

Applying Signaling Theory to Examine Credibility and Impression Management on Social Media

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Abstract

This study adapts and extends signaling theory to examine perceptions of credibility, gender, homophily, and impression management on social media. Specifically, the influence of different signal types – conventional, assessment, and strategic signals. A 2x3 experimental design was conducted to examine the effect of source gender and signal type on receiver perceptions of source and message credibility, homophily, and impressions of the source. Findings confirm that different signal types affect the perception of message and source credibility on social media. Concepts of gender and homophily were not impacted by signal types in this research. With the increase of image-oriented social media such as Instagram, these results demonstrate the sender's role in the person perception process. The role of signaling theory for strategic communication practices is addressed, and future theoretical directions are considered.

Keywords: signaling theory, social media, credibility, homophily, impression management

Introduction

A robust area of inquiry in the computer-mediated communication (CMC) literature is examining the medium's influence on impression management. This includes, but is not limited to, the rate at which impressions are formed (Walther, 1993), similarity to offline impressions (Jacobson, 1999), and authenticity of online self-presentation (Donath, 1999). Impression management represents conscious or unconscious actions to influence the perception of oneself, others, objects, or events. Organizations or individuals conduct impression management by controlling information used to form judgments in situational or social contexts (Sanaria, 2016). While areas of impression management about message characteristic manipulation have been explored, the expedited growth of CMC dictates further examination. Early CMC literature focused primarily on text-based communication, but contemporary digital platforms are characterized by multimodal content, heightened interactivity, and socialized feedback. With the proliferation of user-generated content (UGC), social media users are assuming a more active role online and managing their impressions through it. Active content selection has demonstrated a direct influence on the decision-making of others. The affordances of CMC provide users with increased control over message construction compared to previous CMC capabilities. Thus, there is a need to examine which strategies senders engage in on social media to influence impressions formed by receivers, in this case, social media followers, social network members, etc.

Social media scholars who study person perception and sender attributes, such as credibility, often favor warranting theory and the influence of third-party verification (Walther et al., 2009; Westerman et al., 2012). This approach, although illuminating, is somewhat limiting. Warranting can extend to "any cue that authenticates or legitimizes an online self-presentation" (DeAndrea, 2014). Therefore, alternative theoretical considerations that address the sender's control over message construction are necessary to propel our understanding of CMC processes. The present study focuses on exploring such a theoretical perspective (i.e., signaling theory) to examine sender influences on receiver impressions on social media.

Donath (2007a) adapted signaling theory from economics and biology to posit that people rely on signals or "perceivable features and actions that indicate the presence of hidden qualities" (p. 233). At its core, signaling theory addresses what keeps communication honest (Donath, 2007b; Smith & Harper, 2003). This theory in communication research is growing (Lampe et al., 2007; Lin, 2016; Marwick & Boyd, 2011; Papacharissi, 2009), but further examination

is necessary. Features of signaling theory can provide a new perspective on online person perception and impression management. This study contributes to signaling theory research by utilizing the three identified signal types – conventional, assessment, and strategic, in a multimodal context. These signal types demonstrate one way that users select information that can impact impressions formed by others. We apply this feature of signaling theory to examine the person perception process, specifically perceptions of credibility and homophily on social media. This study adds to CMC literature on person perception and impression management and enhances the merit of signaling theory as a theoretical basis for examining CMC on social media.

Literature Review

Self-Presentation, Impression Management, and Signaling Goals

Impression management is the action of controlling information to influence an audience. When information is controlled by an individual to influence an audience about themselves, this represents self-presentation (Schlenker, 1980). Early work on self-presentation discusses the individual strategies undertaken to provide information to "convey an impression to others which is in their interests to convey" (Goffman, 1959, p. 4). These interests can be altruistic, supportive, or self-serving (Schlenker, 1980). These efforts are categorized as information that is given (i.e., directly communicated to the receiver) and information that is given off (i.e., unintentional communication cues) (Goffman, 1959).

How information is presented to the receiver in online interactions is an important determinant of impression management and relationship formation (Cunningham, 2013; Gibbs et al., 2011). Earlier work acknowledges an insufficient assessment of user exploitation, specifically related to interface attributes used to enhance impressions (Walther, 2007). While some research has been conducted, further examination is necessary due to CMC advancements. Online communication features allow better control and a more thoughtful selection of information than face-to-face communication (Walther, 1996). These features continue to grow, enhancing selected self-presentation capabilities. Online multimodal capabilities, like those on image-oriented platforms, increase communication cues, which aid in discerning unobservable or "hidden" qualities of individuals. Signaling theory addresses this process of revealing hidden qualities by examining sender actions whereby the receiver constructs meaning (Donath, 2007a). These actions, referred to as signals, are used to communicate accurate and honest representations of the senders' unobservable qualities. This differs from work like the hyperpersonal model, where self-selected content can be used to establish a heightened, idealized

version of senders. Signals possess many factors, one being signal types, which can be used to better refine self-selection of content. The impressions formed based on signals represent the senders' actual traits and capabilities. When applied to digital scholarship, these signals assist in keeping communication honest and beneficial for receivers. The present study addresses the effect of multimodal stimuli (e.g., text and images) through channel interface capability on receivers' perceptions of a sender's unobservable quality (e.g., credibility, status, etc.)

Trust and Credibility on Social Media

Social media can create wavering levels of trust and credibility attributed towards the source. While online self-presentations can be perceived as genuine, the ease with which information in mediated communication can be exaggerated and even fabricated, means that individuals tend to be wary of what they are viewing online (Caspi & Gorsky, 2006; Donath, 1999). This issue of trust is further complicated in social media since there are no traditional media gatekeepers. UGC can be posted/shared anywhere and by anyone with an Internet connection. Furthermore, as social media has proliferated, the line between UGC and promoted content has become less obvious, creating further issues of trust online. With the seamless design of social media content, it is difficult to discern where a friend's post ends and an organization's advertisement begins (Metzger et al., 2003). All these considerations can lead receivers to question the authenticity of content shared on social media.

Source credibility refers to the judgments made by a receiver concerning the believability of a communicator (O'Keefe, 1990). Various factors can influence these judgments, including homophily (Ismagilova et al., 2020) and gender (Dedeoglu, 2019). Credibility has traditionally been measured by assessing the trustworthiness and expertise of the source to determine attitude and information acceptance (Pornpitakpan, 2004). Expertise refers to the sender's ability or knowledge regarding a topic, whereas trustworthiness refers to the motivations of the individual to speak honestly about the topic (Hovland et al., 1953). Message credibility supports the goals of source credibility, but often looks at a series of relevant characteristics such as content, presentation, and modality of the message (Huerta & Ryan, 2003). Online credibility can be affected by factors of cognitive authority determined partly by trustworthiness (Fogg, 2003; Rieh & Belkin, 2000; Wathen & Burkell, 2002) or influenced by well-designed interfaces (Chang et al., 2021; Oyibo et al., 2018). This study uses an area of signaling theory – signal types – to examine what actions the sender takes directly that can influence receiver perceptions. Furthermore, we examine how

sender control (i.e., content considerations) aids in warranting their content in mediated environments.

Legitimizing Information Through Signaling Theory

Signaling theory addresses different signal factors used to reduce information asymmetry and affect decision-making. Clear and effective signal selection ensures the accurate presentation of unobservable qualities (Donath, 2007a; Donath, 2007b; Smith & Harper, 2003). Initially applied to the biological sciences (Zahavi, 1975) and economics (Spence, 1978), signaling theory was adapted into CMC research by Donath (2007). The theory posits different signals can provide different levels of reliability regarding traits that are not directly observable, thereby legitimizing information. This process of legitimizing information observed online is known as *warranting* (Walther & Parks, 2002). The process of warranting is frequently associated with warranting theory (Walther & Parks, 2002), but it is important to note that other types of warranting exist. Flanagin and Metzger (2013) noted UGC can act as a "warrant or signal that the information is valid and reliable" (p. 1628). Warrants extend to any "cue that authenticates or legitimizes an online self-presentation" (DeAndrea, 2014, p. 187). Signaling theory addresses legitimization online by using signals that keep communication honest (Donath, 2007a).

Signals can allow recipients to evaluate hidden qualities of platonic, romantic, or strategic intent of individuals to help guarantee honesty (Bacharach & Gambetta, 2001). The degree to which a signal is reliable is determined by the signals' expression of different attributes. The present study addresses the roles of signal types and their ability to communicate a quality based on the effort necessary by the sender to convey them. Individuals who utilize signals that require more effort present higher warranting value. Increased effort is harder to fake and considered more trustworthy (DeAndrea, 2014). Receivers can evaluate different signal types to ascertain whether someone is honestly communicating about themselves. Signaling theory accomplishes this by having individuals compare the difficulty to produce or review a signal to the "costs." For reliable communication to occur, it must be beneficial for the sender to provide an honest signal and detrimental or *costly* to produce a false signal (Donath, 2007b). Costs are represented by either the difficulty, effort, or consequence to produce the signal. In signaling theory, receivers benefit by correctly identifying information through attention and interpretation of signals. Senders benefit if they earn the desired impression, perception, or behavioral action based on the signals they select to communicate a quality (Donath, 2007b). These efforts can create a mutually beneficial relationship between sender and receiver (Katz & Lai, 2014) or a competitive relationship

The utilization of signals by senders acts as a warranting value to establish communication legitimacy online. Online, these signals are presented through content (i.e., social media posts, blogs, websites, etc.) One way to present different signals is through different signal types. Delving into the manipulation of signal types independently on social media is merited as this has not been empirically tested in CMC scholarship. This examination will provide understanding into content features that help legitimize senders without the validation from external sources. This insight is important to UGC considerations in determining what affords senders greater control of honest self-presentation and subsequent impression management.

Types of Signals

Signals refer to the perceivable indicators designed to deliberately communicate unobservable qualities (Donath, 2007b). In signaling theory, signal types address the characterization of signal presentation features and are categorized as three types – conventional, assessment, and strategic (DeAndrea, 2014). Conventional signals are communicative displays that infer an individual's attribute or ability. Conventional signals do not inherently present the quality being indicated in the communicative display, making them the easiest to exhibit and most common online signaling type (Donath, 2007a). Examples of conventional signals can be information posted to a user's profile (e.g., age, gender, hobbies, interests, and occupation). Conventional signals on social media are easily editable and rely on societal forces to maintain reliability, thus inherently making these signals less trustworthy by receivers (Donath, 2007a).

Assessment or index signals are communicative displays that directly depict an individual's attribute or ability (Donath, 2007a). When visibility is necessary for senders to indicate the possession of a quality, the signal becomes more challenging to create or edit. For example, weaving a soccer ball through the legs of other players would signal a player's coordination and sports proficiency. Buying a new vehicle signals financial success. To qualify as an assessment signal online, a particular attribute needs to be explicitly present in the content depicted. For example, if the attribute in question is an individual's physical skill (e.g., swimming), then an image of a swimmer mid-stroke would be necessary for digital content to be classified as an assessment signal. While this action can be fabricated through digital technology, the benefit of deceptively producing this signal would need to outweigh the cost. Assessment signals work best when the content in question demonstrates the

attribute in action. An image of a swimmer swimming would be more difficult to fabricate than an individual standing by the pool. In this example, the latter would constitute a conventional signal, and the former would be an assessment signal.

Strategic signals, also called “costly” or “handicap” signals, are considered a subset of assessment signals and possess a unique distinction (Donath, 2007a). A strategic signal is an exaggerated communication display depicting an individual’s attribute or ability. This exaggerated or expanded presentation conveys an unobserved quality and is more difficult, time consuming, or resource expending than an assessment signal. While it can create an enhanced presentation, this exaggeration does not change the signal’s inherent purpose. Strategic signals do not intend to idealize but rather reaffirm the quality or capability of the signaler at an enhanced level. This differs from theories like the hyperpersonal model, where self-selected content may create an idealized version, sometimes limiting or hiding aspects of an individual that are less desirable. Furthermore, the hyperpersonal model does not dictate the form in which information is presented; it only addresses what is selected to communicate about an individual. Strategic signals do not hide the less desirable. Instead, they choose to highlight qualities at an increased cost to themselves. For example, weaving a soccer ball through someone’s legs demonstrates soccer proficiency (i.e., assessment signal); performing specialized soccer plays also demonstrates ability but is a more “costly” action, representing a strategic signal. If this were the hyperpersonal model, someone could list “soccer MVP” on a profile (i.e., conventional), post a photo of themselves juggling a soccer ball (i.e., assessment), or show a video clip scoring a difficult game winning goal via headbutt (i.e., strategic). Each of these are unique presentations in signaling theory, but in the hyperpersonal model all items could be used to create the impression of a soccer star.

We posit that on social media, strategic signals can be presented through content choices relevant to the quality exhibited. These content choices are undertaken to gain trust from their audience, which could enhance an individual’s online following. Individuals attempting or achieving influencer status often engage in communicative displays to gain recognition from tagged brands or their social media followers to exaggerate qualities they possess. Utilizing a strategic signal could strengthen perceptions of credibility and trust by the receiver.

Literature does not explicitly express a hierarchy between assessment and strategic signals and their subsequent effect on perceptions (Connelly et al., 2011). While strategic signals are a

subset of assessment signals, the exaggerated effort could indicate a higher impact on impression management than assessment signals, particularly on social media. These increased efforts and resources to produce them (time, financial capital, social capital, etc.) could follow a risk/reward relationship with greater efforts creating heightened perceptions. Given the lack of refinement, we utilized perspectives frequently employed in CMC research to establish a hierarchy. As noted in the hyperpersonal model (Walther, 1999), the lack of face-to-face (FtF) cues allows senders to selectively present information to manage impressions in mediated spaces, resulting in heightened perceptions (Walther, 2007). Therefore, we assert that the exaggerated effort undertaken by senders would result in higher levels of credibility for strategic signals over assessment signals.

Based on the above discussion of the different signals on impression management, we posit the following hypotheses:

H1: Message credibility will be highest for social media posts with strategic signals followed by those with assessment signals and conventional signals respectively.

H2: Source credibility will be highest for social media posts with strategic signals followed by those with assessment signals and conventional signals respectively.

H3: Positive impressions will be highest for social media posts with strategic signals followed by those with assessment signals and conventional signals respectively.

Homophily on Social Media

Homophily, often referred to as the degree of shared similarity of individuals, focuses on criteria such as demographics, attitude, and beliefs between senders and receivers (Lazarsfeld & Merton, 1954). Individuals are more likely to communicate with others that they find most like themselves. The examination of homophily is complicated by the abstract and situational dimensions of the concept where similarities are deemed more relevant based on context and presentation of information (Fiore & Donath, 2005). It is for these reasons that individuals tend to form relationships with those they perceive as most similar through their own positively identified characteristics.

In CMC, scholars have applied homophily to online discussion boards focused around self-disclosure (Fiore & Donath, 2005), avatar selection and impact on credibility (Nowak et al., 2009), and gender connection on social media (Laniado et al., 2016). Through the growth of social media platforms such as Snapchat and Instagram, homophilic connections can be made on both a personal

level and brand level. Phua et al. (2017) demonstrated that network homophily modifies brand relationships online with sites like Instagram creating the strongest brand commitment and community engagement. The brand commitment that is established through these relationships can lead to higher purchase intention and stronger brand loyalty (Kilambi et al., 2013; Scarpi, 2010). Furthermore, research has shown a positive relationship between user similarity and trust relations online (Tang et al., 2013). Individuals who have similar preferences in purchase decisions are more likely to trust one another in online reviews or comments (Tang et al., 2013). These actions mimic trust that is established through third-party warranting cues. While not previously explicated in signaling theory, we posit that user similarity, which creates both increased loyalty and positive trust relations, can be applied to warranting value of signal types with differing levels of credibility. Specifically, signal types predicted to have the greatest level of credibility will also exhibit high levels of perceived similarity. Individuals who follow and purchase from Instagram influencers due to a perceived shared similarity will see them as a highly credible source (i.e., strategic signals). Individuals who post generalized information lacking specificity (i.e., conventional signals), will likely be deemed less credible by receivers. Since we hypothesized that differing signals will influence perceptions of credibility accordingly, we posit that these signals will similarly influence perceptions of homophily.

H4: Homophily will be highest for social media posts with strategic signals followed by those with assessment signals and conventional signals respectively.

[Assessing Gender Effects](#)

New media scholarship is ambivalent on the role and effect of gender in online person perception. Studies indicate that women put forth greater effort to maintain their social media presence (McAndrew & Jeong, 2012) and provide more emotionally expressive content than men (Zheng et al., 2016). In terms of impression formation, men were perceived to be more credible via informational blogs (Armstrong & McAdams, 2009). Women (e.g., female celebrities) were judged as more credible by young women on Instagram (Djafarova & Rushworth, 2017). While some research reinforces brand and gender norms (Lebel & Danylchuk, 2012), other work counters this perspective (Smith & Sanderson, 2015). Smith and Sanderson (2015) claimed individuals' control of social media affords them the ability to self-present outside gender norms. Perspectives on gender control through self-presentation have been supported for decades. Butler and Trouble (1990) noted that "the deed is everything" and thus identity is performative (p. 25). The concept of gender being

subjective is furthered by Goffman's (1976) stance on gender as an optional performance (p. 69) and that individuals "themselves employ the term 'expression', and conduct themselves to fit their notions of expression" (p. 75).

Signaling theory currently does not consider gender an important factor in establishing credibility. Instead, the theory dictates that content creates a risk-reward relationship and establishes credibility between receivers and senders. While there is no direct consensus on gender's effect on credibility in signaling theory, numerous studies have presented conflicting findings regarding gender's effect on online content. Therefore, we felt it was important to include a gender component in the stimuli to determine if gender and signal types impact impression formation on social media. This led the researchers to create the following research question to explore the role of gender broadly as no clear directionality or connection was present in the literature.

RQ1: Does gender impact the perceptions formed of different signal types?

Methods

Study Design

The study was conducted on Qualtrics, a web-based survey platform, and utilized a 2x3 post-test only experimental design to examine the effect of source gender (male, female) and signal type (conventional, assessment, strategic) on perceptions of source credibility, message credibility, impression formation, and homophily. Participants were randomized to view one of six visual stimuli, then they completed a post-test survey featuring assessments of message and source credibility, impression management for caption and image, and homophily. Before launching the main study, two groups of students ($N=20$) at a Northeastern university pilot-tested the scales and performed a manipulation check on the experimental stimuli. Each student reviewed each stimuli condition on paper with the male conditions on one page and the female conditions on a separate page. Students were instructed to circle the differences that were unique to the presentations. Those performing the manipulation check were able to consistently ascertain differences across all signal types for gender conditions in both the images and the caption material. Students then completed scale items. The pilot-test of the study scales and stimuli indicated good face validity.

Participants

Participants were recruited from Amazon Mechanical Turk (AMT). This pool of participants is increasingly being preferred as a viable

and more generalizable alternative to student populations (Bartneck et al., 2015; Buhrmester et al., 2011). AMT also has been shown to be more socio-economically and ethnically diverse than face-to-face or social media recruitment styles without sacrificing quality (Casler et al., 2013). Participation was limited to individuals with a 95% completion rate or higher on AMT tasks located within the United States. A total of 301 individuals were recruited: 145 (48.1%) men, 144 women (47.8%) with a mean age of 39 years ($SD = 11.88$, $Range = 56$). The remaining 4.1% of individuals chose not to identify their gender.

Experimental Stimuli

The study utilized six experimental stimuli with each study participant randomly assigned to view one stimulus. Each stimulus consisted of a faux Instagram post containing an image and caption, associated with the handle *pwerlifter17*. A design mimicking an Instagram post was used given its increasing prevalence as the "fastest-growing online photo social web services where users share their life images with other users" (Djafarova & Rushworth, 2017). The image depicted in the Instagram post was related to physical fitness, specifically weightlifting, which although considered a niche area, has increasingly garnered attention on platforms such as Instagram. It is a trending topic in the health and fitness area, making it appropriate to serve as the stimulus (Brogan & Associates, 2017).

In the conventional signal condition, the image showed the weightlifter (man or woman depending on the condition) posing for a mirror photo in a gym in front of weightlifting equipment, ostensibly pre-workout. The photo was structured such that the individual is taking it themselves, using the gym mirror to take a "selfie." This qualifies the signal as conventional because the attribute (i.e., weightlifting) was not shown being performed, only the allusion to the person being a weightlifter. This photo featured the caption, "Nothing like a gym #selfie before starting my workout. #powerlift #deadlift #alltheweight." The assessment signal featured the person in mid-motion of a lift. This exercise demonstrates the individual's physical ability and can be viewed as an assessment signal, overtly presenting the attribute of strength. This photo featured the caption, "Working on my deadlift today. Quick snapshot of my progress. Who would've thought I'd be here 3 years ago. #goals #workhard #powerlift #DL #gains." The strategic signal used identical images as the assessment condition but changed the caption language. The strategic signal caption included assessment material but enhanced its presentation by including text drawing attention to weightlifting gear (i.e., wrist wraps, support for a faux brand tag @lftstrong, and the hashtag "#sponsored"). The additional text about gear demonstrates expanding or exaggerating the role of weightlifting to

Procedure

AMT participants completed the online study as a Human Intelligence Task (HIT). Once completed, the primary investigator reviewed and approved the HIT to provide monetary compensation. Individuals were limited to one response per person through qualifications placed through the platform. Participants were encouraged to complete the study on a laptop or desktop device rather than a mobile device to be able to view the images accurately. Individuals first completed a series of demographic questions before being randomly assigned to view one of the six stimuli. Following the exposure, participants answered post-test measures. Participants who completed the experimental survey in under 90 seconds were removed from further analysis, resulting in a final sample size of 239 comprised of 116 (48.5%) men and 119 women (49.8%) with a mean age of 22 years ($SD = 11.88$, $Range = 55$). An a priori power analysis was conducted using G*Power (Faul et al., 2007) to test the different comparison of means across six groups for a factorial analysis, a medium effect size ($f = .21$), and an alpha of .05. Results showed that a total sample of 222 was required to achieve a power of .80, assuring the sufficiency of the study's sample size.

Measures

Message Credibility. Message credibility measures were adapted from a scale by Appelman and Sundar (2016). Six indicators were utilized from the original scale (*well presented, objective, representative, accurate, believable, and authentic*) and two additional indicators were constructed (*endorsed, biased*). This created a total of eight items to assess message credibility. All eight items were developed into statements ("*This image of a weight-lifter is well-presented*", "*This image of a weight-lifter is objective*" etc.) and assessed on a 7-point Likert scale in which 1 describes very poorly and 7 describes very well. Individuals were directed to answer specifically regarding the content of the message (what was presented in the visual and the caption). One item, "*This image of a weight-lifter is biased*," was reverse-coded. The Cronbach's alpha for the 8-item message credibility scale was deemed acceptable at $\alpha = .78$.

Source Credibility. Four items identified by Appelman and Sundar (2016) (*authoritative, reliable, reputable, and trustworthy*) assessed source credibility. Appelman and Sundar (2016) stated these items presented elements of source perception but were categorized as source-related measures of message credibility. However, the authors noted these items as being distinctive from message credibility (Appelman & Sundar, 2016). Therefore, we determined to

use these distinctive items to measure source credibility. Items were constructed into statements ("*This weight-lifter to me seems authoritative*", "*This weight-lifter to me seems trustworthy*" etc.) to measure source credibility on a 7-point Likert scale where 1 describes very poorly and 7 describes very well. For the source credibility scale, individuals were directed to answer specifically regarding the individual featured in the photo. For the source credibility scale, reliability statistics indicated that the removal of one of the items ("*This weight-lifter to me seems authoritative*") would increase the alpha from .87 to .95; hence, the item was removed. This resulted in a 3-item source credibility scale deemed well-represented through the remaining items, specifically reliability, reputability, and trustworthiness.

Impression Management. Three items were used to assess impression management on a 7-point Likert scale (1 'very negative' to 7' very positive'). Management in this study context allowed the researchers to determine if the sender had effectively managed the content to attain the desired outcome. Since the researchers directly manipulated the stimuli, as opposed to an external source, scales of impression management by receivers were used to assess the sender's effectiveness and message. Three items asked participants their overall impression of the image (the photo), the source (person featured in the photo), and their overall impression of the message related to the social media post (caption beside the photo). These measures, while created by the researchers, are similar to language presented in Gronier's (2016) study addressing first impressions of webpages. Image and source measures were combined into an average score related to impression of the image since they were significantly correlated ($r = .80, p < .001$). For the two-item image impression scale, Cronbach's alpha was deemed to be very good ($\alpha = .88$). Further reliability testing was conducted given the limited nature of this scale (i.e., two items total). Spearman-Brown's reliability was deemed sufficient ($p = .89$).

Homophily and Gender. Six items from a previous measure by McCroskey et al. (1975) were used to assess homophily. Five of these items ("behaves like me," "similar to me," "social class like mine," "status like mine," "like me") were adopted from the original measure. One item, "background like me," was adapted in lieu of the original scale item "economic situation like mine." Individuals were directed to answer specifically regarding the person featured in the photo. For the 6-item homophily scale, Cronbach's alpha was good ($\alpha = .86$). Gender was manipulated through the study stimuli and questions regarding participant gender were included within the demographic questions).

Results

Message Credibility. Factorial ANOVAs were conducted to evaluate the effect of source gender (male, female) and the three signal types (conventional, assessment, strategic) on message credibility perceptions. A significant main effect was found for signaling type on message credibility at $F(2, 239) = 11.44, p < .01$. A Scheffe post-hoc analysis was conducted revealing that conventional signals ($M = 4.17, SD = 0.93$) were perceived as less credible than assessment signals ($M = 4.89, SD = 0.99$) and strategic signals ($M = 4.78, SD = 1.05$); this was statistically significant at $p < .001$. There was no statistically significant difference between perceptions of message credibility between assessment and strategic signals. Thus, H1 was partially supported.

Source Credibility. A significant main effect of signal types was found on perceptions of source credibility at $F(2, 239) = 12.97, p < .01$. A post-hoc analysis determined assessment differences in source credibility between the signal types. The trend of difference was identical to that of message credibility (i.e., posts with conventional signals were perceived to have lower source credibility) ($M = 3.07, SD = 0.98$) compared to assessment signals ($M = 3.87, SD = 0.91$) and strategic signals ($M = 3.55, SD = 1.06$) at $p < .05$. However, there was no statistically significant difference between assessment and strategic signals for source credibility. Thus, H2 also was partially supported.

Impression Management: Image and Message. Overall impression formation was measured as two distinct dependent variables: image impression and message impression. A factorial ANOVA assessing source gender and signal type on image impression found a significant main effect at $F(2, 239) = 8.31, p < .01$. Post-hoc tests using Scheffe, demonstrated that conventional signals ($M = 6.23, SD = 1.78$) were less positively received than assessment signals ($M = 7.43, SD = 1.79$). There were no statistically significant differences between strategic signals and conventional or assessment signals.

Message content (i.e., caption) was varied across signal type condition but did not change based on source gender. Therefore, the researchers determined a one-way analysis of variance was more fitting to examine the relationship between signal types and caption impression. A significant effect was found at $F(2, 238) = 17.90, p < .01$. A post-hoc analysis of overall caption impression yielded statistically significant results across all signal types. There was a mean difference between conventional signal caption ($M = 3.99, SD = 1.37$), assessment signal caption ($M = 5.30, SD = 1.30$), and

strategic signal caption ($M = 4.56$, $SD = 1.49$). Results indicate that conventional signal captions were viewed less favorably than assessment and strategic signals. While strategic signals were posited to be more credible, the post's caption where the strategic manipulation was focused yielded more negative impressions than the assessment condition. This statistically significant distinction between assessment and strategic signals indicates that participants correctly identified a difference between the source and the messages conveyed in the experimental stimuli. However, due to the directionality of the results, H3 received only partial support.

Homophily and Gender. Finally, a factorial ANOVA was conducted to evaluate the difference between the source gender (male, female) and the three signal types (conventional, assessment, strategic) on perceived homophily. Neither gender nor signal type presented a main effect, and no interaction effect between gender and signal types was present. Thus, H4 was rejected.

Our research question examining the role of gender and its connection to signal types did not present a statistically significant effect in this study. Results indicated that gender did not impact perceived credibility, impression formation, or homophily as either a main effect or an interaction effect. Table 1 elucidates all relationships pertaining to signal types in this study.

Table 1

Summary of Findings Depicting Differences in Signal Types on Dependent Variables

Dependent Variables	Relationship with Signal Types
Message Credibility	Conventional signals have the lowest message credibility. No statistical differences for message credibility between assessment and strategic signals.
Source Credibility	Conventional signals have the lowest source credibility. No statistical differences for source credibility between assessment and strategic signals.
Message Impression	Assessment signals have the

	most positive message impression.
	Conventional signals have the least positive message impression.
	Strategic signals were less positive than assessment signals.
Image Impression	Conventional signals have the least positive image impression.
	No statistical differences for image impression between assessment and strategic signals.
Homophily	No relationship between conventional, assessment, or strategic signal types.
	No relationship with source gender.
Gender	No relationship between message credibility, source credibility, image impression, or homophily, or signal types.

Discussion

This study reaffirmed the valuable utilization of signaling theory to examine perceptions of credibility, homophily, and impression management in the context of social media. Some areas in which signaling theory has been examined in previous communication research include social network site design (Lampe et al., 2007), signal reliability of public profiles (Donath & Boyd, 2004; Papacharissi, 2009), authenticity of Twitter (Marwick & Boyd, 2011), and online cues identification (Lin, 2016). The results in the present study provide targeted assessments of signal types' effect on credibility, impression formation, and homophily on social media like Instagram. Findings indicate that types of signals utilized in social media communication significantly affect message and source perception of credibility, more importantly if the source is viewed favorably by the receiver.

Conventional signals, stated in the literature as the least reliable and

most easily edited, were likewise perceived least positively compared to assessment and strategic signals. This was consistent across all the outcomes, including message credibility, source credibility, image impression, and message impression. This consistent finding proves valuable to strategically advance both branded and non-branded channels on social media. The findings, at least related to conventional signals, provide merit to the thesis that different types of signals have warranting value, such that their use influences how the receiver judges them.

Interestingly, there were no statistically significant differences between strategic signals and assessment signals with an exception of message impression. The lack of statistically significant findings does not definitively establish a delineation between strategic and assessment signals. While the premise of exaggerated content should exhibit higher communicative risk, this study does not establish a definitive hierarchy (i.e., strategic signals are not necessarily better than assessment signals). The tenets of the hyperpersonal model would support our conjecture of increased credibility for strategic signals, but further examination is needed to determine this stance. The lack of difference between assessment and strategic signals could boil down to weakness in the manipulation. Only the addition of supplementary text in the caption differentiated the assessment and strategic stimuli. Although a manipulation check ascertained that these two were different, it is still possible that the difference was too subtle to elicit significant results. Future work using signal types should examine the role of different multimodal components' effectiveness between assessment signals and strategic signals in greater depth. However, given the statistically significant difference exhibited with the impression formation of the message, we believe language referring to sponsorship may have a significant impact.

The non-significant findings related to gender point to the continued ambiguity of gender differences and impression formation in CMC (Armstrong & McAdams, 2009; Djafarova & Rushworth, 2017). Our findings indicate no significant difference between source gender's influence on credibility perception across the different signals. Furthermore, there was no interaction effect between gender and signal type for either source or message credibility. Despite the lack of significant findings, there is value in the continued role of gender scholarship on social media. While decades of research have linked the role of gender impacting impression formation, our study arrives at no definite conclusion. As the context (i.e., weightlifting) presented within the study is historically construed as being male-dominant, the lack of gender distinction may allude to societal shifts of gender expectations online. Expressions of masculinity and femininity are

fluctuating and contingent on the content, not the participant. This focus on the role and the actor is supported by Goffman (1976). Further scholarship with female-dominant areas (i.e., beauty) and neutral items (i.e., food, travel, etc.) would need to be examined to support or repudiate this stance.

We measured if image and caption independently were perceived differently across signals, that is, if they exhibited similar relationships to perceptions of credibility. Results for image impression demonstrated that conventional signals were perceived less positively than assessment signals. However, there was no statistically significant difference between conventional and strategic signals or assessment and strategic signals. This provides an interesting consideration for online credibility and impression management. While it is inferred that credibility would lead to consistently positive impressions, this research has shown it is not always direct.

The overall impression of the caption was significantly different across all signal types. Message impression for conventional signals was the least positively perceived signal; however, assessment signals were perceived more positively than strategic signals. While the directionality differs from the theoretical supposition, the statistically significant difference between assessment and strategic signals confirms participants' ability to distinguish signal types within this study. While we address possible flaws associated with the manipulation in the limitations, we assert that the difference in directionality can be explained by previous scholarship on sponsorship. Lu et al. (2014) found that more positive attitudes are formed towards the source when individuals have high brand awareness. This study focused on a niche area, weightlifting, and a faux brand tag (@lftstrong) was utilized. Thus, a lack of brand recognition may have led to less positive perceptions of the caption associated with the strategic signal than the assessment signal. Overall, these findings suggest that even on image-oriented social media like Instagram, individuals pay attention to the texts (e.g., captions, hashtags) that accompany the image to collate more information about the source.

The finding that sponsorship in the caption results in a less positive impression of the message provides interesting considerations for sponsorship's role in message influence and its subsequent impact on source impression. This yields important considerations for social media communication for strategic purposes. To establish their credibility, less-known brands and organizations may need additional warranting values beyond signal types. Therefore, future work should consider the use of other signal factors along with signal types

to establish a greater credibility assessment of the sender.

Perceived similarity or homophily towards the source did not differ between the various signal types in this study. This could be the result of the context of the study experiment. Weightlifting is a niche exercise area, and it is likely that study participants felt little similarity with the subject in the stimuli. To confirm this, the researchers examined what percentage of participants indicated an interest or connection to weightlifting. Data indicates that only 26% were interested or practiced weightlifting, leading the researchers to believe that lack of connection to the content focus inhibited perceived homophily. Previous literature in signaling theory has not explored homophily between sender and receiver based on signal type. This research's lack of significant results may indicate that contextuality is key to homophily between parties. Therefore, brand recognition and topic considerations may need to be included in the stimuli for homophily to be established. We posit that while homophily was not significant in this study, the combined role of similarity and signal type can prove valuable for assessing trust towards the sender, which may enhance the role of signaling theory scholarship for examining online credibility.

Limitations. While this study supports signaling as a valuable theoretical direction for social media research, it is not without its shortcomings. Regarding the experimental stimuli, it is difficult to discern whether the strategic signal manipulation adequately captured the context or if a moderating factor of sponsorship affected impression management. Differences between the strategic and assessment manipulations were only in the caption. Differences between the hashtag language were unique rather than consistent for each signal type. While we do not believe these differences played a large role in the study stimuli, future research will control this language more stringently and examine differences in the image and caption between subsections of signal types. Finally, the experimental context (weightlifting) may have been too niche for a representative sample. Future studies should attempt to replicate our findings across various contexts seen in social media (e.g., fashion, travel, food, etc.) Regardless of the limitations, this study is an important step in legitimizing signaling theory as an alternative theoretical perspective for examining online person perception.

Conclusion

This study provides a new perspective on the effect of the message feature selections made by senders impacting the receivers. Specifically, how signal types can influence perceptions of the source. Our findings partially support Donath's (2007a) contention by finding support that the utilization of conventional signals leads to lower levels of message and source credibility. The examination of

signaling theory in CMC is growing (Donath, 2007a; Donath, 2007b; Donath & Boyd, 2004; Lampe et al., 2007). This study provides an examination of signaling theory's signal types on social media platforms and adds to the CMC literature by demonstrating how sender selection of digital content acts as a warranting value. As UGC-dominated media are thriving, it is imperative to examine how individuals control their communication on social media and thus manage impressions formed of them. Continued research on signaling theory will allow researchers to determine how signal types and other signal factors impact social media considerations, understanding the repercussions of what we signal to others through our posts impacts interpersonal and strategic communication.

Outside of academia, businesses and large marketing organizations routinely examine how sponsorship considerations impact brand trust and credibility online. Past research suggests that sponsorship results in more positive attitudes only when individuals have high brand awareness (Lu et al., 2014). A lack of brand awareness could lead to negative attitudes towards the brand or the individual advocating or tagging the brand. This is a challenging issue for organizations that use influencers to expand their reach. More research utilizing signaling theory will aid in determining the impact of UGC brand endorsements on perceptions of trust and credibility on social media.

As digital communication advances, individuals and organizations will evolve how they communicate about themselves online. This and future signaling theory work is necessary to examine the development of digital communication and its evolving signal capabilities. This includes how organizations can increase their presence as a thought leader, the digital considerations needed to establish trust through content selection, reaching new or emerging targets of digital natives, etc. Understanding signaling efforts may prove incredibly valuable to the use of strategic communication on social media.

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