



Understanding the Pro-Environmental Motives of Young Consumers Engaging with Virtual Influencers: a Perspective from Goal-Framing Theory

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EXTENDED ABSTRACT

Introduction: In recent years, consumers have become increasingly interested in virtual influencers' green activism (Kelly, 2023), leading many fashion brands to leverage virtual influencers for their green marketing initiatives. For example, Burberry developed a virtual influencer to emphasize the brand's investment in environmental strategies (Ruggeri, 2022). Likewise, Noonooori, a popular virtual influencer on Instagram, has presented various works advocating for sustainable fashion (Ruggeri, 2022). Nevertheless, scant research has investigated consumers' motivations for engaging with sustainability virtual influencers. Past literature on virtual influencer marketing has mainly focused on comparing the advertising effectiveness between virtual influencers and human influencers (e.g., Franke et al., 2022; Ozdemir et al., 2023). However, a key research question concerning the understanding of consumers' motives toward virtual influencers' sustainability appeal remains understudied. In this context, this research aims to investigate the motives behind young female consumers' engagement with sustainability virtual influencers. It specifically adopts the source credibility model and goal-framing theory to develop and test the hypothesized model. This study contributes to the influencer marketing and green marketing literature, while also providing practical insights for fashion retailers.

Literature Review: The source credibility model refers to the effectiveness of an endorsement deriving from an endorser's positive characteristics such as attractiveness, trustworthiness, and expertise (Ohanian, 1991; Weismueller et al., 2020). Past literature on influencer marketing that adopted the source credibility model tested the three influential source effects on purchase intention, attitude toward an advertisement, and loyalty (Melnychuk et al., 2024; Yang et al., 2023). The current research specifically focuses on the impact of the source credibility model on audiences' pro-environmental motives. A group of researchers who examined the impact of the source credibility model on pro-environmental behavior provided evidence that an endorser's credibility could play a crucial role in persuading audiences' sustainable behavior (Jain et al., 2022; Kumar et al., 2023).

Emerging from social psychology, the goal-framing theory postulates that an individual has different motivations, namely gain goal, hedonic goal, and normative goal motivations, in pursuing pro-environmental behavior (Lindenberg & Steg, 2007). More specifically, a gain goal frame activates an individual's behavior toward benefit maximization (Lindenberg & Steg, 2007). A hedonic goal frame activates an individual's immediate pleasure (Lindenberg & Steg, 2007). Lastly, a normative goal frame is driven by altruistic motivations and a respect for social norms (Jain & Rathi, 2023). Based on a goal-framing theory perspective, this research investigates the relational associations between virtual influencers' source characteristics and consumers' pro-environmental motivations.

Theoretical framework and hypotheses: Literature on pro-environmental behavior emphasizes the importance of human values, beliefs, and norms that influence an individual's intention and behavior (e.g., Fransson & Garling, 1999; Stern, 2000). In general, two types of values, egoistic and altruistic value orientations, explain pro-environmental behavior. For example, it is assumed that people with a strong egoistic value orientation (i.e., self-enhancement) will consider economic costs and benefits, while those with a strong altruistic value orientation (i.e., self-transcendent) will consider moral and societal expectations in pursuing pro-environmental behavior (De Groot & Steg, 2009). Individuals with an egoistic value orientation would engage in pro-environmental behavior to increase their own gratifications from an environmental-friendly purchase (Gupta et al., 2019). Therefore, consumers seeking utilitarian benefits such as price discounts or health improvements align with a gain goal motivation (Lindenberg &

Steg, 2007). Within this vein, virtual influencers who provide practical knowledge and useful information could be perceived as effective communicators for those who seek objective and standard measures in pursuing pro-environmental behavior (Filieri et al., 2023; Yang et al., 2021). Virtual influencers who demonstrate expertise in sustainability could also elicit positive emotional reactions from those who appreciate and enjoy novel content and a learning experience in pursuing pro-environmental behavior.

H1. VIs' expertise will positively influence consumers' a) gain goal and b) hedonic goal motivations.

Virtual influencers, often designed with idealized features and lifestyles, can serve as aspirational figures. Consumers may be drawn to these influencers as they represent a socially accepted and admired standard. By associating with a virtual influencer engaged in pro-environmental behavior, consumers can enhance their own social image and gain approval, aligning with their egoistic motivations (Jain & Rathi, 2023). Attractiveness, both in appearance and content, is inherently entertaining. Virtual influencers often present content in engaging and visually appealing ways. Consumers, motivated by the hedonic desire for memorable and pleasurable experiences (Miao & Wei, 2013), may be more inclined to adopt pro-environmental behavior when presented by an attractive virtual influencer as it aligns with their hedonic need for pleasure and emotional gratification (Lindenberg & Steg, 2007).

H2. VIs' attractiveness will positively influence consumers' a) gain goal, and b) hedonic goal motivations.

Individuals with an altruistic value orientation engage in pro-environmental behavior because they believe sustainable choices could contribute to a better world (Knez, 2016). They feel responsible for taking pro-environmental actions, aligning with a normative goal motivation (Lindenberg & Steg, 2007). Virtual influencers demonstrating environmental justice through authentic green activism could affect consumers who desire to fulfill their social responsibility.

H3. VIs' trustworthiness will positively influence consumers' normative goal motivations.

Virtual influencers refer to computer-generated avatars that are imbued with human characteristics and personalities (Guthrie, 2020). Facilitated by each pro-environmental goal motivation, consumers would readily engage with virtual influencers as they recognize the persuasiveness of the different source characteristics possessed by virtual influencers.

H4. Consumers' higher gain goal motivation will lead to higher virtual influencer engagement.

H5. Consumers' higher hedonic goal motivation will lead to higher virtual influencer engagement.

H6. Consumers' higher normative goal motivation will lead to higher virtual influencer engagement.

H7. Goal frames (a: gain goal motivation, b: hedonic goal motivation, c: normative goal motivation) will mediate the relationship between each of the source credibility factors and virtual influencer engagement.

Method: A total of 366 participants were recruited via the Prolific platform. The majority of the participants were young female consumers ($M_{age} = 29.8$), White (53.8%) with a bachelor's degree (38.8%), and household income ranging from \$20K to \$80K (55.8%). Participants responded that they had been following virtual influencers for more than 6 months (36.9%), checking the posting of virtual influencers once a week (63.9%), and spending less than 10 minutes a day watching their posts (76.0%).

Fashion was the participants' favorite topic (42.1%), though, the majority of them had never purchased products from virtual influencers (71.6%). The measurement items were adapted from previous studies (see Table 1). The questionnaire was constructed in three sections followed by questions asking respondents' qualifications (i.e., screening questions), measurement items, and respondents' demographic information. Items were measured using a seven-point Likert scale (1=strongly disagree, 7=strongly agree).

Results: Data analysis was conducted using SPSS 29.0 and Amos 26.0. Confirmatory factor analysis (CFA) was conducted to determine the measurement model fit. The fit indices suggested that the measurement model was a good fit to the data ($\chi^2=926.18$, $df=470$, $p<.001$, $CMIN/df=1.97$, $CFI=.96$, $TLI=.95$, $RMSEA=.05$, $SRMR=.04$). To further assess the discriminant validity of the measures, Heterotrait-Monotrait (HTMT) criterion was used with a threshold value of .85 as presented in Table 2 (Henseler, Ringle & Sarstedt, 2015). Table 1 shows the reliability of all constructs as measured by Cronbach's alpha, composite reliability (CR), and the average variance extracted (AVE). The Cronbach's alpha of all constructs meets the acceptable level of .70 (Fornell & Larcker, 1981). However, the AVE of gain goal motivation was below the recommended level of .5. According to Fornell and Larcker (1981), the AVE may be a more conservative estimate of the validity of the measurement model, and "based on the CR alone, the researcher may conclude that the convergent validity of the construct is adequate (p. 46)." As the CR of all constructs was well above the recommended level, the internal reliability of the measurement items was considered acceptable.

Structural equation modeling (SEM) results showed that the model fit was good ($\chi^2=941.74$, $df=474$, $p<.001$, $CMIN/df=1.99$, $CFI=.96$, $RMSEA=.05$, $SRMR=.06$). Path analysis revealed that perceived expertise positively led to gain goal motivation ($\beta=.19$, $t= 2.70$. $p<.01$) and hedonic goal motivation ($\beta=.19$, $t= 3.44$. $p<.001$). Perceived expertise also positively led to gain goal motivation ($\beta=.17$, $t= 2.54$. $p<.05$) and hedonic goal motivation ($\beta=.19$, $t= 3.69$. $p<.001$). Perceived trustworthiness positively led to normative goal motivation ($\beta=.27$, $t= 5.16$. $p<.001$). Hedonic goal motivation ($\beta=.15$, $t= 2.00$. $p<.05$), and normative goal motivation led to virtual influencer engagement, respectively ($\beta=.18$, $t= 2.46$. $p<.05$). However, gain goal motivation did not lead to virtual influencer engagement ($\beta=.07$, $t= .94$. $p=.35$), not supporting H4.

Mediation analysis was conducted with 5,000 bootstrapping samples with a bias-corrected confidence interval at the level of 95% (Preacher and Hayes, 2008). Perceived expertise and perceived attractiveness had a significant indirect effect on virtual influencer engagement through hedonic goal motivation, and perceived trustworthiness had a significant indirect effect on virtual influencer engagement through normative goal motivation, thus partially supporting H7 (see Table 3).

Discussion and conclusions: The data analysis results found that all hypotheses were supported except for H4. Gain goal motivation did not lead to virtual influencer engagement. This could be drawn on several reasons. First, current virtual influencers may not provide sufficient practical information compared to other human influencers who heavily focus on establishing credible and authentic communities on social media (Trager, 2018). Moreover, human influencers give impressions of having specialized knowledge and experience (Etienne et al., 2023) whereas virtual influencers have limitations in the provision of insightful information based on unique experiences. Therefore, consumers with gain goal might perceive that virtual influencers do not provide a sufficient level of beneficial content to establish an engaged relationship with them. Another interesting finding from the study is that perceived expertise and perceived attractiveness led to virtual influencer engagement mediated by hedonic goal motivation. This suggests that brand marketers can utilize virtual influencers as a tool for promoting sustainability by creating enjoyable and novel posts as well as by portraying them as having pleasurable

moments. Perceived trustworthiness also led to virtual influencer engagement mediated by normative goal motivation. This implies that young female consumers might perceive sustainability virtual influencers as suitable spokespersons for green products because they maintain a consistent ethical image as well as convey unbiased content as a neutral medium (Wagman, 2020).

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Table 1 *Results of Reliability, and Convergent Validity*

	Cronbach’s α	CR	AVE	Source
Perceived Expertise	.96	.96	.82	Ohanian (1990)
Perceived Attractiveness	.90	.91	.67	
Perceived Trustworthiness	.96	.96	.84	
Gain Goal Motivation	.70	.70	.37	Khan et al. (2023)
Hedonic Goal Motivation	.92	.92	.80	

Normative Goal Motivation	.88	.88	.72	
Virtual Influencer Engagement	.95	.94	.67	Chen et al. (2021)

Table 2 Results of Discriminant Validity Using the HTMT Ratio

	PE	PA	PT	GG	HG	NG	VIE
PE							
PA	.56						
PT	.85	.50					
GG	.34	.39	.33				
HG	.34	.38	.34	.69			
NG	.33	.29	.32	.65	.78		
VIE	.70	.49	.70	.50	.54	.55	

Note. PE: perceived expertise; PA: perceived attractiveness; PT: perceived trustworthiness; GG: gain goal motivation; HG: hedonic goal motivation; NG: normative goal motivation; VIE: virtual influencer engagement

Table 3 Results of Mediation Analysis

Relationship	Direct Effect	Indirect Effect	Confidence Interval		P-value	Conclusion
			Lower Bound	Upper Bound		
Perceived Expertise → Hedonic Goal → Virtual Influencer Engagement	.20 (.01)	.04	.01	.10	.02	Partial Mediation
Perceived Attractiveness → Hedonic Goal → Virtual Influencer Engagement	.12 (.05)	.05	.01	.13	.02	Partial Mediation
Perceived Trustworthiness → Normative Goal → Virtual Influencer Engagement	.32 (.000)	.04	.01	.10	.03	Partial Mediation

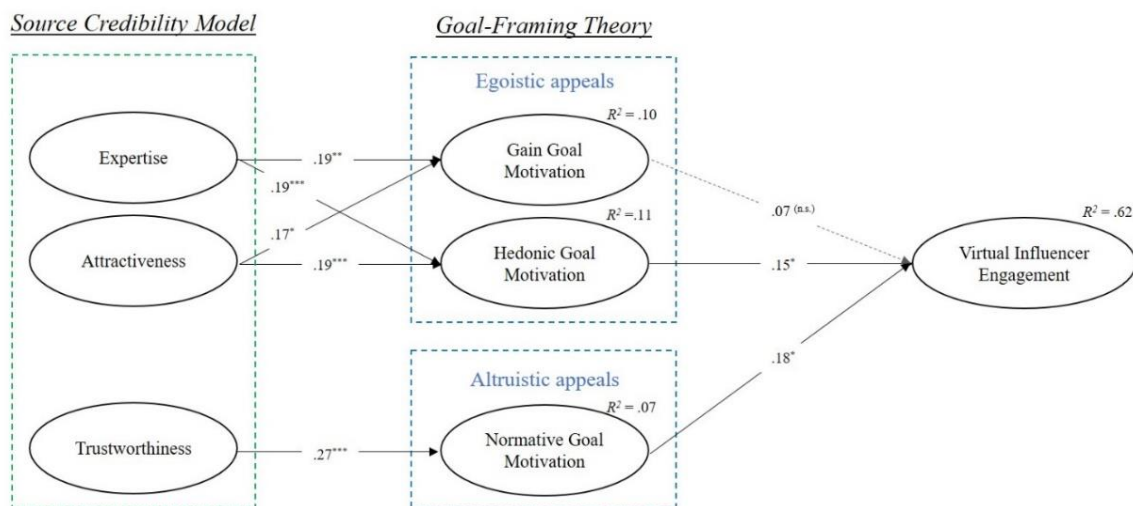


Figure 1. Results of the Hypothesized Model