evidence that indicated a positive correlation between the perceived credibility of eco-label and the purchase intention of an eco-friendly product. Bickart and Ruth [51] discovered that eco-seals, an indicator of source credibility, interacted with brand familiarity and environmental concern in affecting purchase intention, brand attitude, and attitude toward an advertisement. The reviewed studies have examined information sources and their influence on individuals from various angles. However, the studies have overlooked celebrities, a more entertaining but less credible source than an environmental protection authority, and celebrities' impact on the effectiveness of environmental communication.

The name (or image) of a source cues individuals to recall a generalized impression possibly formed by past interactions with the source [42]. Such an impression is likely to be associated with the evaluation of information. Hence, the source credibility was manipulated by changing the names and images displayed in different experimental conditions. The reviewed literature suggests that information presented by a more credible source is more likely to be regarded in a positive way than information presented by a less credible source [38]. Hence, the following hypotheses were postulated based on the reviewed studies.

H3a. *The source credibility positively influences the perceived credibility of a social media message.*

H3b. *Audiences are more likely to read an article associated with a social media message posted by a high-credibility source than a low-credibility source.*

H3c. *Audiences are more likely to share a social media message posted by a high-credibility source than a low-credibility source.*

Empirical evidence suggests the existence of interaction effects among three independent variables (e.g., bandwagon support level, message framing, and source credibility) in various contexts [25,52]. For instance, it is likely that the influence of a negatively framed social media post will be amplified when it is coupled with a high level of bandwagon support because the public support of a negative (or positive) rhetoric would reinforce individuals' pre-existing beliefs [29,53].

Previous research studies have unearthed a significant interaction effect between bandwagon support metrics and negatively worded social media posts or product reviews [41,52]. Moreover, we may deduce based on existing studies [54] that the impact of message valence on individuals' perception of environmental issues may be stronger if the content is posted by a reliable source rather than a not-so-reliable source. Deng et al. [54] found that editorial reviews, product reviews written by experts, had a significant impact on the number of user-generated reviews and the sentiment (i.e., valence) of the reviews. The finding implicated that individuals tend to follow the opinion of a credible source, and

such a source can further alter the influence of review valence on individuals. In a similar vein, Wang et al. [25] conducted a meta-analysis of research studies about the bandwagon effect and found a significant interaction between source credibility and bandwagon support metrics on individuals' judgment of information credibility. Based on the empirical evidence, the following hypotheses were proposed.

H4. *The increase in bandwagon support amplifies message valence's influence on (a) perceived information credibility, (b) intention to read the article, and (c) intention to share the message.*

H5. *The increase in source credibility strengthens message valence's influence on (a) perceived information credibility, (b) intention to read the article, and (c) intention to share the message.*

H6. *The increase in bandwagon support strengthens information source's influence on (a) perceived information credibility, (b) intention to read the article, and (c) intention to share the message.*

Moreover, extant studies suggest that perceived information credibility affects behavioral intention either as a predictor [12] (or as a mediator [55,56]. Konig and Breves [12] unearthed a significant influence of perceived information credibility on individuals' intention to read and share information. Balaji and colleagues [55] discovered that message credibility was a significant mediator that affected one's intention to adopt a service and follow an influencer. Jaeger and Weber [56] found that message credibility mediated the influence of advertising message types on consumer intention to purchase organic food. The main focus of the current research is on the impact of information sources on audiences. The mediation effects that involve source type (i.e., source credibility), perceived information credibility, and behavioral intention were investigated. The following hypotheses were posited based on the findings of the reviewed research.

H7a. *Information credibility positively mediates the correlation between information source and intention to read the article associated with a social media post.*

H7b. *Information credibility positively mediates the correlation between information source and intention to share a social media post.*

Twitter has been chosen as the social platform to be examined in the current research. Among all social platforms, Twitter is considered an ideal venue for the dissemination of news, articles, or new ideas [57]. Most Twitter accounts are open for public views and many influential individuals, such as politicians and celebrities, are using the platform to communicate with their audiences. Twitter is a suitable platform to serve as a gateway for curious individuals to interact with various sources of information and discover scientific or educational articles about environmental issues. Findings unearthed by a research study about Twitter can be applied to explain how audiences may react to environmental communication campaign messages on other social platforms such as Facebook and Instagram. All research materials were submitted to the Institutional Review Board (IRB) of a midwestern university in the U.S. for review, and the IRB committee approved the research project on 21 October 2021 (approval number: IRB5105). Participants of all four studies were provided with informed consent forms at the beginning of the study, and they were awarded extra course credits for their participation.

Four online experiments have been conducted to examine the validity of the proposed hypotheses. The overall goal of the study was to investigate how the varying degrees of bandwagon support, message framing, and source credibility affect the intention to read the article, intention to share the message, and perceived information credibility. In other words, the study attempts to unearth the causal relationship between the proposed independent variables and dependent variables. Thus, the use of experiment as the research methodology is appropriate since the research method is designated to pinpoint the causal relationship among examined variables [58]. In the experiments, the bandwagon support levels were manipulated as the changing number of likes, retweets, and comments associated with mock tweets; the difference in message framing was manipulated as a change in the way of a tweet's wording (positive or negative); and the source credibility was manipulated by

changing the name and image of the account (celebrity or authority) that posted the mock tweet. Different combinations of factors (i.e., independent variables) and their influence on three dependent variables were examined in four experiments. The first study was a 2 (tweet framing valence: negative vs. positive) × 2 (bandwagon support: low vs. high) experiment. The second experiment was a 2 (tweet framing valence: negative vs. positive) × 2 (source types: celebrity vs. authority) experiment. The third study was a 2 (bandwagon support: low vs. high) × 2 (source types: celebrity vs. authority) experiment. The fourth study was a 2 (bandwagon support: low vs. high) × 2 (source types: celebrity vs. authority) × 2 (tweet framing valence: negative vs. positive) experiment. Statistical tests, such as ANCOVA, were conducted to verify the validity of experiment findings that are relevant to the hypotheses. The experiments sampled college students of a midwestern university in the United States. Specifics about the research methods were listed in detail in the method sections of Study 1, 2a, 2b, and 3.

4. Study 1

4.1. Method

A 2 (tweet framing valence: negative vs. positive) × 2 (bandwagon support: low vs. high) between-subjects experiment was conducted online. Undergraduate students of a midwestern university in the U.S. were recruited as study participants with the help of the Human Subject Pool System (SONA). Extra course credits were offered to student participants via SONA. SONA is a research participant management system that is widely used by many universities around the world. Students of certain courses can be registered in the system with the course instructors' approval. Researchers can post studies on the SONA system, students can participate in research projects via SONA, and instructors can use the system to assign extra course credits to students. An attention check question (i.e., Please select "sometimes" on this question) was placed in the questionnaire. Participants who did not pass the attention check and those who did not complete the survey were not included in the data analysis. The final sample size was 276. The sample had 125 males and 145 females.

A series of mock tweets (i.e., screenshot pictures of tweets) were created based on an actual tweet posted by the U.S. EPA. The tweet either described an environmental issue from a negative angle if we do not protect the environment (loss) or a positive angle if we protect the environment (gain). Moreover, the numbers of retweets (1 vs. 1100), likes (4 vs. 14,000), and comments (0 vs. 962) were manipulated since they are indicators of bandwagon support levels. The account name, profile picture, and linked article remained constant across four conditions. The tweet and the associated article discussed the issue of roadside air pollution. Note that all topics of the tweets used in the experiments were selected based on their significance defined or discussed by the EPA [59]. Please see Figure 1 for an example of stimuli.

Perceived credibility of information, intention to share the tweet, and intention to read the article were measured as the dependent variables. Items measuring behavioral intentions were adapted from Ajzen [60]. Items measuring information credibility were adapted from Tucker et al. [61]. All measurement items, including the ones for the control variables and manipulation checks, were measured on 7-point Likert or semantic differential scales. All scale items exhibited good reliability scores ($\alpha > 0.800$). Please see Table 1 for details of measurement items.

Green orientation (GO), a variable examined or controlled in many studies about environmental communication [62], was measured as a control variable with items adapted from Dunlap et al. [63]. GO denotes an individual's degree of empathy toward the planet and environment. A more green-oriented person cares more about the environment than a less green-oriented person. Manipulation check questions were utilized. The questions measured bandwagon support perception were adapted from Xu [64]. The question, "The tweet focused on discussing what would be gained/lost if . . .," was adapted from Kareklas et al. [65] to assess the manipulation of the tweet framing valence.

Figure 1. Sample stimuli used in Study 1.

Table 1. Measurement items and reliability scores.

	Study 1 (α)	Study 2a	Study 2b	Study 3
Intention to Share the Message I would consider sharing this tweet with others. It is possible that I would share this tweet with others. I intend to share this tweet with others.	0.934	934	948	0.925
Intention to Read the Article I would consider reading the article that was shared in the tweet. It is possible that I would read the article that was shared in the tweet. I intend to read the article that was shared in the tweet.	0.937	0.915	0.918	0.923
Perceived Information Credibility Believable/Unbelievable Trustworthy/Untrustworthy Convincing/Not convincing Credible/Not credible Reasonable/Unreasonable Honest/Dishonest Unquestionable/Questionable Authentic/Not authentic	0.931	0.930	0.944	0.955
Green Orientation We are approaching the limit of people the earth can support. Humans have the right to modify the natural environment to suit their needs. When humans interfere with nature it often produces disastrous consequences. Human ingenuity will ensure that we do NOT make the earth unlivable. Humans are severely abusing the environment. The earth has plenty of natural resources if we just learn how to develop them. Plants and animals have as much right as humans to exist. The balance of nature is strong enough to cope with the impacts of modern industrial nations. Despite our special abilities, humans are still subject to the laws of nature. The so-called "ecological crisis" facing humankind has been greatly exaggerated. The Earth is like a spaceship with very limited room and resources Humans were meant to rule over the rest of nature. The balance of nature is very delicate and easily upset.	0.809	0.804	0.787	0.768

Table 1. *Cont.*

	Study 1 (α)	Study 2a	Study 2b	Study 3
Humans will eventually learn enough about how nature works to be able to control it. If things continue on their present course, we will soon experience a major ecological catastrophe.				
Issue Involvement Important/unimportant Of no concern/of concern to me Irrelevant/relevant Means a lot to me/means nothing to me Useless/useful Valuable/worthless Trivial/fundamental Beneficial/not beneficial Matters to me/does not matter Uninterested/interested Significant/insignificant Vital/superfluous Boring/interesting Unexciting/exciting Appealing/unappealing Mundane/fascinating Essential/nonessential Undesirable/desirable Wanted/unwanted Not needed/needed	N/A	0.948	0.962	0.958
Source Credibility Believable/Unbelievable Trustworthy/Untrustworthy Convincing/Not convincing Credible/Not credible Reasonable/Unreasonable Honest/Dishonest Unquestionable/Questionable Authentic/Not authentic	N/A	0.953	0.948	0.933
Bandwagon Support How likely are other people to like this tweet? How likely is it that other people would think this tweet is valuable? How likely are other people to recommend the information presented in the tweet to their friends? How likely is it that other people would share the information presented in the tweet with their friends? How likely is it that other people would think of this tweet in a positive way?	0.859	N/A	0.812	0.864

Participants were greeted with a welcome message and the informed consent form at the beginning of the measurement instrument in Qualtrics. Then, they were prompted to answer a series of questions related to the control variable. Afterward, the participants were exposed to a message that explained the meaning of different symbols (e.g., retweet symbol, like symbol, etc.) associated with a tweet in case the participants were not familiar with Twitter. Then, Qualtrics would randomly assign participants to view one of the four tweets created for the experiment. After viewing the tweet, participants were informed to answer the rest of the questions listed in the questionnaire.

4.2. Results

The manipulation of the bandwagon support level was successful $t(272.064) = -7.540$, $p < 0.001$, and the manipulation of tweet valence was also successful $t(274) = -7.521$, $p < 0.001$. Two-way ANCOVA tests were performed to examine the proposed hypotheses. The intention to read the tweeted article was significantly predicted by the bandwagon support $F(1, 271) = 4.390$, $p = 0.037$, partial $\eta^2 = 0.016$. A post-hoc analysis with Bonferroni adjustment suggested that participants had a stronger intention to read the article when the tweet's bandwagon support metrics were high ($M = 4.792$, $SE = 0.132$) than when they were

low (M = 4.406, SE = 0.129). For the intention to retweet, the main effect of the bandwagon support $F(1, 271) = 4.957$, $p = 0.027$, partial $\eta^2 = 0.018$ was significant. The post-hoc test revealed that participants were more likely to retweet when the bandwagon support was high (M = 4.026, SE = 0.129) than when it was low (M = 3.623, SE = 0.126). Regarding the perceived information credibility, the influence of the bandwagon variable was significant $F(1, 271) = 7.841$, $p = 0.005$, partial $\eta^2 = 0.028$. Participants were more likely to trust the information when the bandwagon support was high (M = 5.514, SE = 0.082) than when it was low (M = 5.129, SE = 0.080). On the other hand, the interaction effect between the bandwagon support and tweet framing valence was significant $F(1, 271) = 6.032$, $p = 0.015$, partial $\eta^2 = 0.022$. The bandwagon support levels positively affected the valence of the tweet's impact on the perceived information credibility (see Figure 2). All other main effects and interaction effects were not significant (see Table 2).

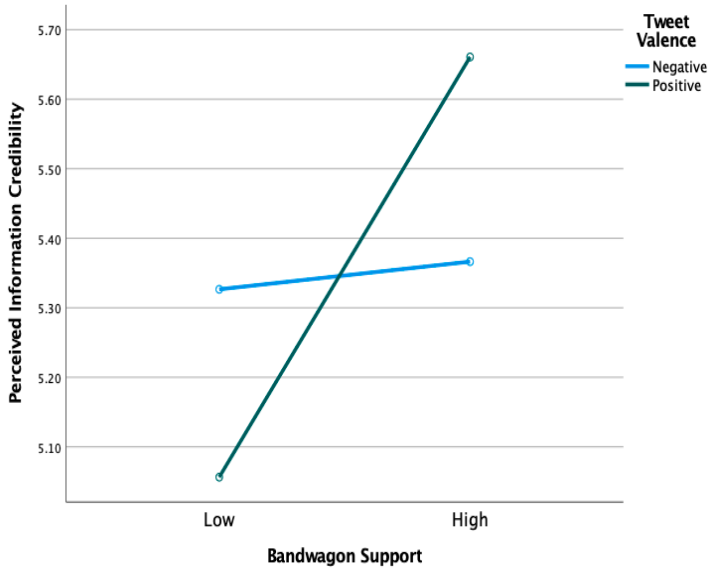

Figure 2. Interaction effect between tweet valence and bandwagon support on information credibility in Study 1.

Table 2. Two-way ANCOVA Results of Study 1.

	Intention to Read the Article	Intention to Share the Message	Perceived Credibility of Information
Tweet valence	2.782	0.997	0.011
Bandwagon support	4.390 *	4.957 *	7.841 **
Tweet valence × bandwagon	0.481	3.076	6.032 *
Green orientation	25.761 ***	21.601 ***	38.966 ***

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

5. Study 2a

To better discern the influence of information sources on the dependent variables, Study 2 was conducted in two steps: Study 2a and 2b. The first step, Study 2a, aims to isolate the influence of the source and tweet valence on the dependent variables. Moreover, issue involvement may affect how an individual processes information [16], yet the variable was overlooked in Study 1. Thus, a new variable, issue involvement level, was introduced and controlled in Study 2a to Study 3.

5.1. Method

A 2 (tweet framing valence: negative vs. positive) × 2 (source types: celebrity vs. authority) between-subjects experiment was conducted online. Undergraduate students from the

same university were sampled. Participants who did not pass the attention check and those who did not finish the survey were not included in the data analysis. The final sample size was 217. The sample had 109 males and 102 females.

The screenshot pictures of tweets used in Study 1 were edited and transformed into four new versions. The tweet framing valence was manipulated in the same manner as it was in Study 1. The source of the tweet was manipulated as either a celebrity, Leonardo DiCaprio, or an authority, U.S. EPA. Note that the difference between source types was conceptualized as the varying degree of source credibility in the current research. Leonardo DiCaprio was selected to represent the celebrity source because first, he is a well-known actor, and second, he is known for his environmental protection efforts. The topic of the tweet was water pollution, and the tweeted article was published by a global environmental organization named The Nature Conservancy (see Figure 3).

Figure 3. Sample stimuli used in Study 2a.

The dependent variables examined in Study 2a were the same as the ones examined in Study 1. In addition to the GO, issue involvement was controlled with measurement items adapted from Zaichkowsky [66]. Manipulation check questions that assessed source credibility were adapted from Tucker et al. [61]. All scale items were reliable ($\alpha > 0.800$). The same experimental procedures implemented in Study 1 were followed.

5.2. Results

The manipulation of source (i.e., source credibility) was successful $t(215) = -3.916$, $p < 0.001$. The EPA was considered a more credible source than Leonardo DiCaprio. The manipulation of tweet framing valence was successful as well $t(189.872) = -7.026$, $p < 0.001$. Two-way ANCOVA tests were performed. The only significant finding was for the perceived information credibility that the information source had a significant impact $F(1, 211) = 5.117$, $p = 0.025$, partial $\eta^2 = 0.024$ on the dependent variable. The post-hoc analysis with Bonferroni adjustment suggested that a tweet posted by the EPA ($M = 5.369$, $SE = 0.087$) was considered more credible than the one posted by Leonardo DiCaprio

(M = 5.085, SE = 0.090). Other main effects and interaction effects were non-significant (see Table 3).

Table 3. Two-way ANCOVA Results of Study 2a.

	Intention to Read the Article	Intention to Share the Message	Perceived Credibility of Information
Tweet valence	0.104	0.039	0.001
Source	0.424	0.105	5.117 *
Tweet valence × source	0.064	0.231	0.428
Green orientation	0.651	0.341	2.451
Issue involvement	134.641 ***	103.495 ***	60.683 ***

* $p < 0.05$, *** $p < 0.001$.

The mediation effects that involve the source (IV), information credibility (mediator), and behavioral intentions (DV) were examined in this study by using the PROCESS macro in SPSS v.28. A significant indirect effect of the source on the intention to share the tweet through the perceived information credibility (0.1597, 95% LLCI: 0.0153, ULCI: 0.3308) was unearthed. The source positively influenced the perceived information credibility (β = 0.317, p = 0.032), which subsequently influenced the intention to share the tweet (β = 0.504, $p < 0.001$). Another significant indirect effect of the source on the intention to read the article was uncovered (0.1137, 95% LLCI: 0.0068, ULCI: 0.2620). The source positively influenced the perceived information credibility (β = 0.317, p = 0.032), which subsequently influenced the intention to read the article (β = 0.359, $p < 0.001$). Please see Figures 4 and 5 for path coefficients and visual demonstrations of the models.

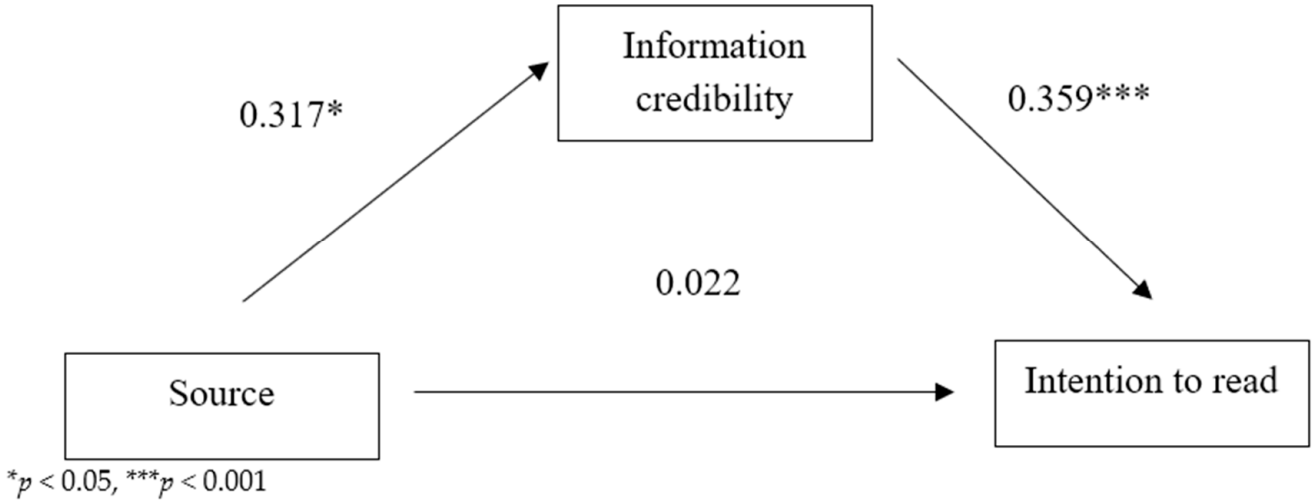

Figure 4. Mediation model with the intention to read the tweeted article as the DV in Study 2a.

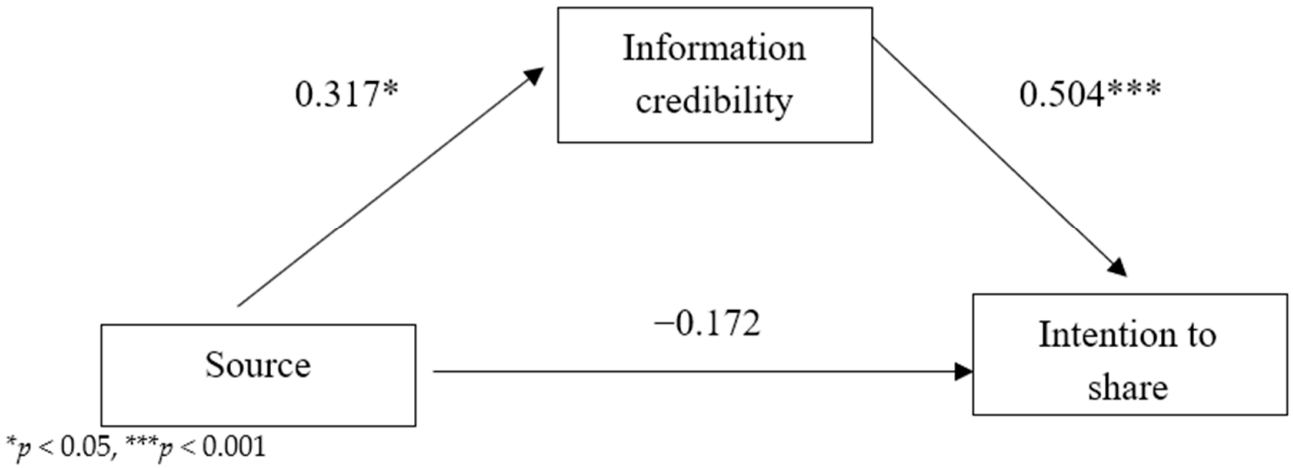

Figure 5. Mediation model with the intention to share the tweet as the DV in Study 2a.

6. Study 2b

The purpose of Study 2b was to isolate the influence of source types and bandwagon support on the dependent variables. Thus, tweet framing valence was held constant across conditions. The original wording of the adapted tweet was kept. The adapted tweet discussed climate change from a negative (loss) perspective. Negatively framed tweets were utilized in this study because the literature on negativity bias documented that a negative event, such as a negatively framed tweet, exerts a stronger psychological impact on individuals than a positive event does [28,29].

6.1. Method

A 2 (bandwagon support: low vs. high) × 2 (source types: celebrity vs. authority) between-subjects experiment was conducted online. The same sampling procedures and data inclusion criteria used in the previous studies were applied. The final sample size was 214. The sample contained 96 males and 112 females.

The bandwagon support and the source type were manipulated in the same fashion as they were in the previous studies. The article associated with the tweet was published by the L.A. Times (see Figure 6). The dependent and control variables were the same as what had been examined in the previous studies. All scale items were reliable ($\alpha > 0.787$).

6.2. Results

The manipulation of source (i.e., source credibility) was successful $t(212) = -2.590$, $p = 0.010$. However, the manipulation of bandwagon support was not successful. Thus, the results should be interpreted with caution. No significant main effect or interaction effect for any dependent variables was discovered (see Table 4). The mediation analysis revealed no significant mediation effect. Though the mediation models were non-significant, information credibility positively influenced the intention to share the tweet ($\beta = 0.724$, $p < 0.001$) and intention to read the article ($\beta = 0.540$, $p < 0.001$).

Table 4. Two-way ANCOVA Results of Study 2b.

	Intention to Read the Article	Intention to Share the Message	Perceived Credibility of Information
Bandwagon support	1.517	1.741	1.262
Source	0.402	3.522	2.083
Bandwagon × source	0.944	0.813	1.365
Green orientation	4.267 *	3.665	1.210
Issue involvement	76.969 ***	103.269 ***	158.769 ***

* $p < 0.05$, *** $p < 0.001$.

Figure 6. Sample stimuli used in Study 2b.

7. Study 3

The goal of Study 3 was to further improve the generalizability of findings and to address the limitations identified in the previous studies. A new topic, deforestation, was examined. Another celebrity, Taylor Swift, was manipulated as the celebrity source of information.

7.1. Method

A 2 (bandwagon support: low vs. high) × 2 (source types: celebrity vs. authority) × 2 (tweet framing valence: negative vs. positive) between-subjects experiment was conducted online. The same sampling procedures and data inclusion criteria used in the previous studies were applied. The final sample size was 292. The sample contained 130 males and 147 females.

The discrepancy between low and high bandwagon support conditions was manipulated in a more salient way in this study. Specifically, the numbers of retweets (1 vs. 515k), likes (4 vs. 1.1 million), and comments (0 vs. 38,000) were manipulated to reflect the drastic changes in terms of bandwagon support levels. The source of the tweet was either Taylor Swift or U.S. EPA. Taylor Swift was chosen to replace Leonardo DiCaprio for three reasons. First, participants in Study 1 listed Taylor Swift as one of their favorite celebrities. Second, Taylor Swift is female. Testing both male and female celebrities would help rule out potential confounders related to celebrity gender. Third, unlike Leonardo DiCaprio, Taylor Swift is not known for her environmental protection endeavors. Examining a celebrity source, who has little or no reputation for environmental protection, improves the explanatory power of research findings that will help future environmental activists and organizations make sound strategic decisions.

The publication source of the article was the EPA. The valence of the tweet was framed from a positive (gain) angle or a negative (loss) angle. The positively framed tweet discussed the benefits of protecting forests, while the negatively framed tweet warned about the detrimental outcomes of deforestation (see Figure 7). The dependent and control variables were the same as what had been examined in the previous studies. All scale items exhibited good reliability scores ($\alpha > 0.768$). The same experimental procedures used in the previous studies were followed.

Figure 7. Sample stimuli used in Study 3.

7.2. Results

The manipulations of bandwagon support $t(254) = -8.449$, $p < 0.001$, tweet framing valence $t(247.731) = -4.521$, $p < 0.001$, and source types $t(234.225) = -5.584$, $p < 0.001$ were successful. Three-way ANCOVA tests were performed to examine the proposed hypotheses. For the intention to read the tweeted article, the interaction effect between the bandwagon support and source was significant $F(1, 282) = 7.259$, $p = 0.007$, partial $\eta^2 = 0.025$. An increase in bandwagon support significantly improved a credible source's (i.e., the EPA) influence on participants' intention to read the tweeted article (see Figure 8).

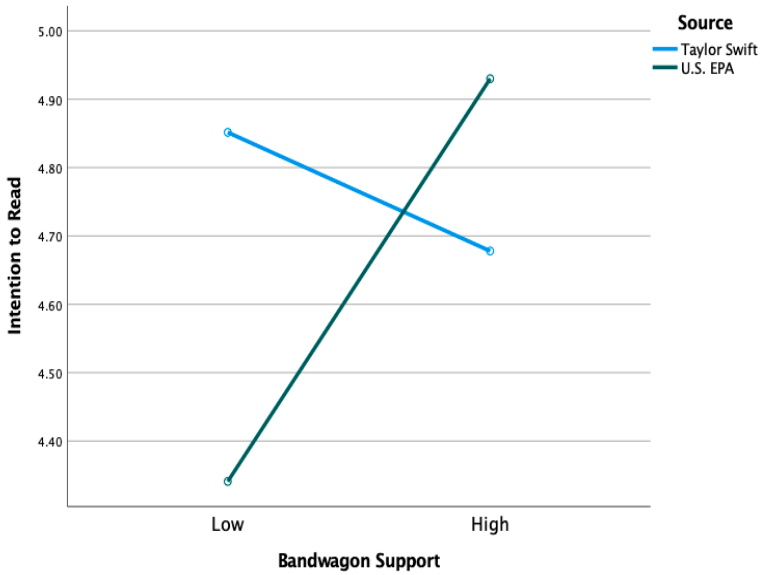

Figure 8. Interaction effect between source and bandwagon support on intention to read in Study 3.

For the intention to retweet, the bandwagon support significantly affected participants $F(1, 282) = 9.507$, $p = 0.002$, partial $\eta^2 = 0.033$. Participants had a stronger intention

to retweet a message that received more support (M = 4.557, SE = 0.110) than a tweet with little or no support (M = 4.079, SE = 0.108). Moreover, the tweet framing valence significantly influenced the intention to retweet $F(1, 282) = 4.725$, $p = 0.031$, partial $\eta^2 = 0.016$. Participants were more likely to retweet a negatively framed tweet (M = 4.486, SE = 0.109) than a positive one (M = 4.150, SE = 0.109).

For the perceived information credibility variable, the source $F(1, 282) = 11.566$, $p < 0.001$, partial $\eta^2 = 0.039$ significantly influenced participants. Participants regarded the tweet as more credible when it was posted by a credible source, the EPA (M = 5.831, SE = 0.071), than when it was posted by Taylor Swift (M = 5.492, SE = 0.070). Moreover, the interaction effect between source types and tweet framing valence was significant $F(1, 282) = 4.499$, $p = 0.035$, partial $\eta^2 = 0.016$. The tweet valence had a stronger influence on perceived information credibility when the source of the information was the EPA than when it was Taylor Swift. Participants considered the negatively framed tweet posted by the EPA significantly more credible than the positively framed tweet posted by the same source (see Figure 9). Other main effects and interaction effects were non-significant (see Table 5).

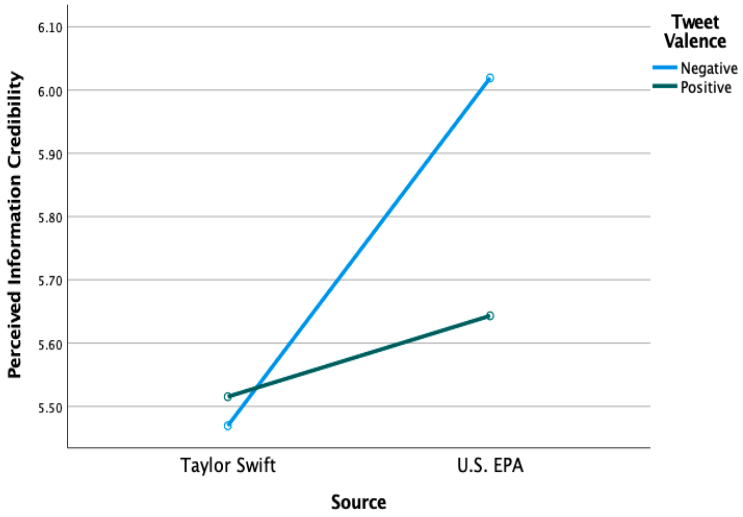

Figure 9. Interaction effect between source and tweet valence on information credibility in Study 3.

Table 5. Three-way ANCOVA Results of Study 3.

	Intention to Read the Article	Intention to Share the Message	Perceived Credibility of Information
Bandwagon support	2.126	9.507 **	1.388
Source	0.830	1.634	11.566 ***
Tweet valence	1.976	4.725 *	2.735
Bandwagon × source	7.259 **	0.334	0.179
Bandwagon × valence	0.798	0.226	0.230
Valence × source	0.722	0.607	4.499 *
Bandwagon × valence × source	0.544	0.114	0.041
Green orientation	0.001	0.540	0.006
Issue involvement	113.765 ***	108.683 ***	161.166 ***

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

The mediation effects that involve the source (IV), information credibility (mediator), and behavioral intentions (DVs) were examined. A significant indirect effect of the source on the intention to retweet through the perceived information credibility (0.1881, 95% LLCI: 0.0201, ULCI: 0.3639) was discovered. The source positively influenced the perceived information credibility ($\beta = 0.290$, $p = 0.029$), which in turn influenced the intention to share

the tweet ($\beta = 0.648$, $p < 0.001$). A significant indirect effect of the source on the intention to read the tweeted article was also revealed (0.1500, 95% LLCI: 0.0192, ULCI: 0.2907). The source positively influenced the perceived information credibility ($\beta = 0.290$, $p = 0.029$), which subsequently influenced the intention to read the tweeted article ($\beta = 0.517$, $p < 0.001$). Please see Figures 10 and 11 for path coefficients and visual demonstrations of the models.

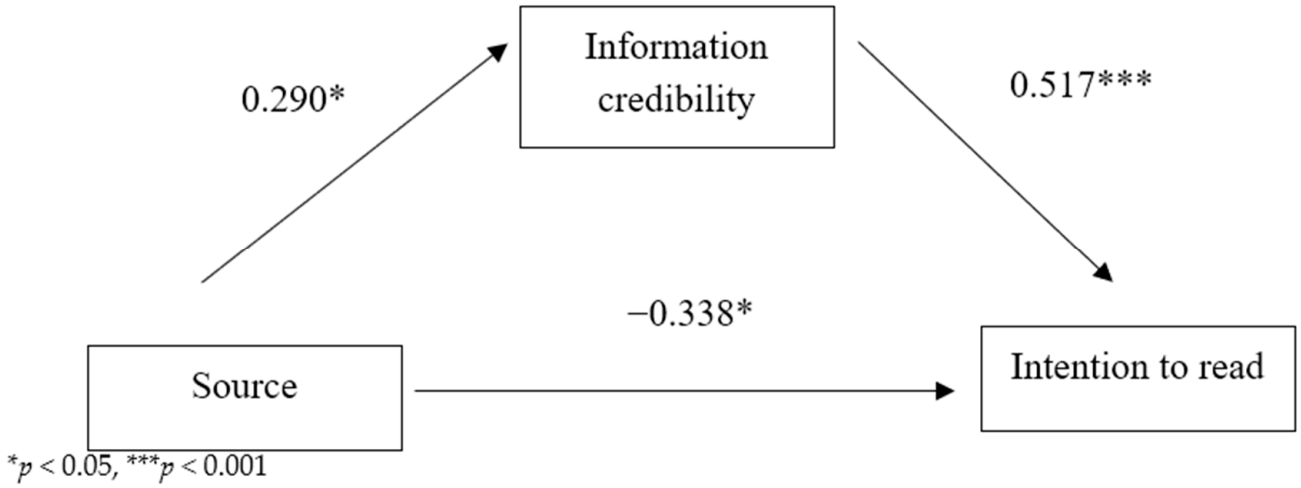

Figure 10. Mediation model with the intention to read the tweeted article as the DV in Study 3.

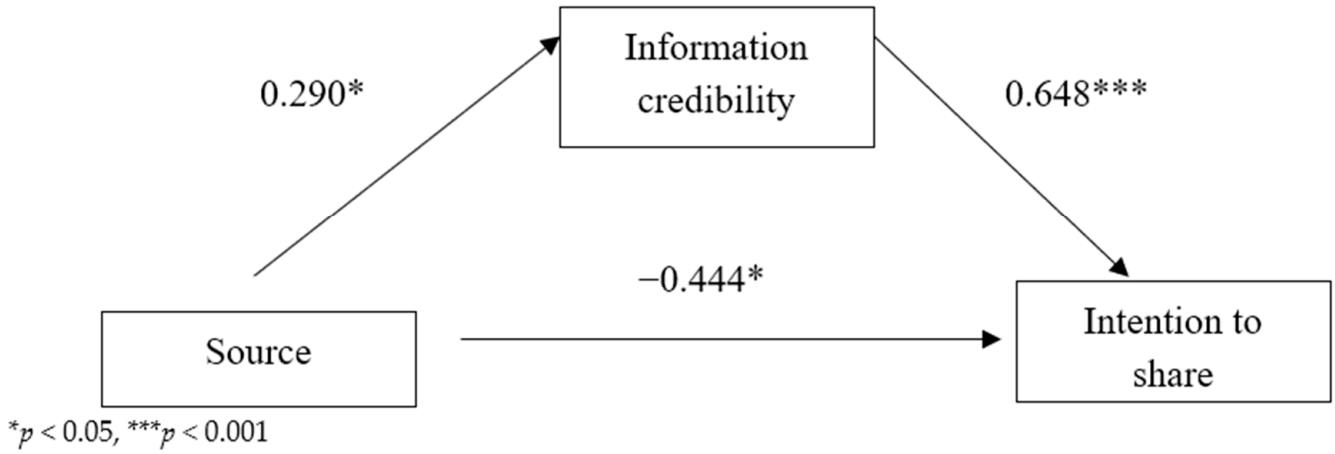

Figure 11. Mediation model with the intention to share the tweet as the DV in Study 3.

8. General Discussion

The findings of four studies suggested that H1a–c were partially supported. The bandwagon support positively affected the intention to retweet in Study 3, and the variable influenced behavioral intentions and perceived information credibility in Study 1. H2c was partially supported. Tweet valence affected the intention to retweet in Study 3. H3a was partially supported. Sources (i.e., source credibility) significantly affected the perceived information credibility in Study 2 and 3. H4a was partially supported by the data that the interaction between the bandwagon support and tweet valence significantly influenced the perceived information credibility in Study 1. H5a was partially supported since the source of information and message valence interacted and affected the perceived information credibility in Study 3. H6b was partially supported. The interaction between the bandwagon support and sources significantly affected the intention to read the tweeted article in Study 3. H7a and b were partially supported. The mediation effects were significant in Study 2a and 3. All other hypotheses were not supported. The validity of the hypotheses was verified by conducting the experiments and analyzing the data statistically.

In the experiment, the independent variables (i.e., bandwagon support, tweet valence, and source credibility) were manipulated in the form of mock tweets. The dependent variables, one's reactions after viewing the mock tweets, were measured in a questionnaire. ANCOVA and mediation analyses were conducted using SPSS v.28, and statistical analysis results have been reported in the result sections in Study 1, 2a, 2b, and 3. Regarding the extent to which each hypothesis was supported by the findings, they were discussed in the following paragraphs.

In Study 1, the source type remained constant, and the underlying connotation of source credibility remained at a high level across conditions. In such a scenario, audiences of a tweet were very attentive to the bandwagon cues and relied heavily on the cues to help them evaluate the information. On the other hand, the impact of the tweet framing valence on audiences was slightly weaker since the variable must interact with the bandwagon support metrics to have an impact on just a single variable, the perceived credibility of information, in Study 1.

In the second study (Study 2a), the source of information was allowed to vary, and hence, the level of source credibility differed across conditions. In this study, highly credible sources corresponded with a high level of perceived information credibility, confirming extant research findings about the positive correlation between source and information credibility [38,42]. More importantly, individuals' opinion on sharing the tweet or reading the tweeted article was not directly influenced by the type of information source, but rather indirectly via the mediation of perceived information credibility. The indirect impact of the source on behavioral intentions via the mediation of perceived information credibility would be confirmed by the findings of Study 3. The tweet valence variable, on the other hand, was not a significant predictor of any dependent variables in Study 2a. Topical differences (e.g., air pollution vs. water pollution), impacts exerted by other factors (e.g., source), and the absence of bandwagon cues may have impaired the influence of tweet valence in Study 2a.

In the third study (Study 2b), the bandwagon cues and sources were manipulated, and no significant result was found. The results of Study 2b should be interpreted with caution since the bandwagon support was not successfully manipulated. The results also suggest that different individuals have different standards regarding the degree of bandwagon support.

In the fourth study (Study 3), the bandwagon support variable significantly affected audiences' intentions to share the tweet and read the tweeted article. This, once again, acknowledges that when the manipulation is successful, the bandwagon effects are prevalent and significant [24,41]. Moreover, the significant interaction effect between bandwagon support levels and source types on the intention to read the article unearthed by Study 3 indicates that bandwagon cues can potentially elevate the image of a source and motivate an individual to think or behave in a certain manner. Such an enhancing effect is more notable when the source (e.g., U.S. EPA) is considered more credible by message receivers.

Study 3 also suggests that individuals are more likely to trust information posted by the EPA, an authority in environmental protection, than by celebrities. The findings offer a significant implication. That is, messages about environmental protection are considered specialized, scientific information that media audiences believe the information should be posted by a professional, knowledgeable source. A conceptual explanation for the phenomenon would be that the congruency between the source and the type of information affects how an individual evaluates the information. Celebrities are considered unsuitable to disseminate environmental messages by many because celebrities lack the expertise or knowledge in environmental protection. Moreover, the incongruency between celebrities' entertaining image and the serious nature of environmental communication may also render celebrities unsuitable sources of communicating environmental information. The source-information congruency can also explain the significant interaction effect between the bandwagon support and source on the intention to read the article. In Study 3, the congruency between the source (i.e., the EPA) and message (i.e., a tweet about deforestation)

gave audiences a "feeling right" type of impression. The increase in the level of bandwagon support further strengthened or confirmed the audience's perception that they were "right" about their judgment. Hence, a well-supported tweet posted by the EPA stimulated the strongest interest from audiences to read the tweeted article.

On the contrary, the incongruency between the source and the type of message is beneficial to environmental communication campaigns only when the communication goal is to reinforce message memorization [37]. The incongruency may provoke audiences of a message to encode the perceived information, and thus, audiences are more likely to recall the message later [36]. The use of celebrity spokespersons may be effective if the campaign goal is solely about message recall, but such a goal is too narrow in scope, and hence, the achievement of the goal provides limited value.

Finally, in Study 3, the tweet framing valence significantly influenced the intention to retweet (via the main effect) and perceived information credibility (via the interaction with the source). Audiences were more likely to share negatively framed tweets. In a similar vein, audiences had more trust in negatively framed tweets when the tweets were posted by a credible source of information. Thus, it seems that a negatively framed or loss-prevention type of message is more appealing to audiences. The findings of the study can corroborate the existence and prevalence of the negativity bias phenomenon in our lives [28,29,31]. However, such a conclusion should not be drawn so easily because Study 2a revealed no significant impact of tweet valence on any dependent variable, and in Study 1, the increase in the level of bandwagon support only improved the positive tweet's impact on perceived information credibility. Thus, it is likely that the presence of negativity bias in our lives may be context-dependent, and more studies are needed to further examine the phenomenon.

One may notice the discrepancy in results obtained from four studies. The discrepancy is likely caused by the varying contexts. The context referred to here is two-fold. The first aspect is the topic or issue portrayed in the tweet. The findings of the research should inform scholars about the importance of testing multiple themes of stimuli to improve the generalizability of findings and to ascertain if the findings are applicable in explaining a phenomenon under different scenarios. The second context is the characteristics of the participants sampled in the study. Though all participants were undergraduate students from the same university in the U.S., individual differences still exist. Such differences among individuals may render four studies to generate four different sets of results. Thus, once again, it is imperative for scholars to conduct multiple studies when examining a social or psychological phenomenon.

9. Conclusions

All in all, an entertaining or likable source of information, such as a celebrity, may not be more effective in helping a social media message induce a favorable reaction from audiences in the context of environmental communication. In contrast, a seemingly mundane but professional source, such as the U.S. EPA, may be more effective in achieving the goal of the campaign (e.g., higher article click-through rate, more shares or retweets, improvement in perception of message credibility). Hence, the most important implication offered by this study is that the practice of using celebrities as environmental campaign spokespersons on social media is questionable. Though celebrities have already been involved in many environmental protection campaigns either voluntarily or hired [9], the findings of this research study suggest that their involvement does not significantly improve the effectiveness of message delivery. Government agencies, environmental organizations, and activists across the world need to be cognizant when weighing the decision to involve a celebrity in their social media environmental campaigns. The findings of the study also illustrate the importance of making evidence-based, data-driven decisions in the implementation of environmental communication campaigns.

Another potential strategy that can be used by environmental advocates to promote environmental causes is to utilize the public voice or opinion to the advocates' advantage. Social media posts that receive a high level of support from the viewers, reflected as a large

number of likes, shares, or comments, are likely to earn audiences' attention and trust. In other words, audiences are more likely to read an article and retweet a message if the message receives many likes (or shares and comments). There are two approaches that environmental advocates or organizations can utilize to solicit support from the audiences. Most social platforms offer a function to users so they can financially sponsor a post. Thus, the first strategy environmental advocates or organizations can utilize is to promote a message through paid posts or sponsored posts. The other approach is to grow the support organically. Environmental organizations or advocates alike can design their social media messages in a way that is visually or semantically appealing to the audiences. Additionally, the organizations or advocates can collaborate with not just real-world celebrities but also social media influencers to grow the support. Social media influencers are believed to be more trustworthy sources of information than celebrity spokespersons. Hence, influencers might be more ideal sources of information than celebrities to help government agencies or environmental NGOs disseminate environmental messages. More future studies should be carried out to investigate the issue in more depth.

Currently, the U.S. EPA's social accounts (e.g., Twitter. Facebook, etc.) do not receive much attention from the public since both the impression and interaction metrics (e.g., comments) associated with the accounts are relatively low. However, findings of the current research suggest that the EPA is still regarded as a premier source of environmental information by many young audiences. Social media are where people, especially young people, consume information. Thus, organizations, such as the EPA, need to spend more time and resources on social media to promote various causes related to environmental protection.

The bandwagon support plays a significant role in affecting our opinion or perception either through direct impact or indirectly via interactions with other factors when the bandwagon support variable was successfully manipulated in the current experiments. The conclusion that can be drawn from such a finding is that humans are social beings and social influence, or peer pressure, affects many aspects of our lives [39]. The findings indicate that our opinions are easily influenced by others and our tendency to conform to the norms (i.e., how most people think or behave) is strong [40]. The findings also confirm the prevalence and importance of the bandwagon effects as discussed in the previous sections of the manuscript [41]. However, it should be noted that different individuals have different standards regarding what should be considered as "enough" support. When compared to Study 1, the same manipulation of the bandwagon support variable did not elicit a similar type of sentiment or response from participants in Study 2b. How much support associated with a social media post is considered enough support? This is the debate or question that might be raised by the findings of the experiments. An answer to this question is not easy to find since the ideal level of support that a social media post should receive may be context-dependent. The only way for environmental advocates, organizations, and marketers to find an answer is through trials.

10. Limitations

The first limitation of the research is that it sampled college-aged participants. Young adults are likely to be environmentally conscious. Future studies should sample individuals from all age groups and socioeconomic backgrounds to have more generalizable findings. Second, more types of individuals (e.g., influencers and scientists) and organizations (e.g., NGOs and news agencies) should be examined as information sources to acquire a better understanding of how different sources affect message receivers. Third, future studies should examine how different ways of information presentation (e.g., videos vs. texts) would influence the effectiveness of the cues tested in the current research. Following this line of logic, future researchers may wish to examine environmental communication campaign strategies that can be implemented on a video-centric social platform such as YouTube or TikTok. Fourth, this study did not differentiate fans and non-fans of a celebrity. The varying degree of fandom may be a factor that affects individuals' reactions to an environmental communication message posted by a celebrity. Future studies should

take fandom and fan culture into consideration when examining celebrities as sources of environmental protection messages.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available upon request.

Conflicts of Interest: The author declares no conflict of interest.

References

1. eMarketer. Share of Time Spent on Selected Social Media Platforms in the United States from 2019 to 2024. Statista. 2022. Available online: https://www-statista-com.proxy.wichita.edu/statistics/1318870/us-share-of-time-spent-on-social-media-platforms/ (accessed on 2 June 2023).
2. Pavelle, S.; Wilkinson, C. Into the digital wild: Utilizing Twitter, Instagram, YouTube, and Facebook for effective science and environmental communication. *Front. Commun.* **2020**, *5*, 575122. [CrossRef]
3. Burksiene, V.; Dvorak, J. E-Communication of ENGO's for Measurable Improvements for Sustainability. *Adm. Sci.* **2022**, *12*, 70. [CrossRef]
4. Di Tullio, P.; La Torre, M.; Rea, M.A. Social media for engaging and educating: From universities' sustainability reporting to dialogic communication. *Adm. Sci.* **2021**, *11*, 151. [CrossRef]
5. Jönsson, A.M.; Boström, M.; Dreyer, M.; Söderström, S. Risk communication and the role of the public: Towards inclusive environmental governance of the Baltic Sea? In *Environmental Governance of the Baltic Sea*; Gilek, M., Karlsson, M., Linke, S., Smolarz, K., Eds.; MARE Publication Series; Springer: Cham, Switzerland, 2016; Volume 10, pp. 205–227.
6. Cambridge Dictionary. Meaning of Strategy in English. 2013. Available online: https://dictionary.cambridge.org/us/dictionary/english/strategy (accessed on 2 October 2023).
7. Aw, E.C.X.; Labrecque, L.I. Celebrity endorsement in social media contexts: Understanding the role of parasocial interactions and the need to belong. *J. Consum. Mark.* **2020**, *37*, 895–908. [CrossRef]
8. Knoll, J.; Matthes, J. The effectiveness of celebrity endorsements: A meta-analysis. *J. Acad. Mark. Sci.* **2017**, *45*, 55–75. [CrossRef]
9. Olmedo, A.; Milner-Gulland, E.J.; Challender, D.W.; Cugnière, L.; Dao, H.T.T.; Nguyen, L.B.; Nuno, A.; Potier, E.; Ribadeneira, M.; Thomas-Walters, L.; et al. A scoping review of celebrity endorsement in environmental campaigns and evidence for its effectiveness. *Conserv. Sci. Pract.* **2020**, *2*, e261. [CrossRef]
10. Furnham, A.; Boo, H.C. A literature review of the anchoring effect. *J. Socio-Econ.* **2011**, *40*, 35–42. [CrossRef]
11. Hu, Y.; Sundar, S.S. Effects of online health sources on credibility and behavioral intentions. *Commun. Res.* **2010**, *37*, 105–132. [CrossRef]
12. König, L.; Breves, P. Providing health information via Twitter: Professional background and message style influence source trustworthiness, message credibility and behavioral intentions. *J. Sci. Commun.* **2021**, *20*, A04. [CrossRef]
13. Hennig-Thurau, T.; Gwinner, K.P.; Walsh, G.; Gremler, D.D. Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the internet? *J. Interact. Mark.* **2004**, *18*, 38–52. [CrossRef]
14. Chaiken, S. Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *J. Personal. Soc. Psychol.* **1980**, *39*, 752–756. [CrossRef]
15. Sundar, S.S. The MAIN model: A heuristic approach to understanding technology effects on credibility. In *The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning*; Metzger, M.J., Flanagin, A.J., Eds.; The MIT Press: Cambridge, MA, USA, 2008; pp. 73–100.
16. Chaiken, S.; Maheswaran, D. Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. *J. Personal. Soc. Psychol.* **1994**, *66*, 460–473. [CrossRef] [PubMed]
17. Pancer, E.; McShane, L.; Noseworthy, T.J. Isolated environmental cues and product efficacy penalties: The color green and eco-labels. *J. Bus. Ethics* **2017**, *143*, 159–177. [CrossRef]
18. Atkinson, L.; Rosenthal, S. Signaling the green sell: The influence of eco-label source, argument specificity, and product involvement on consumer trust. *J. Advert.* **2014**, *43*, 33–45. [CrossRef]
19. Usrey, B.; Palihawadana, D.; Saridakis, C.; Theotokis, A. How downplaying product greenness affects performance evaluations: Examining the effects of implicit and explicit green signals in advertising. *J. Advert.* **2020**, *49*, 125–140. [CrossRef]
20. Demirbag, M.; Sahadev, S.; Mellahi, K. Country image and consumer preference for emerging economy products: The moderating role of consumer materialism. *Int. Mark. Rev.* **2010**, *27*, 141–163. [CrossRef]
21. Kabadayi, S.; Lerman, D. Made in China but sold at FAO Schwarz: Country-of-origin effect and trusting beliefs. *Int. Mark. Rev.* **2011**, *28*, 102–126. [CrossRef]

22. Chan, R.Y. The effectiveness of environmental advertising: The role of claim type and the source country green image. *Int. J. Advert.* **2000**, *19*, 349–375. [CrossRef]
23. Dekhili, S.; Achabou, M.A. The influence of the country-of-origin ecological image on ecolabelled product evaluation: An experimental approach to the case of the European ecolabel. *J. Bus. Ethics* **2015**, *131*, 89–106. [CrossRef]
24. Lee, S.; Atkinson, L.; Sung, Y.H. Online bandwagon effects: Quantitative versus qualitative cues in online comments sections. *New Media Soc.* **2020**, *24*, 580–599. [CrossRef]
25. Wang, S.; Chu, T.H.; Huang, G. Do Bandwagon Cues Affect Credibility Perceptions? A Meta-Analysis of the Experimental Evidence. *Commun. Res.* **2023**, *50*, 720–744. [CrossRef]
26. Waddell, T.F. What does the crowd think? How online comments and popularity metrics affect news credibility and issue importance. *New Media Soc.* **2018**, *20*, 3068–3083. [CrossRef]
27. Bolls, P.D.; Lang, A.; Potter, R.F. The effects of message valence and listener arousal on attention, memory, and facial muscular responses to radio advertisements. *Commun. Res.* **2001**, *28*, 627–651. [CrossRef]
28. Ito, T.A.; Larsen, J.T.; Smith, N.K.; Cacioppo, J.T. Negative information weighs more heavily on the brain: The negativity bias in evaluative categorizations. *J. Personal. Soc. Psychol.* **1998**, *75*, 887–900. [CrossRef]
29. Rozin, P.; Royzman, E.B. Negativity bias, negativity dominance, and contagion. *Personal. Soc. Psychol. Rev.* **2001**, *5*, 296–320. [CrossRef]
30. Lewicka, M.; Czapinski, J.; Peeters, G. Positive-negative asymmetry or when the heart needs a reason. *Eur. J. Soc. Psychol.* **1992**, *22*, 425–434. [CrossRef]
31. Tversky, A.; Kahneman, D. Loss aversion in riskless choice: A reference-dependent model. *Q. J. Econ.* **1991**, *106*, 1039–1061. [CrossRef]
32. Chen, H. College-aged young consumers' perceptions of social media marketing: The story of Instagram. *J. Curr. Issues Res. Advert.* **2018**, *39*, 22–36. [CrossRef]
33. Bergkvist, L.; Zhou, K.Q. Celebrity endorsements: A literature review and research agenda. *Int. J. Advert.* **2016**, *35*, 642–663. [CrossRef]
34. Wang, S.; Liu, M.T. Celebrity endorsement in marketing from 1960 to 2021: A bibliometric review and future agenda. *Asia Pac. J. Mark. Logist.* **2023**, *35*, 849–873. [CrossRef]
35. Li, M.; Li, J.; Yasin, M.A.I.; Hashim, N.B.; Ang, L.H.; Bidin, R. Impact of celebrity-endorsed environmental advertisements on green economy development. *Technol. Forecast. Soc. Change* **2022**, *184*, 121979. [CrossRef]
36. Lang, A. The limited capacity model of mediated message processing. *J. Commun.* **2000**, *50*, 46–70. [CrossRef]
37. Stangor, C.; McMillan, D. Memory for expectancy-congruent and expectancy-incongruent information: A review of the social and social developmental literatures. *Psychol. Bull.* **1992**, *111*, 42–61. [CrossRef]
38. Metzger, M.J.; Flanagin, A.J.; Madders, R. Social and heuristic approach to credibility evaluation online. *J. Commun.* **2010**, *60*, 413–439. [CrossRef]
39. Asch, S.E. Studies of independence and conformity: I. A minority of one against a unanimous majority. *Psychol. Monogr. Gen. Appl.* **1956**, *70*, 1–70. [CrossRef]
40. Cialdini, R.B.; Goldstein, N.J. Social influence: Compliance and conformity. *Annu. Rev. Psychol.* **2004**, *55*, 591–621. [CrossRef] [PubMed]
41. Waddell, T.F.; Sundar, S.S. #thisshowsucks! The overpowering influence of negative social media comments on television viewers. *J. Broadcast. Electron. Media* **2017**, *61*, 393–409.
42. Metzger, M.J.; Flanagin, A.J. Credibility and trust of information in online environments: The use of cognitive heuristics. *J. Pragmat.* **2013**, *59*, 210–220. [CrossRef]
43. Meyers-Levy, J.; Maheswaran, D. Exploring message framing outcomes when systematic, heuristic, or both types of processing occur. *J. Consum. Psychol.* **2004**, *14*, 159–167.
44. Cesario, J.; Grant, H.; Higgins, E.T. Regulatory fit and persuasion: Transfer from "feeling right". *J. Personal. Soc. Psychol.* **2004**, *86*, 388–404. [CrossRef]
45. Levin, I.P.; Schneider, S.L.; Gaeth, G.J. All frames are not created equal: A typology and critical analysis of framing effects. *Organ. Behav. Hum. Decis. Process.* **1998**, *76*, 149–188. [CrossRef] [PubMed]
46. Chang, H.; Zhang, L.; Xie, G.X. Message framing in green advertising: The effect of construal level and consumer environmental concern. *Int. J. Advert.* **2015**, *34*, 158–176. [CrossRef]
47. Meyerowitz, B.E.; Chaiken, S. The effect of message framing on breast self-examination attitudes, intentions, and behavior. *J. Personal. Soc. Psychol.* **1987**, *52*, 500–510. [CrossRef] [PubMed]
48. Li, R.; Vafeiadis, M.; Xiao, A.; Yang, G. The role of corporate credibility and bandwagon cues in sponsored social media advertising. *Corp. Commun. Int. J.* **2020**, *25*, 495–513. [CrossRef]
49. Edwards, C.; Spence, P.R.; Gentile, C.J.; Edwards, A.; Edwards, A. How much Klout do you have... A test of system generated cues on source credibility. *Comput. Hum. Behav.* **2013**, *29*, A12–A16. [CrossRef]
50. Cai, Z.; Xie, Y.; Aguilar, F.X. Eco-label credibility and retailer effects on green product purchasing intentions. *For. Policy Econ.* **2017**, *80*, 200–208. [CrossRef]
51. Bickart, B.A.; Ruth, J.A. Green eco-seals and advertising persuasion. In *Green Advertising and the Reluctant Consumer*; Routledge: London, UK, 2016; pp. 44–60.

52. Hong, S.; Pittman, M. Ewom anatomy of online product reviews: Interaction effects of review number, valence, and star ratings on perceived credibility. *Int. J. Advert.* **2020**, *39*, 892–920. [CrossRef]
53. Klayman, J. Varieties of confirmation bias. *Psychol. Learn. Motiv.* **1995**, *32*, 385–418.
54. Deng, Y.; Zheng, J.; Khern-am-nuai, W.; Kannan, K. More than the Quantity: The Value of Editorial Reviews for a User-Generated Content Platform. *Manag. Sci.* **2022**, *68*, 6865–6888. [CrossRef]
55. Balaji, M.S.; Jiang, Y.; Jha, S. Nanoinfluencer marketing: How message features affect credibility and behavioral intentions. *J. Bus. Res.* **2021**, *136*, 293–304. [CrossRef]
56. Jaeger, A.K.; Weber, A. Can you believe it? The effects of benefit type versus construal level on advertisement credibility and purchase intention for organic food. *J. Clean. Prod.* **2020**, *257*, 120543. [CrossRef]
57. Pew Research Center. News on Twitter: Consumed by Most Users and Trusted by Many. 2021. Available online: https://www.pewresearch.org/journalism/2021/11/15/news-on-twitter-consumed-by-most-users-and-trusted-by-many/ (accessed on 1 October 2022).
58. Wickens, T.D.; Keppel, G. *Design and Analysis: A Researcher's Handbook*; Pearson Prentice-Hall: Upper Saddle River, NJ, USA, 2004.
59. EPA. Environmental Topics. 2022. Available online: https://www.epa.gov/environmental-topics (accessed on 1 January 2022).
60. Ajzen, I. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [CrossRef]
61. Tucker, E.M.; Rifon, N.J.; Lee, E.M.; Reece, B.B. Consumer receptivity to green ads: A test of green claim types and the role of individual consumer characteristics for green ad response. *J. Advert.* **2012**, *41*, 9–23. [CrossRef]
62. Papadas, K.K.; Avlonitis, G.J.; Carrigan, M. Green marketing orientation: Conceptualization, scale development and validation. *J. Bus. Res.* **2017**, *80*, 236–246. [CrossRef]
63. Dunlap, R.E.; VanLiere, K.D.; Mertig, A.G.; Jones, R.E. Measuring endorsement of the New Ecological Paradigm: A revised NEP scale. *J. Soc. Issues* **2000**, *56*, 425–442. [CrossRef]
64. Xu, Q. Social recommendation, source credibility and recency: Effects of news cues in a social bookmarking website. *J. Mass Commun. Q.* **2013**, *90*, 757–775. [CrossRef]
65. Kareklas, I.; Carlson, J.R.; Muehling, D.D. The role of regulatory focus and self-view in "green" advertising message framing. *J. Advert.* **2012**, *41*, 25–39. [CrossRef]
66. Zaichkowsky, J.L. Measuring the involvement construct. *J. Consum. Res.* **1985**, *12*, 341–352. [CrossRef]