

Consumers' self-reported and brain responses to advertising post on Instagram: the effect of number of followers and argument quality

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Abstract

Purpose – This paper aims to examine a two-way interaction between social influencers' number of followers (micro vs meso) and argument quality (weak vs strong) on consumers' self-reported and brain responses to advertising posts on Instagram. Further, drawing upon source credibility theory and contemporary theories of persuasion, the Instagram users' perceptions of the influencer's credibility are predicted to mediate the hypothesized effects.

Design/methodology/approach – Through an online (N = 192) and a lab study (N = 112), the authors examined Instagram users' responses to an advertising post from Instagram influencers in terms of perceived source credibility and electronic word-of-mouth intention, using validated multi-item scales from existing literatures and electroencephalogram (EEG) measures. The hypotheses were tested with a 2 (type of influencer: micro vs meso) × 2 (argument quality: weak vs strong) between-subject design using mediated moderated linear regression analysis.

Findings – The results highlight that meso-influencers are perceived as a credible source of information only when their product-related post provides strong argument quality. Moreover, this process involves an increase in users' cognitive work (measured with EEG), with possible implications on marketing communication strategies and online message design.

Research limitations/implications – The limitations of the work can serve as ideas for future research. First, this study did not account for the influencer's relevance and resonance. Second, the authors studied consumer responses to online communication produced by Instagram influencers within a single product category. Another important product type distinction that requires further attention is between hedonic and utilitarian products. Finally, the two studies only used positive review content. Further research should study how consumers evaluate the source credibility of a micro- vs meso-influencer when they are exposed to negative reviews containing weak vs strong arguments.

Practical implications – The results suggest that marketers should carefully consider Instagram influencers based on the trade-offs between credibility and reach. Specifically, micro-influencers are perceived as more credible sources of information than meso-influencers, which means that they have greater potential to affect Instagram users' behavior. Moreover, the results suggest that meso-influencers should leverage argument quality to enhance their credibility and draw greater positive outcomes for the products and brands they endorse.

Originality/value – To the best of the authors' knowledge, this study is the first to investigate how the interaction between the type of social media influencer and the argument quality affects consumers' self-reported and brain responses to advertising posts on Instagram. Moreover, using neuroscience, this study



aims to shed light on the neurophysiological processes that drive consumer responses to product-related communication posted by different influencer types.

Keywords Influencer marketing, Argument quality, Number of followers, Consumer neuroscience, Source credibility

Paper type Research paper

Introduction

Social media influencers (hereafter SMIs) are online opinion leaders who have the power to affect others' purchase decisions because of their own authority, knowledge, position or relationship with their audience (Cocker *et al.*, 2021; De Vries, 2019). With social media becoming the primary channel through which consumers seek product and service information, companies and brands increasingly collaborate with SMIs to connect with consumers and persuade them (Balaji *et al.*, 2021; Schouten *et al.*, 2020). The main objective of the present research is to investigate how different combinations of characteristics of SMIs (i.e. number of followers an influencer might have) and characteristics of the content of the messages they share (i.e. the strength of the arguments) can affect target audience's responses, so to provide insights that can improve the effectiveness of brands' influencer marketing investments (De Veirman *et al.*, 2017; Hosie, 2019).

Such an investigation builds off Lou and Yuan's (2019) SMI value model which suggests that various input components in persuasive communication – such as messenger features (e.g. credibility) and message characteristics (e.g. advertising value) – determine its effectiveness. The number of followers is considered one of the key factors that companies look at when selecting SMIs (Boerman, 2020). Indeed, collaborations with SMIs with large number of followers (i.e. influencers with a 500,000 + number of followers) seemed to be particularly appealing for companies in the early stages of the influencer marketing boom (Jin and Phua, 2014). In more recent times, however, companies have been increasingly partnering with micro-influencers (i.e. influencers with fewer than 10,000 followers) (Kay *et al.*, 2020).

Even though past studies have recognized the critical role that SMIs' number of followers may play in determining the effectiveness of product-related message posted on social media platforms (Boerman, 2020; Jin and Phua, 2014; Marques *et al.*, 2021), there is still scant scientific knowledge on how the interaction between SMIs' popularity and advertising message characteristics affects consumer perceptions and responses to advertising from SMIs (see Table 1).

The current study aims to fill this research gap by investigating how the number of an influencer's followers joint with the quality of the arguments contained in the influencer's message affects perceived credibility of the message and the likelihood that the audience shares it (e.g. electronic word-of-mouth, hereafter eWOM). We focus on argument quality (i.e. the audience's subjective perception of the arguments in the message as strongly vs weakly persuasive) because recent research suggests that this message characteristic might affect consumers' perceptions of the influencer's credibility defined as “the perceived ability and motivation of the message source to produce accurate and truthful information” (Li and Zhan, 2011, p. 240) – and therefore, the persuasiveness of his/her message (Hussain *et al.*, 2017; Shan, 2016). For example, Xiao *et al.* (2018) found that argument quality affects consumer perceived information credibility. Thus, it could be assumed that argument quality could significantly moderate consumer attitudinal and behavioral responses to advertising message posted by the SMIs, especially when the influencer is short on credibility.

The elaboration likelihood model (ELM) has been widely used in empirical studies about how individuals evaluate information quality or credibility (Cyr *et al.*, 2018; Lee and Theokary, 2021; Xiao *et al.*, 2018). According to ELM, strong arguments can positively influence

Paper	Method/social platform	Source and message characteristics	Key findings
Jin and Phua, 2014	Experiments/Twitter	<ul style="list-style-type: none"> • Number of followers • Source credibility 	Higher number of followers increases source credibility and intention to build an online friendship. The joint impact of high number of followers and positive valence increases buying intention and product involvement
Uribe <i>et al.</i> , 2016	Experiment/online blog	<ul style="list-style-type: none"> • Communicator expertise • Message sidedness • Advertising intent 	The relevance of using two-sided messages, expert sources and unbiased (nonsponsored) messages in terms of increase blog credibility and behavioral intention toward the reviewed product
De Veirman <i>et al.</i> , 2017	Online experiment/Instagram	<ul style="list-style-type: none"> • Number of followers • Divergent products 	Influencers with a higher number of followers is perceived as more popular and is ascribed more opinion leadership, and therefore, people have more positive attitudes toward this influencer. If influencers with high numbers of followers promote divergent products, this decreases the brand's perceived uniqueness and, consequently, brand attitudes
Xiao <i>et al.</i> , 2018	Online survey/YouTube	<ul style="list-style-type: none"> • Source trustworthiness • Argument quality 	Trustworthiness, social influence, argument quality and information involvement are influential factors affecting consumer perceived information credibility on YouTube
Balabanis and Chatzopoulou, 2019	Online survey/online blog	<ul style="list-style-type: none"> • Blogger credibility • Blogger authority and homophily • Message usefulness 	Information seekers' objectives and issue involvements are important drivers of blog selection and determinants of the blog's influence
Lou and Yuan, 2019	Online survey/social platforms	<ul style="list-style-type: none"> • Influencers credibility • Informative and entertainment value of message content 	The informative value of influencer-generated content, influencer's trustworthiness, attractiveness and similarity to the followers positively affect followers' trust in influencers' branded posts, which subsequently influence brand awareness and purchase intentions
De Vries, 2019	Online experiment/Instagram	<ul style="list-style-type: none"> • Likes-to-followers ratio 	High as well as low likes-to-followers ratios negatively

(continued)

Table 1.
Literature review on source and message characteristics affecting consumer responses to influencer marketing

Paper	Method/social platform	Source and message characteristics	Key findings
		<ul style="list-style-type: none"> • Number of hashtags • Perceived account credibility 	influence the perceived credibility of the account. The addition of hashtags is identified as a way to guard against the negative impact of high likes-to-followers ratios
Boerman, 2020	Online experiment/ Instagram	<ul style="list-style-type: none"> • Number of followers • Instagram disclosure 	Disclosure positively affects brand recall and intentions to engage with the post via ad recognition Influencer type does not moderate the effect of the disclosure and does not affect people's responses
De Veirman and Hudders, 2020	Online experiment/ Instagram	<ul style="list-style-type: none"> • Influencer credibility • Instagram disclosure • Message sidedness 	Including a sponsorship disclosure negatively affects brand attitude through enhanced ad recognition, which activates ad skepticism, which, in turn, negatively affects the influencer's credibility. The effect is present when the influencer used a one-sided message and not when the message was two-sided
Kay <i>et al.</i> , 2020	Online experiment/ Instagram	<ul style="list-style-type: none"> • Number of likes • Instagram disclosure 	Consumers exposed to the micro-influencer condition report higher levels of product knowledge and consumers exposed to the disclosure condition reported the products endorsed by SMIs to be more attractive
Schouten <i>et al.</i> , 2020	Online experiment/ online platform	<ul style="list-style-type: none"> • Influencer vs celebrity • Perceived credibility 	Users identify more with influencers than celebrities, feel more similar to influencers than celebrities and trust influencers more than celebrities. Similarity, wishful identification and trust mediate the relationship between type of endorser and advertising effectiveness
Balaji <i>et al.</i> , 2021	Online experiment/ Instagram	<ul style="list-style-type: none"> • Message construal • Message valence • Credibility 	Low-construal messages posted by the nanoinfluencer are viewed as more credible than high-construal messages. Positively framed low-construal messages are perceived as more credible than negatively framed low-construal messages
Kim and Kim, 2021a	Online survey/ Instagram	<ul style="list-style-type: none"> • Sponsorship disclosure 	Influencer-product congruence enhances product attitude and reduces advertising recognition Sponsorship disclosure can also affect product attitude in a serial

(continued)

Table 1.

Paper	Method/social platform	Source and message characteristics	Key findings
		<ul style="list-style-type: none"> • Influencer-product congruence 	mediation of calculative motive inference and advertising recognition
Kim and Kim, 2021b	Online survey/ Instagram	<ul style="list-style-type: none"> • Influencer's credibility and homophily • Trust 	Trust mediated the impacts of expertise, authenticity and homophily on loyalty and marketing outcomes. The moderating role of relationship strength was confirmed in authenticity-trust and trust-loyalty linkages
Lee and Theokary, 2021	Speech-to-text data, survey data, archival data/social platforms	<ul style="list-style-type: none"> • Linguistic style • Context expertise • Production expertise • Emotional contagion 	Viewers of superstar SMIs identify the traditionally peripheral elements of linguistic style and emotional contagion as central to increasing the number of views and subscribers
Marques <i>et al.</i> , 2021	Exploratory study/ Instagram	<ul style="list-style-type: none"> • Number of followers • Clicks • Likes • Comments 	Celebrity's posts attracted more followers to the brand's Instagram page when compared to the micro-influencer's publications. However, the latter has garnered more clicks, comments and likes, thereby increasing the consumer-brand engagement through social media
The current study	Online experiment and lab (EEG) experiment/ Instagram	<ul style="list-style-type: none"> • Number of followers • Source credibility • Argument quality 	Meso-influencers are perceived as a credible source of information only when their product-related post provides strong argument quality. Moreover, this process involves an increase in users' cognitive work (measured with EEG)

Table 1.

consumers' perception of product-related message and influencer's credibility and the effects tend to be stronger under systematic processing which requires a person to devote more cognitive effort (Zha *et al.*, 2018). Importantly, past research on cognitive work describes the benefits of a consumer neuroscience research approach, highlighting how it allows for greater inferential traction and more reliable measurement than do traditional self-reported markers of cognitive work (Venkatraman *et al.*, 2014; Westbrook and Braver, 2015). This idea resonates with recent consumer neuroscience studies that have clearly suggested that researchers and marketers should disentangle the different types of responses (i.e. self-reported vs neurophysiological) that SMIs' messages might elicit in consumers (Pozharliev *et al.*, 2022; Royo *et al.*, 2018). Therefore, in the current study, we use consumer neuroscience, namely, electroencephalogram (EEG) brain responses, to assess the level of consumer cognitive work associated with the processing of an advertising message presenting weak (vs strong) argument quality and posted by SMIs with relatively higher or lower numbers of followers.

More in detail, the present study investigates whether and how Instagram users' self-reported responses (i.e. perceived credibility and word-of-mouth [WOM] intentions) and brain responses (i.e. cognitive work) to an advertising message posted by *micro-influencers* (i.e. influencers with fewer than 10,000 followers) versus *meso-influencers* (i.e. influencers with a number of followers ranging between 10,000 and 1 million) is moderated by the argument quality of the message. In doing so, the present research contributes to the literature on social media marketing in several ways. First, it contributes to the literature on influencer marketing (De Vries, 2019; Martínez-López *et al.*, 2020; Rohde and Mau, 2021) by investigating how micro- versus meso-influencers can effectively persuade consumers on social media. In this way, the current study addresses the call for research on the persuasiveness of different types of SMIs (Boerman, 2020; De Veirman *et al.*, 2017; Kay *et al.*, 2020). In this respect, our study advances extant research that has suggested that an influencer's number of followers affects users' perceptions of the influencer's popularity, attractiveness and likability (De Vries, 2019; Jin and Phua, 2014; Schouten *et al.*, 2020). Second, it contributes to the literature on the role of message characteristics in determining the effectiveness of a brand-related message posted on social platform (Balabanis and Chatzopoulou, 2019; Balaji *et al.*, 2021; Lee and Theokary, 2021; Lou and Yuan, 2019; Uribe *et al.*, 2016; Xiao *et al.*, 2018) by testing if argument quality affects consumer responses to advertising message posted by micro- versus meso-influencers. Third, the study findings contribute to the growing body of literature that seeks to understand how neurophysiological processes affect online experiences and customer responses to online marketing communication (Lin *et al.*, 2018a, 2018b; Pozharliev *et al.*, 2022). Using consumer neuroscience, namely, EEG brain responses, this study answers the call by shedding light into the neurophysiological processes (e.g. cognitive work) that drive consumer responses to communication messages posted by different types of SMIs.

Finally, our research also offers practical implications for marketing managers and SMIs looking for insights on how to enhance the credibility of their online communication, particularly for those marketers interested in empirical evidence to support their decision to invest in social media marketing. Our results suggest that marketers should carefully consider Instagram influencers based on the trade-offs between credibility and reach. Specifically, micro-influencers are perceived as more credible sources of information than meso-influencers, which means that they have greater potential to affect Instagram users' behavior. Moreover, our results suggest that meso-influencers should leverage argument quality to enhance their credibility and draw greater positive outcomes for the products and brands they endorse.

Theoretical framework

Source credibility and number of followers

In the online review setting, source credibility refers to the degree to which the online reviewer can be trusted to give an objective and unbiased opinion on the product or service reviewed (Djafarova and Rushworth, 2017; Li and Zhan, 2011). Source credibility is a multidimensional concept (Ohanian, 1990). Although previous research has identified numerous dimensions of credibility, expertise and trustworthiness are considered the two primary dimensions of source credibility over time (Lou and Yuan, 2019; Orazi and Newton, 2018). Trustworthiness refers to the degree of confidence and acceptance that the message receiver develops toward the source and thus to the audience's perception that the sender of the information is acting in a sincere and honest manner (Orazi and Newton, 2018). Consumers' evaluations about the trustworthiness of an online product review is based on their perception regarding the reviewer's genuine motivation to endorse a product (Djafarova and Rushworth, 2017). Expertise refers to the reviewer's perceived ability to

make valid and accurate assertions based on his or her personal skills and relevant knowledge (Spry *et al.*, 2011). It is important to address the critical role of online users' evaluation on source credibility in the online environment (Lou and Yuan, 2019). The level of source credibility determines the level of confidence and acceptance of the online product reviews by message receivers (Teng *et al.*, 2014). Consumers tend to respond positively to products related to credible messages (Li and Zhan, 2011; Spry *et al.*, 2011). Conversely, it is less likely that consumers will accept a product review message if the source is not perceived as credible (Djafarova and Rushworth, 2017).

According to David Armano, chief executive office (CEO) of Executive Vice President, Global Innovation and Integration at Edelman Digital:

The size of networks to cause effect is irrelevant. The idea that only large networks can cause an effect is a myth. You must understand how influence spreads. Now, you can connect with people based on common interests through the influential voices who are frequently the hub of important conversations (Solis and Webber, 2012).

Both scholarly research and common knowledge typically describe SMIs as people who are very popular on social media (Cocker *et al.*, 2021). More specifically, based on the number of followers, scholars and marketers distinguish between micro-, meso- and macro-influencers. Micro-influencers, the largest group of influencers, are what many would consider "everyday people": those who typically have hundreds or a few thousands of followers to whom they promote products or services on social media (Hatton, 2018). In recent years, researchers have uncovered the importance of micro-influencers, showing that people trust advice and recommendations from other people that they perceive as more similar (Domingues Aguiar and van Reijmersdal, 2018). Meso-influencers are usually full-time professional influencers who have a number of followers ranging between 10,000 and 1 million (Boerman, 2020). They are not as big as macro-influencers, who are often established, international celebrities with over one million followers (i.e. Cristiano Ronaldo, Ariana Grande and Dwayne Johnson) (Hatton, 2018). Meso-influencers are mainly interesting because of their large reach and the perception that they are social role models; buying their recommended products or services might satisfy consumers' desire for social validation (Jin and Phua, 2014; De Veirman *et al.*, 2017). At the same time, their popularity could constitute a weakness, making them seem more economically driven and thus less authentic and credible (Hosie, 2019).

Indeed, it is not always the case that the number of followers improves perceptions of an SMI's reliability. According to Kyle Wong, CEO and cofounder of Pixlee:

Influence isn't characterized by having a lot of followers. In the past, brands have focused on popular bloggers and celebrities, but today there is a new wave of communicators that can have just as much impact (Wong, 2014).

In short, broad exposure remains an influencer's primary quality, but it should not be the sole consideration. Surely, micro-influencers are a growing trend because they look more authentic in storytelling and visual content (Domingues Aguiar and van Reijmersdal, 2018). They are usually leaders in their niches, and hence their followers are deeply involved with them (Hosie, 2019). The main advantage of micro-influencers is that they create a real and authentic relationship with their audience and express themselves more personally than most meso- and macro-influencers which helps them to be perceived as more credible by their followers (Campbell and Farrell, 2020; Djafarova and Rushworth, 2017).

However, past research has found conflicting empirical evidence on whether the relationship between an SMI's potential reach and followers' responses to the advertising post is positive or negative (Boerman, 2020; Jin and Phua, 2014; Kay *et al.*, 2020; Smith *et al.*, 2005). While Boerman (2020) found that influencer type (e.g. in terms of number of followers)

did not affect consumer's responses to the message, the influencer or the product being reviewed, [Smith et al. \(2005\)](#) found that people mostly tend to rely on recommendations from their peers rather than on any other information source, because they perceive those individuals as more reliable. Moreover, micro-influencers produce relevant content that appeals to online users, and they tend to engage in synchronous communications with their followers, as opposed to the meso-influencers ([Barker, 2016](#)). For this reason, they are increasingly being employed by companies as their product reviews are perceived as credible and trustworthy by their followers ([Marques et al., 2021](#)). As reported by [Campbell and Farrell \(2020, p. 472\)](#), "marketing managers are increasingly working with micro-influencers, who harness greater authenticity and trust and often are more connected to the needs and interests of their followers." Finally, in a recent study on the impact of micro- and macro-influencers' disclosure on consumers' evaluations of products, [Kay et al. \(2020\)](#) found that consumers exposed to a micro-influencer's advertising report higher levels of behavioral intentions than those exposed to a macro-influencer. Thus, we hypothesize that:

H1a. Compared to a meso-influencer, a micro-influencer will score higher on credibility.

Source credibility and electronic word-of-mouth

With the advent of Internet technologies, traditional WOM communication has been extended to electronic media, such as social networks, online discussion forums, blogs and review sites ([Ismagilova et al., 2020](#)). Electronic word-of-mouth (hereafter, eWOM) has thus become a relevant factor in shaping consumer purchase behavior ([Verma and Yadav, 2021](#)). eWOM is more powerful than traditional WOM, as it is faster and more convenient and influences a large number of physically distant people ([Farace et al., 2017](#)). Message source credibility is a key factor determining the persuasiveness of eWOM messages ([Hussain et al., 2017](#)). The higher an influencer's seeming credibility, the more likely followers will buy his/her sponsored products ([Jang et al., 2020](#)). Indeed, the literature on source credibility suggests that consumers are more likely to be persuaded when the source of the product information is perceived as credible ([Farace et al., 2017](#); [Ismagilova et al., 2020](#)). Specifically, highly credible sources usually generate more effective persuasive messages and induce more positive responses toward the product/services related to the reviews compared to less credible sources ([Hussain et al., 2017](#)). Moreover, past empirical evidence indicates that trustworthiness and expertise play key roles in persuading consumers and influencing their behavioral intentions ([Erkan and Evans, 2016](#)). Thus, we hypothesize that:

H1b. Influencers' perceived credibility will enhance Instagram users' eWOM intentions.

Source credibility and argument quality

Previous studies have demonstrated that argument strength affects the believability of online information ([Xiao et al., 2018](#); [Shan, 2016](#)). "Argument quality" refers to the strength of persuasion of the arguments within an information message ([Teng et al., 2014](#)). For product or service reviews that are created and shared by strangers, online users typically examine the semantic cues in the information to evaluate the source's credibility. Online influencers who make objective and cogent arguments about the product tend to be perceived as more credible than those who make specious arguments ([Papyrina, 2019](#); [Shan, 2016](#)). According to the ELM, strong, issue-relevant arguments have a positive effect on recipients' responses at both low and high levels of involvement with the content of the message; of course, the effects tend to be stronger when involvement is high ([Petty and Cacioppo, 1984](#); [Kitchen et al., 2014](#)). Moreover, previous research suggests that reviews with stronger argument quality score

higher on perceived source expertise and trustworthiness than reviews with weaker argument quality (Shan, 2016). Therefore, SMIs who provide objective and issue-relevant product evaluations with sufficient evidence are more likely to be perceived as credible sources of information regarding the reviewed product or service.

However, when talking about credibility perceptions, one cannot separate argument quality from influencers' characteristics, such as their number of followers. And yet, most previous studies about the factors that influence information credibility have explored these two phenomena independently (Xiao *et al.*, 2018). One recent study tried to fill this gap by investigating the interaction effect between argument quality and source prestige on the perceived expertise of the product's reviewer (Shan, 2016). The author's main finding was that reviews containing strong arguments score higher on trustworthiness compared to those containing weak arguments, regardless of the source's reputation. To further address this important issue, we examine the effects of argument quality on source credibility for micro-versus meso-influencers. As discussed previously, we expect that micro-influencers (compared to meso-influencers) will be perceived as more credible (Djafarova and Rushworth, 2017; Domingues Aguiar and van Reijmersdal, 2018; Kay *et al.*, 2020). Since micro-influencers are already perceived as highly reliable and trustworthy sources of information, consumers will be less motivated to evaluate how issue-relevant the message arguments are. In this case, consumer perception of the influencers' credibility will be mostly guided by heuristic cues such as the number of followers of the social influencer (Lee and Theokary, 2021). Therefore, we predict that argument quality will have little or no effect on influencers' perceived credibility (Domingues Aguiar and van Reijmersdal, 2018; Smith *et al.*, 2005).

On the contrary, we expect that meso- (compared to micro-influencers) will be perceived as less credible (Domingues Aguiar and van Reijmersdal, 2018; Kay *et al.*, 2020). Indeed, recent research found that consumers exposed to a meso-influencer's social advertising report less positive responses than those exposed to a macro-influencer (Campbell and Farrell, 2020; Djafarova and Rushworth, 2017; Kay *et al.*, 2020). Moreover, recent literature suggests that meso-influencers are sometimes seen as having lower credibility due to the perception that they are economically incentivized to review products or services:

People want authentic content and it becomes really disingenuous of you realize someone is paid \$13000 to do it. Consumers and followers start to see the dollar signs behind that, which have contributed to the general decline trust in big influencers and data backs this up (Hosie, 2019).

We suggest that as the perceived credibility of the SMI decreases, consumers become more motivated to evaluate all issue-relevant arguments presented in the product review to evaluate the true merits of the advertising proposal. Therefore, we predict that recipients of meso-influencers' product reviews will consider whether arguments contained in the review are weak or strong when forming a credibility judgment. Hence, we propose that argument quality will have a stronger impact on meso- compared to micro-influencers' perceived credibility. Thus, we hypothesize that:

- H2. The type of argument quality (strong vs weak) moderates the effects of number of followers on influencers' credibility. Strong (compared to weak) argument quality enhances source credibility and, in turn, eWOM intention when the review is shared by a meso-influencer, but not when it is shared by a micro-influencer.

Persuasion theory and consumer neuroscience

As previously discussed, Petty *et al.*'s (1981) dual process theory of persuasion has been widely used in empirical studies on how consumers evaluate information quality or

credibility (Cyr *et al.*, 2018; Huang *et al.*, 2011; Lee and Theokary, 2021; Xiao *et al.*, 2018). According to the ELM, people's involvement with information is linked to the relative cognitive work necessary to process and evaluate it. The model suggests that any factor in the communication context – including the quality and quantity of arguments in an advertisement – can influence persuasion via the central or the peripheral route (Petty and Cacioppo, 1984). This conceptualization suggests that when the elaboration likelihood is high (i.e. when the *central route* is used), message recipients are more generous with their cognitive resources; therefore, when exposed to an advertising post containing more than one product cue (i.e. when argument quality is strong), they will be more likely to engage in systematic thinking about the relevance of each argument (Kitchen *et al.*, 2014). Alternatively, when the *peripheral route* is used, message recipients are less generous with their cognitive resources and spend little or no cognitive work in evaluating how specious or issue-relevant the message arguments are, and their evaluation of the object may be guided mostly by the person's initial attitude and/or heuristic cues (i.e. number of followers) (Lee and Theokary, 2021).

Past research found that strong arguments can positively influence consumers' perception of the product-related message and influencer credibility and the effects tend to be stronger under systematic processing which requires a person to devote more cognitive effort (Zha *et al.*, 2018). Importantly, past research on cognitive work describes the benefits of a consumer neuroscience research approach, highlighting how it allows for more reliable measurement than do traditional self-reported markers of cognitive work (Pozharliev *et al.*, 2017; Westbrook and Braver, 2015). Indeed, while traditional advertising research has relied on self-reported measures (Shapiro *et al.*, 2002), researchers have increasingly suggested combining traditional and neurophysiological methods to gain more reliable measures of perceptual and cognitive processes (Lin *et al.*, 2018a, 2018b; Pozharliev *et al.*, 2017; Royo *et al.*, 2018). Therefore, in the current study, we use consumer neuroscience, namely, EEG brain responses, to assess the level of consumer cognitive work associated with the processing of an advertising message presenting weak (vs strong) argument quality and posted by micro- vs meso-influencer. Specifically, we focus on frontal theta activity as an indicator of cognitive work (Gordon *et al.*, 2018; Klimesch, 1999). We use consumer neuroscience, namely, EEG measures, to examine the cognitive activity that underlies how consumers process product-related information on an Instagram post from different types of SMIs. EEG measures can give us information about a person's inner state. Indeed, there is plenty of evidence linking theta rhythm to cognitive processing work (Klimesch, 1999; Wisniewski *et al.*, 2015), even in marketing settings (Cartocci *et al.*, 2019; Gordon *et al.*, 2018; Vecchiato *et al.*, 2010). In particular, an increase in the demand for cognitive resources (i.e. cognitive work) to be used in processing issue-related information is reflected in an increase of activity in the theta rhythm over the prefrontal scalp locations (Gordon *et al.*, 2018; Wisniewski *et al.*, 2015).

Based on the aforementioned role of cognitive work in evaluating the credibility of information and the reasoning behind *H1a* (lower credibility for meso- vs micro-influencer), we assume that consumers will spend more cognitive resources to process the product review information from meso- compared to micro-influencers. Thus, we hypothesize that:

H3a. Consumers will show higher levels of cognitive work when processing the product review information from meso- compared to micro-influencers.

Moreover, based on *H2*, we assume that when confronted with advertising post from meso-compared to micro-influencers, consumers will spend more cognitive resources to process

the product review containing strong versus weak argument quality. Specifically, we suggest that as perceived credibility of the SMI decreases, consumers become more motivated to engage in the cognitive work necessary to process all issue-relevant arguments presented to evaluate the true merits of the advertising message. Thus, we hypothesize that:

- H3b.* The type of argument quality (strong vs weak) moderates the effects of number of followers on cognitive work. Strong (compared to weak) argument quality enhances cognitive work when the review is shared by a meso-influencer but not when it is shared by a micro-influencer.

Empirical overview

We test our hypotheses and research questions in two studies. Study 1 is an online experiment that investigates Instagram users' self-reported responses (namely, perceived credibility, *H1a* and eWOM intentions, *H1b*) to an advertising messages posted by micro-influencers vs meso-influencers. Moreover, Study 1 tests our *H2* by examining how argument quality (strong vs weak) influences the effects of number of followers on influencers' credibility. Study 2 is a consumer neuroscience experiment performed in lab settings that investigates Instagram users' brain responses (frontal theta) to measure their level of cognitive work associated with the processing of advertising messages posted by micro-influencers versus meso-influencers. Moreover, Study 2 aims at offering convergence on our hypothesized conceptual framework by examining how argument quality (strong vs weak) influences the effects of number of followers on Instagram users' brain responses and, therefore, on their level of cognitive work associated with the processing of advertising messages posted by micro-influencers versus meso-influencers (*H3a* and *H3b*). [Figure 1](#) graphically illustrates our conceptual framework and hypotheses.

Methods Study 1

Study 1 is an online experiment conducted on a sample of Instagram users. The purpose of the study was to evaluate the effects of influencer type (micro vs meso) and argument quality (weak vs strong) on perceived source credibility and eWOM intention in relation to a fictitious Instagram influencer's post containing a product review.

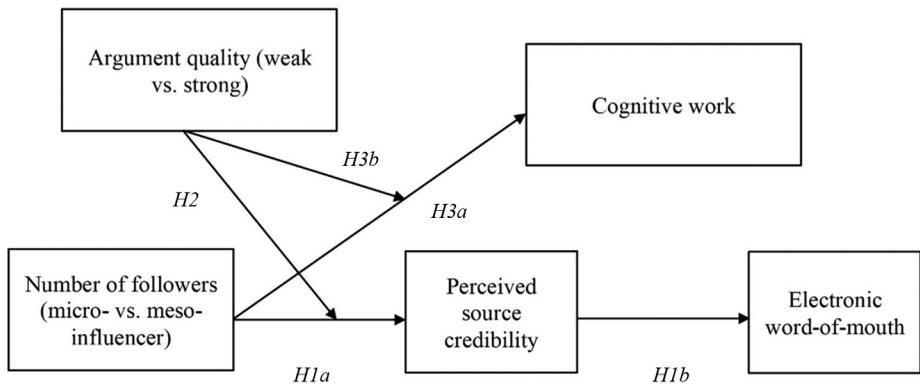


Figure 1.
Proposed conceptual
framework

Design and participants

We tested the hypotheses using an online survey, with a 2 (type of influencer: micro vs meso) \times 2 (argument quality: weak vs strong) between-subject experimental design. A total sample of 301 participants was recruited through invitations on social media platforms, forums, websites and messaging apps. We did a rigorous prescreening process. For the purpose of our study, only participants who had an Instagram account and who followed at least one SMI were allowed to participate in the experiment. Participants ($n = 109$) who did not have an Instagram account, did not follow at least one influencer on Instagram, did not pass the manipulation check and did not complete the questionnaire were excluded, leading to a final sample of 192 Instagram users ($M_{age} = 28.52$; $SD = 3.68$; 39% female). The youngest respondent was 19 and the oldest was 39 years old. This sample resembles the average Instagram user, as past research shows that 18- to 29-years-olds are the core users of this platform (Chen, 2018). In terms of how frequently they use Instagram, 69% of our respondents claimed to use Instagram between 1 and 3 h a day and generate an average of 5 posts and 11 Instagram stories per week. Participants were randomly assigned to one of the four experimental conditions.

Stimulus materials

A pretest ($n = 44$ Instagram users; $M_{age} = 24.07$, $SD = 3.83$; 56.8% female) was conducted to evaluate whether the two manipulations represented a sufficient difference between the influencer types and the argument qualities. The stimulus consisted in the *ad hoc* modified Instagram feed of a fictitious micro- or meso-influencer, featuring one of her posts containing either a weak or strong argument about buying a dog leash. We manipulated influencer type by modifying the number of followers: 5,000 followers for micro- versus 500,000 followers for meso-influencers (Boerman, 2020). The influencer's picture and biographical information remained the same in both conditions. The quality of the argument was manipulated by introducing:

- more factual information including technical characteristics of the product (e.g. availability of different colors, adjustable in length);
- promotional information (e.g. 30% discount); and
- hashtags and emoticons (Shan, 2016).

The weak condition featured shorter plain text with no factual and promotional information, as well as no hashtags or emoticons. The strong condition featured a longer description including more factual and promotional information, as well as hashtags and emoticons (Shan, 2016). The picture in the post was the same in all conditions (Figure 2).

To test the influencer's type, the pretest presented participants with a text saying that Instagram distinguishes influencers based on their number of followers ("reach"). Then, participants were asked to look at the influencer's biographical information, which displayed the number of followers alongside other information. To indicate their perception of the influencer's reach, participants responded to the statement "This influencer can reach a very high number of people with her posts," using a seven-point Likert scale anchored with "Strongly disagree/Neutral/Strongly agree" and "Neutral" as the midpoint. The results of the independent samples *t*-test confirmed a significant difference in perceived reach, with lower values for the micro-influencer ($M = 2.73$; $SD = 0.99$) compared to the meso-influencer ($M = 4.95$; $SD = 1.5$), as expected, with a $t(42) = -2.17$ and $p < 0.001$.

To test the argument quality, the pretest asked participants to rate the influencer's post in terms of the number of arguments presenting objective and verifiable product-related

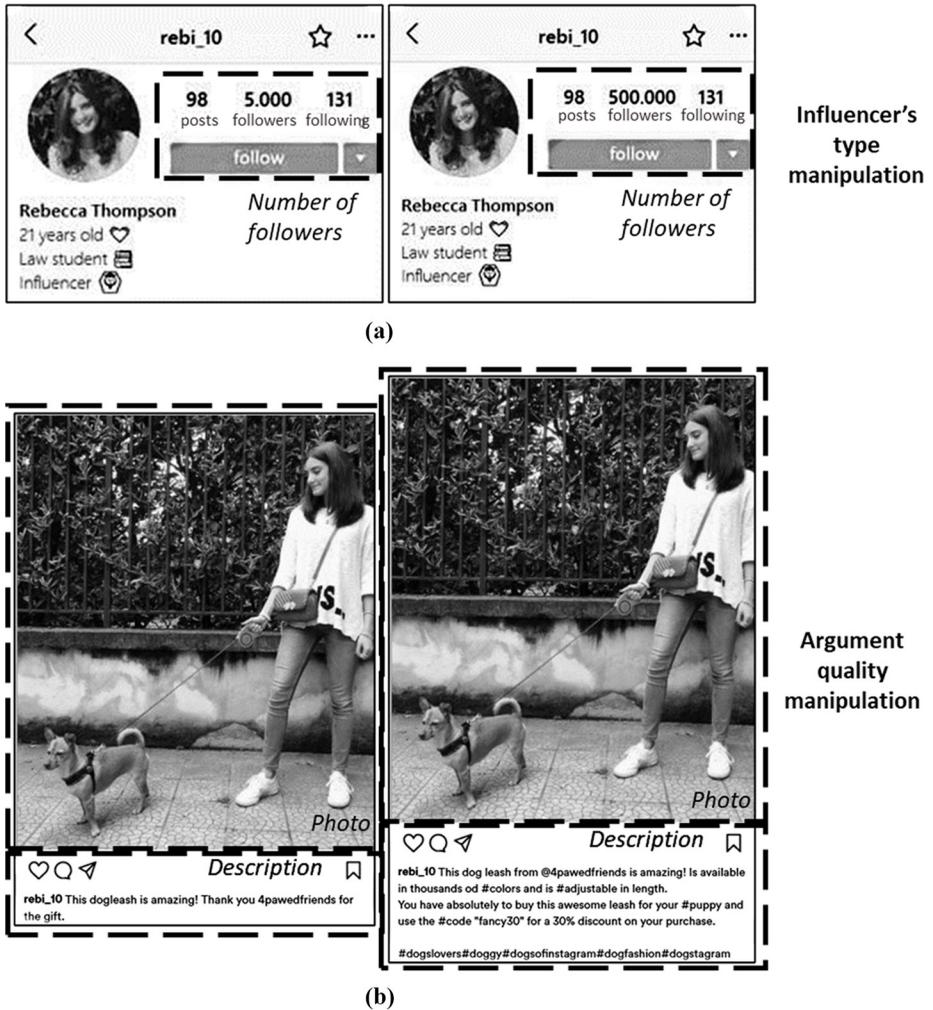


Figure 2. Stimuli manipulation for Studies 1 and 2. (a) Micro- and meso-influencer on left and right panel, respectively. (b) Weak and strong argument on left and right panel, respectively

information. Next, participants looked at an Instagram post featuring both a picture and text. They then rated their level of agreement with the sentence “I think this post has a:” on a seven-point semantic differential item anchored with “Weak argument/Strong argument.” The results of the independent samples *t*-test confirmed a significant difference in argument quality, with lower values for the weak argument ($M = 2.55$; $SD = 1.22$) compared to the strong argument ($M = 3.45$; $SD = 1.54$), as expected, with a $t(42) = -5.84$ and $p = 0.036$.

Procedure

The study was presented as an assessment of consumers’ responses to different Instagram posts. Primary data were collected using an online experimental survey. First, participants were asked to look at the overview of an Instagram account that aligned with one of the four conditions:

- (1) micro-influencer with strong argument;
- (2) micro-influencer with weak argument;
- (3) meso-influencer with strong argument; and
- (4) meso-influencer with weak argument.

Participants could look at the Instagram account as long as they wanted before continuing to the questionnaire. The questionnaire started with questions on perceived source credibility and eWOM, followed by the manipulation checks. We ordered questions in this way to ensure that the responses were not primed by the manipulation checks. The survey ended with questions about demographics.

Measures

Perceived credibility. With regard to the main study, we applied [Ohanian's \(1990\)](#) to measure perceived source credibility ([Table 2](#)). This scale measured trustworthiness with four, seven-point semantic differential items (anchored with “Dependable/Undependable,” “Dishonest/Honest,” “Sincere/Insincere” and “Trustworthy/Untrustworthy”) and measured expertise with four, seven-point semantic differential items (anchored with “Not an expert/Expert,” “Experienced/Inexperienced,” “Knowledgeable/Unknowledgeable” and “Unqualified/Qualified”) ($M_{credibility} = 4.78$; $SD = 1.43$; Cronbach's alpha = 0.95).

Electronic word-of-mouth intention. To measure eWOM intention, we adapted [Jin and Phua's \(2014\)](#) questionnaire to the Instagram context ([Table 2](#)) ($M_{eWOM} = 3.81$; $SD = 1.83$; Cronbach's alpha = 0.91). The scale features three items that are measured on a seven-point Likert scale anchored with “Strongly disagree/Strongly agree” as endpoints: “I am interested in sharing this product review on my Instagram account”; “I want to re-post the product review done by the influencer which I have just seen”; “I am going to write online about the reviewed product.”

Manipulation check. We conducted a manipulation check to ensure that respondents actually perceived a difference between micro- and meso-influencers and between weak and

Construct/variable	Source	Scale	Scale type
Intention to spread eWOM (dependent variable)	Adapted from Jin and Phua (2014)	Q1 I am interested in sharing this product review on my Instagram account Q2 I want to repost the product review done by influencer, which I have just seen Q3 I am going to write online about the reviewed product	Three items with seven points Likert scales
Influencers credibility	Adapted from Ohanian (1990)	Undependable – Dependable Dishonest – Honest Insincere – Sincere Untrustworthy – Trustworthy Not an expert – Expert Inexperienced – Experienced Unknowledgeable – Knowledgeable Unqualified – Qualified	Eight items with seven-point semantic differential scales

Table 2.
Scales used in the studies

strong arguments. Regarding influencer type, participants were asked to indicate the type of influencer they had seen (0 = micro-influencer; 1 = meso-influencer). Regarding argument quality, participants were asked how they perceived the argument in the post description (0 = weak; 1 = strong). Participants who gave a wrong answer to at least one of the questions were excluded from the survey.

Results

Moderated mediation model. To test our research hypotheses, we used a moderated mediation model implemented in the PROCESS macro for SPSS (Hayes, 2017) (Model 8), with type of influencer (coded as 0 = micro-influencer and 1 = meso-influencer) as the independent variable, argument quality (coded as 0 = weak argument and 1 = strong argument) as the moderator, perceived credibility as the mediator and eWOM intention as the dependent variable (Figure 1).

The regression analysis used 5,000 bootstrap samples to estimate bootstrap confidence intervals. Table 3 presents the results of this regression analysis.

With regard to *H1a*, the results of the regression [$R^2 = 0.24$; $F(3,188) = 19.28$; $p < 0.001$; $f^2 = 0.32$] showed a significant, negative main effect of influencer type ($b = -1.64$; $t = -6.16$; $p < 0.001$), indicating a decrease in credibility for the meso-influencer compared to the micro-influencer, but argument quality did not demonstrate a significant main effect on credibility ($p = 0.27$). With regard to *H2*, the results showed a positive, significant interaction effect of influencer and argument quality on credibility ($b = 0.80$; $t = 2.16$; $p = 0.03$). Looking at this interaction effect more closely, we noticed a significant difference between the micro- and meso-influencer in the weak argument condition, with a decrease in credibility for the meso-influencer ($M_{micro} = 5.14 \pm 0.17$; $M_{macro} = 3.50 \pm 0.21$; $p < 0.001$). Even in the strong argument condition, the results showed a decrease in credibility for the meso-influencer ($M_{micro} = 5.41 \pm 0.17$; $M_{macro} = 4.57 \pm 0.20$; $p = 0.002$). More interestingly for our *H2*, the meso-influencer received an increase in credibility in the strong argument condition compared to the weak argument condition ($M_{strong} = 4.57 \pm 0.20$; $M_{weak} = 3.50 \pm 0.21$; $p < 0.001$), while the micro-influencer's credibility remained similar across the two argument conditions ($p = 0.32$) (Figure 3A).

As a further test our *H1b* and *H2*, we regressed eWOM intention on the influencer's type, argument conditions, their interaction and credibility as a possible mediator [$R^2 = 0.53$; $F(4,187) = 51.79$; $p < 0.001$; $f^2 = 1.13$]. The results showed no significant main effects on eWOM intention among either influencer type ($p = 0.73$) or argument quality ($p = 0.98$). Their interaction effect on eWOM intention was also not significant ($p = 0.40$). Credibility, on

IV	Effect on:		
	Credibility	eWOM	Index of moderated mediation on eWOM
Influencer's type (micro = 0; meso = 1)	-1.4 (0.28)	-0.28 (0.36)	0.61 (0.29); CI = 0.04; 1.18
Argument quality (weak = 0; strong = 1)	0.26 (0.28)	0.35 (0.33)	
Influencer's type*	0.79 (0.4)*	0.15 (0.48)	
Argument quality			
Credibility	-	0.76 (0.11)**	

Table 3. Moderated mediation effects of argument quality on influencer's type, via credibility

Notes: Unstandardized b-coefficients (SE); CI = 95% bootstrap confidence interval; * indicates a $p < 0.05$; ** indicates a $p < 0.001$

the other hand, had a positive significant effect on eWOM intention ($b = 0.92$; $t = 12.45$; $p < 0.001$), highlighting that an increase in credibility leads to an increase in eWOM intention, as hypothesized in *H1b*.

In light of these results, there was no conditional direct effect ($p_{weak} = 0.73$; $p_{strong} = 0.42$), but there was a positive, significant and completely moderated indirect effect through credibility on eWOM [$b = 0.74$; Lower bound of the confidence interval (LCI) = 0.08; Upper bound of the confidence interval (UCI) = 1.41].

The results of the regression confirm our hypotheses: micro-influencers have higher credibility, which leads to an increase in eWOM intention. Moreover, the interaction between influencer type and argument quality has a positive effect on perceived credibility (and, in turn, on eWOM intention), with strong arguments increasing perceived credibility and eWOM intentions for the meso-influencer.

Methods Study 2

The results of Study 1 show that meso-influencers are perceived as less credible compared to micro-influencers. Moreover, the strength of the argument quality has a positive effect on meso-influencers' credibility and no effect on the credibility of micro-influencers. Therefore, we assume that the Instagram advertising posts of meso-influencers will be more likely to trigger high-effort cognitive elaboration in consumers. On the contrary, when exposed to product-related communication from a micro-influencer, consumers will be less sensitive to the message's arguments due to the source's inherent high credibility. In that case, consumers might be less motivated to spend cognitive resources on issue-relevant arguments. Thus, the aim of Study 2 is to examine the effects of the interaction between influencer type (micro vs meso) and argument quality (weak vs strong) on consumers' cognitive work while processing the product review.

Cognitive work evaluation using electroencephalogram

Thanks to the advances in consumer neuroscience and its application in different settings, it is possible to monitor in a noninvasive and continuous way the cognitive work during a specific task, in this particular case, the processing and evaluation of an Instagram advertising.

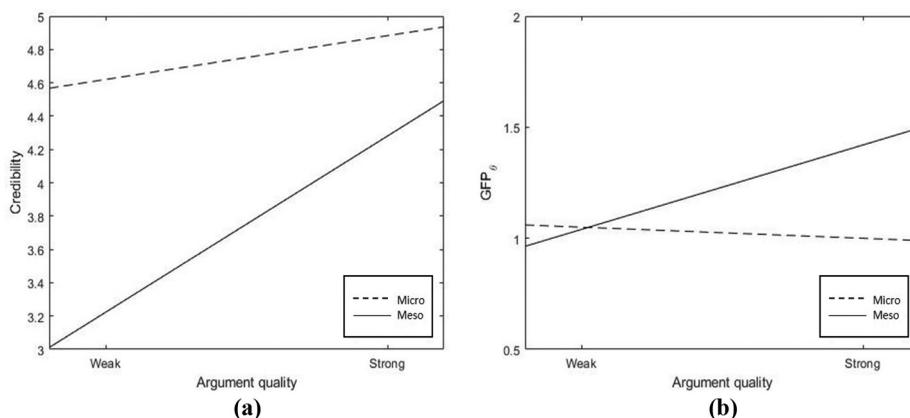


Figure 3. (a) Moderation effect of argument quality on credibility in Study 1. (b) ANOVA results for GFP_{θ} as a proxy of cognitive effort

Indeed, while traditional advertising research has relied on subjects' accuracy of poststimulus self-reported measures (Shapiro *et al.*, 2002), researchers have increasingly suggested combining traditional and neurophysiological methods to gain more reliable measures of perceptual and cognitive processes (Gordon *et al.*, 2018). With neuroimaging methods mainly used in neuromarketing studies, such as functional magnetic resonance imaging (fMRI), magnetoencephalography (MEG) and EEG, it is possible to obtain a direct and unbiased measure of the brain activity during the vision of the Instagram advertised post. Since the scarce usability and cost of fMRI and MEG, we used for this study a portable EEG device, also considering its optimal temporal resolution in the order of milliseconds (Daugherty *et al.*, 2018). Moreover, the use of a portable EEG device allows us to show the stimulus in a real context (directly from a smartphone) with less constraints for the participants as for the use of fMRI and MEG (Royo *et al.*, 2018). EEG records the electrical activity of the brain, produced by the neuronal postsynaptic potential and can give us information about brain areas activation that can be associated with consumers' cognitive states. In this study, we focus on the frontal area of the brain and its theta band activity, used as an indicator of cognitive work. There is plenty of evidence linking theta rhythm to cognitive processing work (Klimesch, 1999; Wisniewski *et al.*, 2015), even in marketing settings (Cartocci *et al.*, 2019; Gordon *et al.*, 2018; Vecchiato *et al.*, 2010). In particular, an increase in the demand for cognitive resources (i.e. cognitive work) to be used in processing issue-related information is reflected in an increase of activity in the theta rhythm over the prefrontal scalp locations (Wisniewski *et al.*, 2015). Thus, we use EEG measures to examine the cognitive activity that underlies how consumers process product-related information on an Instagram post from different types of SMIs.

Design and participants

To test the effect of an Instagram post containing product-related information on cognitive work, we used a 2 (type of influencer: micro vs meso) \times 2 (argument quality: weak vs strong) between subject experimental design. One hundred and twenty-one undergraduate business students from European Union University participated in the study. We did a rigorous prescreening process. Only participants who had an Instagram account and who followed at least one social influencer were allowed to participate in the experiment. We excluded participants ($n = 9$) who did not have an Instagram account, did not follow at least one influencer on Instagram, did not pass the manipulation check and presented artifacts or missing data in the segments of interest during the EEG recordings. This led to a final sample of 112 participants ($M_{age} = 21.9$; $SD = 1.6$; 46.3% female). The youngest respondent was 20 and the oldest was 26 years old, resembling the average Instagram user population (Chen, 2018). Regarding the frequency of use of Instagram, 57.5% of our respondents claimed to use Instagram between 1 and 3 h a day, 63.4% generated 1 to 3 posts per week and 66.7% generated 1 to 10 Instagram stories per week. The experiment was approved by the university's Ethics Committee, and we collected informed consent from each participant prior to beginning the experiment. Participants were assigned to one of the four selected experimental conditions (29 respondents for micro-influencer with weak argument condition; 29 respondents for micro-influencer with strong argument condition; 28 respondents for meso-influencer with weak argument condition; 26 respondents for meso-influencer with strong argument condition).

Procedure

Participants were told that the study concerned consumers' responses to different Instagram posts. The posts were presented on a smartphone, while EEG readings were recorded

throughout the whole experiment. The stimuli and the manipulation were the same as in Study 1. After signing an informed consent, the participant was invited to the experimental room, where the researcher installed an EEG headband on his/her forehead and checked the EEG signal for a correct acquisition. Prior to the experimental task, each participant recorded a 1-min baseline and 1 min with closed eyes to calibrate the EEG data. Then, participants were asked to look at the overview of the Instagram account for 1 min, which we deemed sufficient for reading and understanding the post's content, even for longer posts in the strong argument condition. During the task, participants could scroll up/down at will and review the information in the post. Finally, participants were presented with a questionnaire about their Instagram use and demographics.

Measures

Cognitive work. Participants' EEG activity was recorded at a sampling rate of 256 Hz, keeping impedances below 10 k Ω , using a custom-made frontal band with 10 silver coated electrodes (Fpz, Fp1, Fp2, AFz, AF3, AF4, AF5, AF6, AF7 and AF8), by the means of a portable 24-channel device (BEMicro, EBneuro, Italy).

EEG data has been processed and analyzed with custom-made MATLAB scripts using the EEGLAB toolbox (Delorme and Makeig, 2004) to identify and exclude any nonneural data (artifact) in the signal and retain only clean EEG signal. As first step, a series of digital filters have been applied to the recorded signal. In particular, a notch filter (50 Hz) and a band-pass filter (2–30 Hz) were applied to reject main current interference and high-frequency interferences (such as muscular artifacts), respectively. One of the main sources of artifacts in EEG signal is the eye. In fact, it acts as a dipole, and for this reason, the frontal electrodes signal could be affected by the micro-current generated by the eye blinks and movements. Since we are using primarily frontal electrodes in our study, the filtered EEG still contains eye-related artifacts. To discriminate between the two electrical sources (eye artifacts and neuronal data), we conducted an independent component analysis on the filtered EEG signal to identify the eye blinks and movements and exclude the relative component from the analysis since their electrical activity overlaps the EEG band of interest in this study (Di Flumeri *et al.*, 2016).

As last preparation step of the analysis, the clean EEG data has been divided into three main segments: 1-min baseline, 1-min closed eyes and 1-min task segments.

As suggested by Klimesch (1999), since alpha frequency varies as a function of age and brain volume, there is the necessity to define the alpha frequency individually (and therefore all the other bands of interest) for each subject. For this reason, from the 1 min with closed eyes segment (resting state with high alpha activity), we obtained the individual alpha frequency (IAF) for each subject to identify EEG theta band (θ), defined in Klimesch (1999) as the band between IAF minus 6 Hz and IAF minus 2 Hz. Then, to obtain a temporal description of the brain activation, we calculated the global field power (GFP) (Lehmann and Michel, 1990) for the theta band to highlight the moments of high synchronization of neurons in the scalp both for the one-minute baseline segment and the task segment. This index from EEG cognitive studies indicates that increases in frontal theta activity reliably reflect an increase in cognitive work (Wisniewski *et al.*, 2015). GFP θ was obtained from the left, right and midline frontal electrodes (Fp2, AF4, AF6, AF8, AF7, AF3, Fp1, AF5, Fpz and AFz), and the normalized Zscore for the task segment has been calculated using the mean and standard deviation obtained from the one-minute baseline segment.

Results

Effects of influencer's type and argument quality on cognitive work. We performed a two-way analysis of variance (ANOVA) to test the effect of the influencer's type (micro vs meso),

the argument quality (weak vs strong) and their interaction on normalized GFP θ (nGFP θ), which served as the dependent variable. Table 4 shows the means for the nGFP θ in all four conditions.

The results showed a main effect of the influencer type on our dependent variable, with an increase of nGFP θ for the meso- compared to the micro-influencer [$M_{micro} = 1.03 \pm 0.05$; $M_{meso} = 1.23 \pm 0.08$; $F(1,109) = 4.52$; $p = 0.036$; $partial \eta^2 = 0.04$], while argument quality had no significant main effect on nGFP θ ($p = 0.083$).

Moreover, when we tested the interaction effect on nGFP θ , we found a significant interaction between influencer type and argument quality [$F(1,109) = 4.99$; $p = 0.028$; $partial \eta^2 = 0.04$]. Duncan's post hoc test highlighted a significant increase in nGFP θ for the meso-influencer with a strong argument compared to all other conditions (see Table 5). In particular, we saw an increase in nGFP θ in the strong (compared to weak) argument condition for the meso-influencer, while no such increase occurred for the micro-influencer (Figure 3B).

As expected, the results of the ANOVA underscored that consumers exhibit a significant increase in cognitive work toward an Instagram product review by a meso-influencer with strong arguments, but not for micro-influencers or those with weak arguments. Quality did not have a main effect on nGFP θ due to the fact it interacts with influencer type. In particular, in the case of micro-influencer, quality did not play a decisive role in affecting credibility because micro-influencers are typically perceived as relatively high in credibility and authenticity; thus, customer could need less cognitive work to evaluate the quality of arguments in the post.

General discussion

This research aimed to investigate the impact of SMI type and argument quality on consumers' neurophysiological (cognitive work) and self-reported (perceived source credibility and eWOM intention) responses to a brand-related Instagram post. Study 1 showed that Instagram users perceived micro-influencers as more credible sources of product-related information than meso-influencers, which led to higher eWOM intention. The results also demonstrated that strong (versus weak) argument quality plays an important role in enhancing the credibility of meso-influencers, but not micro-influencers. Study 2, an EEG experiment, extended Study 1 by showing that people invest more

Table 4.
Average values and their standard deviation for the GFP θ in Study 2

GFP θ	Weak argument	Strong argument
Micro-influencer	1.05 \pm 0.47	1.01 \pm 0.37
Meso-influencer	1.04 \pm 0.37	1.43 \pm 0.77

Table 5.
p-values for Duncan's post hoc test for Study 2

Influencer's reach*Argument	Micro*Strong	Macro*Weak	Meso*Strong
Micro*Weak	0.75	0.939	0.007*
Micro*Strong		0.79	0.004*
Meso*Weak			0.008*

Note: *denotes a significance level below 0.01

cognitive work when exposed to Instagram posts featuring strong arguments from meso-influencers, but not for weak arguments or micro-influencers. In the following sections, we discuss and explain these findings' theoretical and practical implications.

Theoretical contribution

Our research advances extant research on consumer responses to social media marketing in three important ways. First, it contributes to the literature on influencer marketing (De Vries, 2019; Martínez-López *et al.*, 2020; Rohde and Mau, 2021) by investigating how micro-versus meso-influencers can effectively persuade consumers on social media. Specifically, we found that micro-influencers, rather than meso-influencers, appear to be perceived as more credible sources of information and are thus more effective in enhancing consumer behavioral intentions. In contrast to previous empirical findings on celebrity endorsement and SMIs, which suggest that a greater level of popularity increases the impact of SMIs (Jin and Phua, 2014; De Veirman *et al.*, 2017), the results of our research show the opposite: that “more is not always better” regarding influencers' number of followers. On the contrary, our results add empirical evidence to marketers and practitioners' arguments that micro-influencers could be more beneficial than meso-influencers for brands that want to invest in influencer marketing (Hatton, 2018; Langan, 2019; Wissman, 2018). One possible explanation for our results comes from the persuasion knowledge model, which suggests that consumers try to avoid highly persuasive marketing communication (Guo and Main, 2012; Verlegh *et al.*, 2015). Presumably, consumers perceive that meso- (compared to micro-influencers) use their higher number of followers as a persuasion tool, which negatively affects the influencer's perceived credibility among Instagram users.

Second, this study bridges two streams of literature: SMI level (micro vs meso) and argument quality (weak vs strong). By combining these streams, we offer a theoretical explanation, alongside empirical evidence, of how these two concepts influence consumer responses to SMIs. In doing so, we contribute to the literature on the role of message characteristics in determining the effectiveness of a product-related advertising posted on social platform (Balabanis and Chatzopoulou, 2019; Balaji *et al.*, 2021; Lee and Theokary, 2021; Lou and Yuan, 2019; Uribe *et al.*, 2016; Xiao *et al.*, 2018). Thus far, research has studied influencer type (Boerman, 2020; De Veirman *et al.*, 2017) and argument quality (Xiao *et al.*, 2018; Papyrina, 2019) in isolation. By contrast, this study explored how these two phenomena affect consumers' attitudinal and behavioral responses to social influencers' marketing communication. Our results indicate that meso-influencers who use more issue-relevant arguments are perceived as more credible, indicating that the credibility of product reviews is affected by more than just source-related attributes; the content of the review also exerts a strong influence on source credibility evaluations. This suggests that consumers have a greater preference for and evaluate more positively those Instagram influencers who are more relatable (low levels of followers) and open (disclose more product-relevant information) but become more skeptical as influencers' popularity increases.

Third and finally, the study findings contribute to the growing body of literature that seeks to understand how neurophysiological processes affect online experiences and customer responses to online marketing communication (Gordon *et al.*, 2018; Lin *et al.*, 2018a, 2018b; Pozharliev *et al.*, 2022). Broadening the methodological approach is important for generating more insights in this area (Daugherty *et al.*, 2018; Royo *et al.*, 2018). Specifically, we found that consumers invest significantly more cognitive work in Instagram product reviews that come from a meso-influencer and feature strong arguments. Previous research suggests that a greater amount of frontal theta activity likely reflects an increase in attention allocation (Klimesch, 1999) and/or working memory (Jensen and Tesche, 2002).

One plausible explanation for our EEG results driven from the ELM, which suggests that the quality and number of arguments in a message can induce persuasion via either issue-related thinking or simple inference (Kitchen *et al.*, 2014; Lee and Theokary, 2021). According to the *central/systematic route*, attitude change results from a person's careful consideration of all available information. Our results show that meso-influencers are perceived as less credible, which may compel a viewer to apply more cognitive resources scrutinizing the number and quality of arguments in a message. In other words: "The more information the influencer provides, the more I think about whether to believe him/her or not." On the other hand, our results show that micro-influencers are perceived as more credible; thus, any evaluation of the source credibility will likely occur via the *peripheral/heuristic route*, where consumers make a simple inference about the merits of the advocated position based on simple and easily accessible cues (e.g. number of followers) in the communication context, which requires fewer cognitive resources (Xiao *et al.*, 2018). For example, rather than carefully evaluating the product-relevant arguments, the consumer may accept an advocacy simply because the message source presents specific characteristics such as a low number of followers.

Managerial implications

From a practical and marketing point of view, this study provides guidance to marketers looking to identify and select the type of SMI who will yield the greatest impact on the credibility of their online communication. In particular, our results suggest that marketers should carefully consider Instagram influencers based on the trade-offs between credibility and reach. Specifically, micro-influencers are perceived as more credible sources of information than meso-influencers, which means that they can exert a greater influence on consumers' behavior. In a recent study commissioned by experticity, 82% of the surveyed consumers stated that they were highly likely to follow a recommendation made by a micro-influencer (Langan, 2019). While micro-influencers may be challenging to identify due to their smaller networks, firms would nonetheless benefit from the fact that they are more cost-effective, accessible and flexible than their counterparts (Expert Panel (2019) Forbes Communication Council).

Instagram influencers can also draw implications from these results. First, some SMIs adopt the practice of buying followers from "follower farms" to artificially boost their popularity and potential reach (Confessore *et al.*, 2018). Instagram influencers should reconsider using these unethical practices, as it appears "less is more" in terms of how the number of followers impacts influencers' credibility and consumers' behavioral intentions. Second, this study suggests that Instagram influencers should view argument quality as a potential opportunity to enhance their credibility and draw greater positive outcomes for the products and brands they endorse. Specifically, meso-influencers should focus their social media efforts on enhancing the quality of their online communication rather than on increasing their number of followers. This could be achieved by Instagram influencers ensuring they post a greater number of objectives, reliable and easily verifiable claims. Such a strategy could enhance source/message credibility and influence consumers' behavioral intentions.

Future research

The limitations of our work can serve as ideas for future research. First, an important question for future research concerns the differential consequences, if any, of the attitude change and/or the behavioral intentions toward SMIs induced under each route. First, attitude change and/or behavioral intentions induced via the systematic route (meso-influencer) may remain for a

longer time and/or be more predictive of behavior because of the higher level of cognitive resources applied to evaluating all available arguments (Kitchen *et al.*, 2014; Lee and Theokary, 2021; Xiao *et al.*, 2018). Following this line of reasoning, changes in attitude and/or behavioral intentions toward SMIs (micro-influencer) that result from a simple inference (e.g. number of followers) may be less stable over time and have lower predictive power. While the systematic route appears to have more prevailing benefits (e.g. greater temporal resistance and more predictive behavior due to higher cognitive activity), inducing behavior via this route is a major hurdle because consumers must have both the motivation and ability to think about the influencer's product-relevant arguments.

Second, this study did not account for the influencer's relevance and resonance. According to Solis and Webber (2012), these factors combine with reach to form the pillars of online influence. While reach and resonance represent an overlap with "classic" communication, relevance is a new element that finds an ideal ground in influencing marketing. Being relevant entails being useful due to expertise and know-how, as well as involving the target audience in relationships capable of creating value. Future research should consider the impact of all three pillars of influence when choosing an influencer, regardless of the marketing campaign goal.

Third, we studied consumer responses to online communication produced by Instagram influencers within a single product category. Past research suggests that consumer responses may vary based on the product category, such as experienced vs searched products (Park and Lee, 2009). Another important product type distinction that requires further attention is between hedonic and utilitarian products. It could be that micro- versus macro-influencers or that weak versus strong arguments are more effective for promoting the utilitarian versus hedonic value of products (Lin *et al.*, 2018a, 2018b). Thus, future research could examine the robustness and generalizability of these results across multiple product types and/or categories.

Finally, our two studies only used positive review content. Past studies have found that negative reviews are more likely to affect consumer responses than positive reviews (Shan, 2016). Further research should study how consumers evaluate the source credibility of a micro- vs meso-influencer when they are exposed to negative reviews containing weak vs strong arguments.

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