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Conceptualization and Validation of a Theoretically Grounded Multidimensional Scale for Greenfluencer Cognitraction

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Abstract

This study aims to deliver a reliable scale for greenfluencer cognitraction which is defined as 'the cognitive pull, the green influencers exert on their followers'. Addressing three core research questions, the study investigates the dimensions of perceived cognitive influence in the context of greenfluencer attraction, the scale's theoretical grounding and translation into measurable constructs, and the reliability and validity of the developed scale. Drawing from source credibility and source attractiveness theories, a mixed methods approach was adopted; where primarily in-depth interviews (n=55) were conducted to generate item pools, secondly, a pilot survey for Cronbach' alpha validation (n=50), thirdly Exploratory Factor Analysis (EFA) (n=217) and finally Confirmatory Factor Analysis (CFA) (n=385). These four stages resulted in identifying four core dimensions for cognitive anchoring, such as, awareness and recognition of products; analysis and judgement of the claims; communication advocacy of sustainability practices and knowledge of the environment. Particularly, the robustness of the cognitive anchoring items, centered on message clarity and simplification demonstrated strong reliability and alignment with participants' natural processing of greenfluencer communication. The validated scale offers a theoretically grounded tool for future research on greenfluencer impact in sustainability marketing.

Keywords: Cognitive Anchoring, Cognitraction, Greenfluencer Attraction, Scale Development, Sustainable Green Marketing.

Introduction

The advent of social media has broadened the notion of celebrity in recent years. Extension of the concept of a celebrity describes a separate category as "internet celebrities," also known as online influencers (OIs) or Social Media Influencers (SMIs). They constitute a different type of celebrity group known as influencers (1). Distinct from traditional celebrities who have achieved success in certain accredited industries (such as acting, music, or athletics), influencers as a separate category have never received any official recognition (2, 3). They gained fame and celebrity status among their peer social media (SM) users through their presumably authentic and engaging content. This study utilizes the wider definition of influencers, which includes both internet celebrities and celebrity influencers. While green advertising has been the subject of previous research, its presence in SM has received very little attention. It is done through green-sponsored posts on social media. With the global influencer marketing industry valued at over $21 billion and sustainability-driven content witnessing unprecedented engagement (4). A subset of influencers who promote sustainability and green practices of a body corporate on social media are called greenfluencers. They publish posts through blogs, tweets, and other formats to sway opinions (5). They specialize in disseminating information on marketing green products and can therefore be advocates for effective change (6-8). These sources have the potential to be powerful advocates for encouraging people to adopt sustainable lifestyles (9, 10). These sources function as symbolic models based on which the followers model their beliefs. They are sustainability heroes on social media (7, 11**)**. They influence followers by incorporating endorse-ments into their posts and personal narratives (12). Their 'perceived attraction' is subject to being conceptualized and developed as a scale in the present study. The cognitive ability as

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an attraction trait (henceforth referred to as cognitraction) as defined in this study is the degree to which a consumer finds a source attractive because of their cognitive ability exhibited through their cognitive awareness and recognition, cognitive analysis and judgement, knowledge and environmental awareness, and their perceived communication and advocacy skills. In marketing research, consumers are attracted to sources that exhibit knowledge and experience and have decent appearances (13). Hence, the term cognitraction is a portmanteau – a word neologism, created by clipping and blending "cognitive ability" with "Attraction". Source attractiveness theory (SAT) and Source credibility theory (SCT) have been foundational concepts in communication science, highlighting how a source's physical attractiveness, expertise, and trustworthiness can influence consumer perceptions of credibility (14-16). The 'source' in this study is a subset of influencers known as "green influencers" or "greenfluencers". Despite the increasing reliance on influencers in green marketing, current theoretical frameworks such as SAT and SCT remain limited in scope. To the best of the researcher's knowledge, there is no standardized scale in the extant literature that measures the perceptions of attractiveness toward the cognitive ability of a source. There is a pressing need for a standardised scale to measure this. The absence of such a tool limits both theoretical advancement and practical applications in influencer marketing, particularly in domains like sustainability where cognition-driven trust is critical. This gap highlights the necessity of developing a validated and reliable scale to measure cognitraction. It has long been a subject of study in psychology and marketing, with a focus on physical traits or physical beauty or beauty quotient (BQ) (17). They have traditionally focused on BQ as the only dimension of attractiveness, alongside expertise and trustworthiness as the drivers of credibility (14). There exists a compelling need to comprehend the consumers' perceptions of attractiveness toward the sources in green-sponsored posts on social media (henceforth referred to as posts). However, with the advent of SM, where anybody can look attractive with a few filters and Artificial intelligence technologies, the theories have to be revisited. The credibility of a source is boosted by their expertise and trustworthiness as stated in SCT. Exhibiting expertise efficiently on posts through will add on to their attractiveness. The researchers challenge the existing theories in the context of green marketing**,** especially while greenfluencers promote eco-friendly products. This study expands the use of SAT and SCT in the context of greenfluencers. Hence, cognitive ability is imported in the place of physical attractiveness i.e., (BQ) in the present study. Greenfluencers support body corporates eco-friendly product choices (18, 19). Attractiveness here is the source's rational thinking towards the companies and their claims, rational thinking consults reliable sources, facts, and analysis before endorsing. This study attempts to add a new dimension to the SAT and SCT by integrating them for a phenomenon where consumers are tasked with differentiating genuine green claims from deceptive ones, which is done with ease by a greenfluencer. Its influence on perceived interpersonal attraction, especially for a follower towards a greenfluencer, is a new phenomenon to investigate. While shaping perceptions of cognitraction, fostering deeper connections with followers and enhancing the overall impact of the source and advertising message is important (20). These attributes are particularly vital in areas where expertise and thoughtful communication drive trust.

We suggest that when a source is perceived as cognitively attractive, their messages are more persuasive and their advertisements resonate better with the audience. The novelty of this study lies in its conceptualization and operationalization of Cognitraction as a measurable construct, contributing both to theory and practice. Theoretically, it integrates and extends SAT and SCT by replacing the traditionally dominant role of physical beauty with cognitive appeal, particularly relevant in green influencer marketing. It offers practical insights for industries, such as healthcare, and technology—where expertise and cognitive ability are paramount. The following are the research questions of this study.

RQ1: What are the core dimensions of perceived cognitive influence in the context of greenfluencer attraction?

RQ2: How can these dimensions be translated into a theoretically grounded and measurable scale?

RQ3: Does the developed scale demonstrate adequate reliability and validity across consumer samples?

It has long been believed that cognitive ability significantly impacts people's lives (21). Social science disciplines have different conceptualizations of this (Table 1). Individuals with higher cognitive ability are often trusted. The classic studies specific to assessing an endorser's cognitive abilities (Table 2) stress the significance of cognitive ability for an endorser.

Table 1: General Meaning of Cognitive Ability across Disciplines

Disciplines	Meaning	Citation
Psychology	Ability to perform mental functions, including solving problems, adapting, understanding, reasoning, acquiring knowledge, thinking abstractly, and forming connections.	(21)
Education/Learning	Regarded as a basis for learning new concepts.	(22)
Economics	The most significant unobserved variable for productivity and earnings is hypothesized in human capital models.	(23)
Sociology	The relationships between socioeconomic outcomes and cognitive aptitude have long been of interest.	(24, 25)
Marketing	Cognitive ability is primarily in the context of how people process and remember advertisements.	(13)

Theoretical Background

The theoretical lens will be explained initially, as this provides a crucial starting point for inquiry. Two theories were used in this study to figure out the construct to be tested with a suitable set of users. Combined usage of these theories in its integrated framework ensured they did not contradict and overlap each other.

Table 2: Shows Classic Studies Specific to Assessing an Endorser's Cognitive Abilities

	Description	Citation
Source Credibility	Evaluates how expert, trustworthy, and credible the endorser is perceived to be.	(14)
Need for Cognition (Related to likeability)	Evaluates a person's propensity for and enjoyment of cognitive activities, which may have an impact on how customers view an endorser's cognitive involvement with the message.	(26)
Expertise Perception	Assesses the audience's perception of the endorser's level of expertise or understanding in a certain field.	(21)
Argument Quality	Assesses the endorser's arguments for perceived clarity and strength, which subtly reveals cognitive aptitude.	(27)
Trust and Competence	Evaluates the audience's perception of an endorser's credibility and level of cognitive ability in conveying accurate marketing messaging.	(28)
Competence and Performance	Assesses the endorsers' implied cognitive ability to comprehend and communicate complex marketing messages.	(29)

Source Credibility

The concept of source credibility was first introduced by Hovland *et al*. It refers to the reliability of information from the source. It has a huge impact on the persuasive process. Consumers are persuaded easily when the source's credibility is strong (30, 31). Since users are rational while trusting information from highly credible sources, credibility is crucial for fostering good opinions concerning the endorser (32-34). The conceptual framework was derived from the below-elaborated theories.

Source Credibility Theory

A broad construct comprising trustworthiness, expertise, and attractiveness is the term 'credibility'. It refers to the source's attributes that influence the receiver's (Consumers who are also the followers of sources in the manuscript) acceptance of a message (35). Trustworthiness- encompasses certain qualities of the sources such as honesty, fairness, and integrity. The degree to which a source is perceived as sincere, truthful, and reliable in their online presence increases their authenticity in influencer marketing (20).

Consumers' trust in the information source is identified as a measure of their confidence in the source's fairness and truthfulness at the time of delivery. Expertise- builds up on the qualifications and capabilities of the source. Expertise is experience and understanding of the endorsed product. Expertise is measured from the endorser's knowledge and experience in the

relevant area (36). However, having expertise does not guarantee credibility. Other factors such as goodwill and trust lend more credibility to the source.

Source Attractiveness Theory

This theory states that an endorser's good looks can increase an advertisement's impact. It was proposed by McGuire in 1985 and is based on the idea that consumers often have positive opinions about attractive people, which they associate with a business. The audience's liking or physical attractiveness of the source is a determining factor in their attractiveness (19). Familiarity, likeability, and attractiveness of the source are the main factors that determine attractiveness as a whole (16). Although McGuire lists source attractiveness as one of the characteristics of source credibility, other studies (37, 38) have examined the effect of source's attractiveness independently on goods, services, and social causes. Consumer's perception of a source's attractiveness depends on how stylish, charming, elegant, sexy, or appealing they seem to be (39). The adage 'Beauty is Power' refers to the idea that physical attractiveness is a source of power and that one's actions and words are therefore accepted as credible. People are more likely to accept information from attractive endorsers and let the 'Beauty is power' heuristic influence their decisions because they are subconsciously eager to associate with attractive persons (40, 41).

Ad hoc Integration of Theories

Both theories, rooted in communication science, were applied in green influencer marketing. They have been integrated and tested in the current study's phenomenon. An Ad hoc integration of theories was the method used to formulate a unified framework (Figure 1) where concepts from theories are combined. Owing to the study's objectives, new ideas that were not part of the theories previously are introduced. In the green influencer marketing context - when consumers buy eco-friendly products and undertake environment-friendly practices - the said theory is relevant under circumstances where a hollow effect is experienced in the beginning but dissipates subsequently. On social media, intellectual attractiveness tends to matter over physical attractiveness. The message would backfire if the source was deemed to use beauty to cover up a lack of genuine commitment towards environmental causes. For instance, if the source lacks congruence with sustainable lifestyle values, consumers could doubt the validity of the endorsement. Consumers in the green market are more vigilant and discerning. They tend to focus on the substance of the message (that is, verifiable proof of sustainability practices) as opposed to the attractiveness of a source. Overemphasis on looks may be incongruous with green influencers' simplicity, naturalness, and authenticity values.

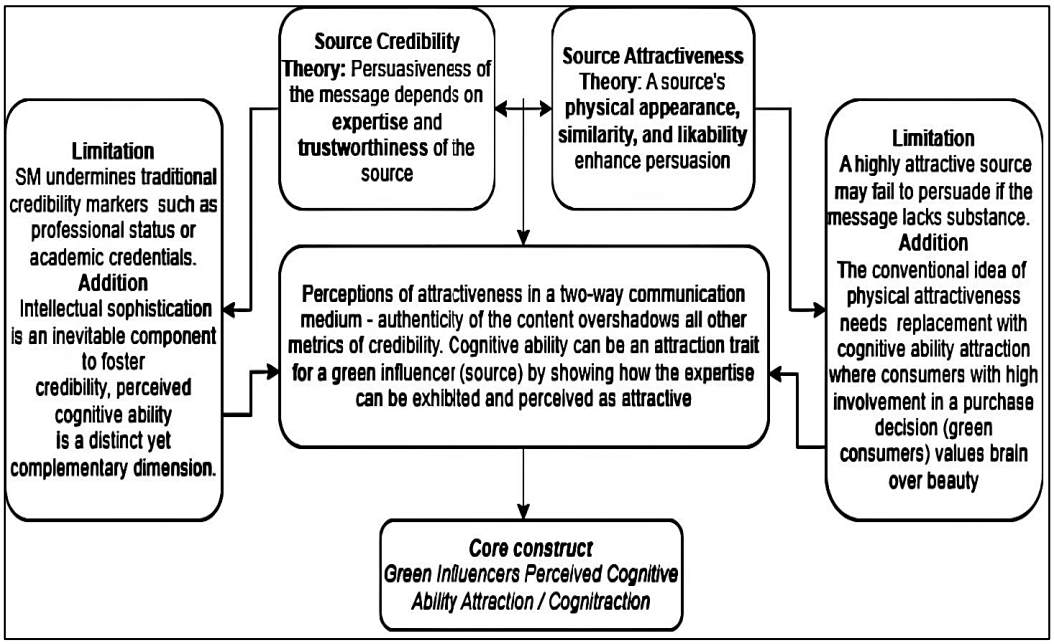

Figure 1: Integrated Framework for Scale Conceptualization

Considering the previous studies on source credibility and attractiveness, the present study proposes that attractiveness can also have dimension- cognitive ability attractiveness. This study expands the use of SAT and SCT in the context of greenfluencers. Hence, cognitive ability is imported in the place of physical attractiveness i.e., (BQ) in the present study. Greenfluencers support body corporates eco-friendly product choices. Attractiveness here is the source's rational thinking towards the companies and their claims. Rational thinking consults reliable sources, facts, and analysis before making a decision and endorsing a claim. Making decisions based on solid reasoning and evidence rather than prejudices or emotions can be ensured with the use of rational thinking. Sources with such an attitude are perceived as attractive. When the consumers are not able to process the credibility of the claims in the posts, the critical thinking capacity of the source to apply reason and logic to arrive at well-informed conclusions will look attractive. It involves questioning assumptions and conclusions and rendering decisions in light of the available data. A source's strong presentation abilities can more effectively and succinctly convey their content to their audience and makes them attractive. Hence, intellectual beauty is attractive and admirable. Moral qualities like personality, way of life, and intelligence are just as important as physical attractiveness (40). Nonetheless, because it is so visible, advertisers primarily focus on the endorser's physical appeal when using source endorsements in practice (42). To the best of the researcher's knowledge, there is no standardized scale in the extant literature that measures the perceptions of attractiveness toward the cognitive ability of a source. There is a pressing need for a scale to measure this construct. The study went beyond beauty and tested the brains of the sources. Hence, Cognitive ability as an attraction trait, i.e., Cognitraction is a portmanteau – a word neologism, created by clipping and blending "cognitive ability" with "Attraction". The researchers name the scale as the cognitraction scale, which translates this abstract theory into a measurable instrument.

Methodology

This study adopts a sequential mixed methods approach to ensure both theoretical depth and empirical rigor in developing the scale. Initially, a qualitative exploratory research design was implemented to gain rich, nuanced insights into consumer perceptions of green influencers. This stage was critical to generate scale items grounded in real user experiences and reflections.

Stage I: The researchers conducted in-depth interviews with structured, open-ended questions**.** An interview aided in the data collection, and the same interviewer interviewed all the respondents. The mode of administration for the interview was through note-taking. This was designed to ensure consistency across respondents and was designed based on the study's objective of identifying cognitive ability–driven attraction perception. The responses were analyzed to identify recurring themes and concepts related to perceived cognitraction, which then informed the initial pool of scale items. The choice of these respondents provided a relevant and informed respondent base, as they are typically active on digital platforms and sensitive to sustainability issues. The respondents for the interviews were approached from universities with diverse populations (that represent the whole of India's population), having a multicultural environment. A total of 55 respondents participated in the study, who is active social media users and followers of any greenfluencers. It took 20 minutes to complete the interview with each respondent. The interviews were confined to 48 respondents, as no new comments were received. To reach a saturation point, an additional 7 respondents were included. The respondents were explained in detail the objectives of the study for clarity in answering the questions. Although the interview schedule was not initially organized around formal domains, the emergent themes were later mapped onto cognitive processes, such as awareness and recognition, analysis and judgment, communication and advocacy, and knowledge about the environment during item generation.

Stage II: Following the qualitative analysis (stage 1), a quantitative approach was employed to refine and validate the scale. A pilot study was conducted with 50 anonymous social media users who are followers of green influencers, through a cross-sectional survey held between April and June 2024. Feedback from this pilot study was used to revise and improve item clarity and scale consistency.

Stage III & IV: Thereafter, an Exploratory Factor Analysis (EFA) was carried out with a larger sample of 217 participants from June to September 2024, which helped identify the underlying factor structure of the scale. Finally, Confirmatory Factor Analysis (CFA) was conducted with a sample of 385 social media users between September 2024 and February 2025, to assess the model's reliability and validity.

This sequential and rigorous methodological framework ensures that the developed scale is psychometrically sound and applicable for future research on greenfluencer impact. The progressive nature of data collection, from item generation to scale validation, underlines the study's commitment to empirical precision and theoretical relevance in addressing the emerging role of green influencers in sustainable consumer behavior.

Sampling Technique and Inclusion Criteria for the Study Respondents

A snowball sampling technique was used to reach out to the respondents while collecting all the three sets of samples. We focused on respondents' experiences in witnessing green-sponsored posts on SM and perceptions of greenfluencers. The respondents had to be Indian or have resided in India since childhood to restrict socio-cultural influence and nationality differences from the study results. The respondents had to be active SM users. The respondents also had to be followers of any greenfluencers. Respondents aged 18 and above who have freely agreed to participate in the study and given their informed agreement to complete it are included as respondents. The consent from the respondents for the interview was oral (immediately after explaining the study objectives); and for the questionnaire was through writing, i.e, by clicking the informed consent check box in the Google Forms.

Results

The entire procedure involved in scale development is elaborated in the four stages below.

Stage I

In-depth interviews resulted in distilling the conceptual ambiguity to the respondents, heard voices from the interview, followed by item generation.

Distilling the Conceptual Ambiguity to the Respondents

The study objectives were briefed to the respondents. The distinction between Cognitraction and Intellectual Attractiveness (IA); and, perceived intelligence and actual intelligence were explained. Cognitraction refers to the appeal of mental acuteness, problem-solving capabilities, critical thinking, complex analysis, and elocution. It shows how someone connects and interprets messages. Opposite to this, IA depends on knowledge, expertise, and intellectual sophistication. Both attract consumers who praise brains over beauty. Authority bias drives this form of attractiveness, whereby individuals are more likely to believe sources with expertise. This is well depicted in influencer marketing applications (eg. greenfluencers, techfluencers and finfluencers have cognitraction, as they make complex subjects easy to understand), while academicians, philosophers, and deep-dive analysts exemplify IA through profound insights. Perceived intelligence is a judgment performed on subjective measurement by observable cues in real-time rather than actual measurable cognitive ability; it is different from actual intelligence. Perceived intelligence in the context of influencer marketing varies due to some factors such as communication style, subject knowledge, reasoning, and ability to convey complicated information in easy terms (43). A confident, eloquent greenfluencer may seem very intelligent without regard to any actual intelligence, simply because research reveals that people frequently judge intelligence in terms of socially constructed cues rather than cognitive objective measures of intelligence (44).

The distinction between cognitive attraction and cognitive ability attraction is essential to elaborate to the respondents as it depends on what aspect of cognition is driving the attraction. The former is based on the similarity-attraction hypothesis between an influencer and a follower. It is concerned with beliefs and thought processes shared by each other or creating bonds through similarity. For instance, a greenfluencer and their follower bond over their mutual passion for sustainability and green consumerism. The latter which is the core of the present study argues that; attraction can also be based on an individual's intelligence, problem-solving skills, or intellectual capacity. Cognitraction is concerned with

attraction to someone's intelligence or intellectual power, irrespective of similarity. Consumers are drawn to greenfluencers who exhibit high intellectual competence, creativity, or critical thinking while endorsing a product. This study is not associated with sapiosexual attraction, in which intelligence is held as a prime aspect of attraction with some romantic interest.

Voices from the Interview

Provided with the brief explanation, we asked our respondents to recall the posts they had seen from their greenfluencers and began asking our questions. The respondents were encouraged to verbalize their thoughts to identify themes and patterns with the terms they used. First, we asked while seeing their posts what specific actions of the greenfluencers led to this cognitraction. Additionally, we posed a follow-up question: When do they feel attracted? This question aimed to identify the behavioral and communication patterns of the greenfluencers that contribute to the perception of attractiveness and credibility. Secondly, we inquired about the qualities that increase their attractiveness regarding cognitive ability, seeking to uncover the cognitive traits that are presumably appealing. Finally, we raised the question of how an influencer's usage of eco-friendly products and sustainable practices enhances their attractiveness. This inquiry aimed to explore how their alignment with sustainability boosts perceived cognitraction, thereby contributing to the credibility of their endorsements.

Item Generation

Notes taken during the interviews were read carefully several times with a quest to familiarize ourselves with the content. NVivo coding was done to formulate the patterns and themes that emerged from the data. This method was used because it suited the qualitative data, and it maximized how to highlight key insights on bringing up the dimensionalities to the scale. We created initial codes and identified potential themes through constant reflections and debriefing. The initial codes were developed based on meaningful text segments that then culminated into themes. During this step, we repeatedly compared all the listed codes to ensure no contradictions or overlaps in meaning and to support the corresponding theme. Followed by this, a validation approach is employed. Media and marketing experts (n=6) were consulted to ensure the scales' practical relevance and applicability. Next, Professors and PhD students in the English language and psychology domains (n=6) were approached. The inputs from the experts were incorporated to validate the content and dimensionality of the themes generated. This ensures the items' content validity and face validity. Overall, the items encompass qualitative analysis and validation.

Stage II - Questionnaire Development

The question flow was adjusted, and items in the scale were modified, which ensured the statements were readable and captured the crux of the construct holistically. Finally, we derived at our core construct (cognitraction) with four dimensions and 15 items. A 5-point Likert scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree," is used to measure the items on the scale. This helps to capture more nuanced opinions over yes/no questions. To prevent measurement errors while administering the scale to a large sample, a pilot study (n=50) was conducted initially to check reliability. The online method was chosen deliberately for pretesting the scales to mirror the data collection method intended for the main study, wherein Google Forms were utilized to collect data from respondents. Through this, some potential technical issues were identified and addressed through the suggestions received. This enhanced the overall quality of the data collected in the upcoming stages. The pilot study does not intend to test theory or model estimation but rather to investigate the survey instrument refinement stage. The objectives of this stage are to evaluate item clarity, preliminary internal consistency, and possible item redundancy, rather than to draw full psychometric validity conclusions. Therefore, for exploratory item refinement and initial reliability checks before the major validation study, the sample size is sufficient (45, 46). One of the methods used to assess preliminary internal consistency was the computation of Cronbach's alpha, which is generally applied in the initial stages of scale development to measure item coherence (47, 48). It is recommended that the participation of around 30 or more respondents is adequate for the first reliability analysis before the larger psychometric analysis. The pilot testing using alpha is a very common practice because it is

easily understood and is also appropriate for small samples when used for item confirmation, not for final reliability claims. More advanced reliability and validity assessments - such as composite reliability, rho_A, convergent validity, discriminant validity, and structural relationships are delegated to EFA and CFA that use a considerably larger sample. The analysis results confirmed that (Cronbach's value: AR=0.803; AJ=0.701; KE=0.706; CA=0.816) the developed scale is ready for its full-fledged data collection.

Survey

Examining the Indian consumer's perception of attractiveness is crucial for body corporates targeting the Indian market. According to Statista, India is the second-largest country in the Asia-Pacific region as of 2024 using SM platforms. According to research from OnlyAccounts.io, India's SM user base is expected to increase by 51% to 1.3 billion by 2029, making it a country with the largest SM market. Although China has long held a dominant position in the SM market, India is expected to add 445 million new users over the next five years, which is twice as many as China and the US combined. Furthermore, as the majority of the literature that has been written about a similar topic up to this point has been from Western nations, the scale development from India can add to a more global perspective to the body of existing research.

Stage III - Scale Refinement

The respondents for EFA were predominantly young (64.5% aged 18–30 years) and had a higher female participant (55.8%). Over half (50.2%) held postgraduate degrees, indicating a well-educated group. Urban respondents made up 44.7%, followed by semi-urban (36.9%) and rural (18.4%) areas. They were ensured to possess the ability to bring out insights to the study. For that, screening questions were set and ensure that the samples were accumulated across the county through an online survey. To reach out to the samples for the scale development, the questionnaires were posted on SM platforms (Instagram, LinkedIn, Facebook, and WhatsApp).

Table 3: Exploratory Factor Analysis (EFA) (N=217)

	AR	AJ	KE	CA
AR1	0.824			
AR2	0.811			
AR3	0.771			
AR4	0.922			
AJ1		0.769		
AJ2		0.788		
AJ3		0.772		
AJ4		0.695		
KE1			0.690	
KE2			0.701	
KE3			0.646	
CA1				0.841
CA2				0.768
CA3				0.669
CA4				0.801
KMO Measure of Sampling Adequacy			0.963	

To make sure that replicability of the scale and accuracy of the findings, checking outliers, linearity and multi-collinearity were checked (49). The skewness values were between -2 and 2, and the kurtosis values were between -3 and 3 for the respondents. Maximum likelihood estimation method with oblique rotation (Eigen-value >1) is achieved.

Table 3 demonstrates the EFA and the sample size of n = 217, is adequate for performing EFA (50). First, the data fit for EFA was evaluated through the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. This KMO value (0.963 > 0.60) is greater than the recommended threshold value, indicating that the sample is well suited for factor analysis (51). Next, EFA was performed to investigate the shared variance among constructs. This ensures that the constructs' variance is captured by the model. Factor loadings for every item in the constructs AR, AJ, KE, and CA loaded highly on their respective factors. The values are

above the minimum threshold limit of 0.70 for convergent validity (52).

Considering the theoretical framework formulated initially and later its alignment with interview data, the items KE3 (0.646) and AJ4 (0.695) were retained. Hence, the four factors derived from the qualitative findings are conceptually distinct and empirically supported, reinforcing the discriminant validity assumption. It can be understood in a way that; Indian green consumers are strongly persuaded by cognitraction and possess sufficient knowledge and experience of viewing the greenfluencers' posts. It can be further understood that they are not being carried away by the halo effect of BQ and have significantly valued greenfluencers' endorsements. This initial factor structure implies that the measurement model is valid for subsequent Confirmatory Factor Analysis (CFA) or structural modelling.

Stage IV - Scale Validation

For the scale validation, data were collected again anonymously from (n=385) Indian green consumers who follow greenfluencers. Table 4 demonstrates that the majority of the respondents were young adults (69.6%), and female respondents (52.7%) marginally outnumbered males (41.6%), with the same pattern reflected in both groups. Nevertheless, the gender balance was stronger among the CFA respondents. Urban dwellers dominated at 51.4%, followed by 32.2% semi-urban and 16.4% rural. Both EFA and CFA respondents included a high number of young participants (18–30 years), reflecting continued engagement from the technologically savvy age group.

Table 4: Respondents' Demographics

Label	EFA (n=217)		CFA (n=385)	
	Percentage	Frequency	Percentage	Frequency
Age				
18 – 30	64.5	140	69.6	268
31 – 40	19.4	42	16.1	62
41 – 50	9.2	20	9.1	35
51 – 60	3.7	8	1.8	7
Above 60	3.2	7	3.4	13
Gender				
Man	38.2	83	41.6	160
Woman	55.8	121	52.7	203
Do not want to disclose	6	13	5.7	22
Educational Qualifications				
12th Grade	2.8	6	3.6	14
Under Graduation	16.6	36	14.5	56
Post-Graduation	24.9	54	22.9	87
Post-Graduation & Above	25.3	55	28.1	108
Others	30.4	66	30.9	119
Locality				
Urban	44.7	97	51.4	198
Semi-Urban	34.1	74	30.1	116
Rural	21.2	46	18.4	71

Rooted in robust methodological literature, the study assessed the presented model through a range of goodness-of-fit indices. The following were the inferential statistics. The chi-square to degrees of freedom (χ^2/df) ratio was 1.08, significantly lower than the recommended value of 5.0, indicating an excellent model fit (53, 54). The Root Mean Square Error of Approximation (RMSEA) of 0.012 further indicated a highly suitable fit, significantly lower than the threshold limit of 0.07 (55). The Comparative Fit Index (CFI) and Normed Fit Index (NFI) scores were 0.933 and 0.915 respectively, both of which are higher than their respective cut-off standards of 0.90 and 0.80 indicating a good fit of the hypothesized model and observed data (56, 57). The Root Mean Square Residual (RMSR) index was 0.014, which is below the 0.05 benchmark. This ensures minimal residual and thereby a good-fit model (58). The Parsimony Goodness-of-Fit Index (PGFI) reading was 0.711, which, is above the conventional benchmark of 0.50, attested to parsimony in the

model (59). The Tucker-Lewis Index (TLI) provided a result of 0.982, above the 0.95 threshold and thus confirming model stability (60). The convergent validity was established as the Average variance extracted (AVE) for each construct is above the threshold limit (AR=0.575; AJ=0.579; CA=0.603; KE=0.637 > 0.5) (Table 5). Furthermore, discriminant validity was acceptable, as the square root of the Average Variance Extracted (AVE) for each construct was above its correlation scores with other constructs. The Cronbach's alpha and Composite Reliability (CR) for each construct were above 0.7.

Table 5: Discriminant Validity – F&L

	AR	AJ	CA	KE
AR	**0.758**			
AJ	0.606	**0.761**		
CA	0.664	0.652	**0.777**	
KE	0.64	0.573	0.606	**0.798**

Discriminant validity was tested based on the Fornell and Larcker criterion, which holds that the square root of the Average Variance Extracted (AVE) for a construct should be larger than the correlations between the construct and other latent constructs. The results suggest that for every construct - AR, AJ, CA, and CE - the square root of the AVE is greater than the respective inter-construct correlations.

Table 6: Convergent Validity and Construct Reliability

Indicators			Estimate	Item Reliability	Error (Delta)	AVE	Sum of Estimate	Sum of Error	Composite Reliability
AR4	<---	AR	0.763	0.582	0.418				
AR3	<---	AR	0.743	0.552	0.448	0.575	3.031	1.702	0.844
AR2	<---	AR	0.738	0.545	0.455				
AR1	<---	AR	0.787	0.619	0.381				
AJ4	<---	AJ	0.748	0.560	0.440				
AJ3	<---	AJ	0.779	0.607	0.393	0.579	3.044	1.683	0.846
AJ2	<---	AJ	0.745	0.555	0.445				
AJ1	<---	AJ	0.772	0.596	0.404				
CA4	<---	CA	0.763	0.582	0.418				
CA3	<---	CA	0.778	0.605	0.395	0.603	3.105	1.588	0.859
CA2	<---	CA	0.757	0.573	0.427				
CA1	<---	CA	0.807	0.651	0.349				
KE3	<---	KE	0.8	0.640	0.360				
KE2	<---	KE	0.815	0.664	0.336	0.637	2.393	1.090	0.840
KE1	<---	KE	0.778	0.605	0.395				

The items derived from the qualitative phase were subject to rigorous statistical tests. As indicated by coefficient alpha, internal consistency among the items was between 0.81 and 0.94 for all the constructs, reflecting high internal reliability for the constructed scale in the Table 6 and Figure 2 (61). Although all the constructs in the model have strong item reliability, subtle differences offer deeper insights into the relative strengths of each construct measured. The Awareness and Recognition (AR): AR1 to AR4 load between 0.738 and 0.787, indicating their correlation in measuring the AR. AR1 (0.787) is the best indicator. The item reliability for the AR construct ranges from 0.545 to 0.619, indicating that the items in this construct are reliably measuring the latent variable. The highest item reliability value, 0.619 (AR1), shows strong explanatory power. Overall, AR is well-represented by its indicators.

AJ ranges from 0.555 to 0.607, with the highest item reliability found in AJ3 (0.607). These show that the indicators are generally strong in representing the AJ construct. The relatively consistent reliability values suggest that the AJ construct is consistently captured. The outer loadings of Analysis and Judgment (AJ) range from

0.745 to 0.779, with a tight grouping and well-balanced measurement. The strongest reliability appears in AJ3 (0.779), while AJ2 (0.745) is also slightly weaker but still well correlated with other items. This ensures consistent item reliability, which suggests that respondents interpret awareness and judgement homogenously. This homogeneity ensures extremely well-designed items that are generally relatable to the responses and simplicity of its reception.

Knowledge and environmental awareness (KE), with only three indicators, demonstrates strong item reliability, with loadings ranging from 0.778 to 0.815. KE2 (0.815) is at the forefront in this case, indicating the greatest degree of consistency with which greenfluencers are being viewed. The high scores and narrow range suggest a unified conceptualization of the construct by the respondents. Communication and advocacy (CA) items are among the highest loading items in the entire model, ranging from 0.757 to 0.807. CA1 (0.807) is the best performer across all constructs, a sign of exceptional item reliability.

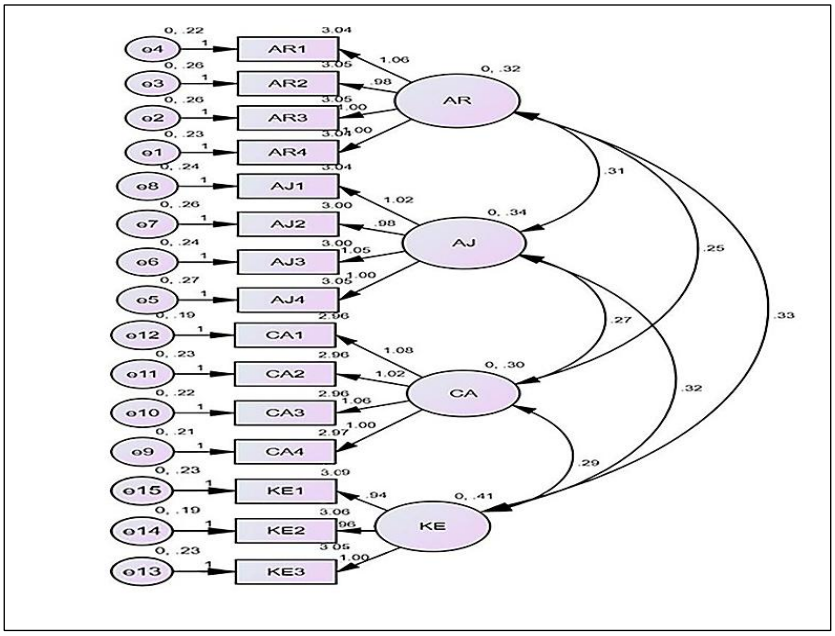

Figure 2: Confirmatory Factor Analysis (CFA) - (χ^2/df = 1.08; (p<0.001); GIF =0.711; CIF=0.933; NIF=0.915; TLI =0.982; Standardised RMR=0.014; RMSEA=0.012)

Discussion

The sequential mixed-methods approach facilitates a thorough understanding of the phenomenon to develop and validate the scale (62, 63). The insights from the KE revealed the eminence of cognitraction for a greenfluencer. It unveiled the significance of 'cognitraction,' a dimension not yet measured by extant scales (14). Through the qualitative exploration, four dimensions were identified: Cognitive Awareness and Recognition (AR), Cognitive Analysis and Judgement (AJ), Knowledge and Environmental Consciousness (KE), and Communication and Advocacy Skills (CA)—which were then validated using quantitative methods. The dimensions that emerged from the qualitative phase were interpreted in the integrated theoretical lens (combining SCT and SAT) (64). The post hoc analysis revealed strong conceptual alignment, with Cognitive Awareness and Recognition (AR) and Knowledge and Environmental Consciousness (KE) reflecting facets of expertise and trustworthiness in the SCT (65). Similarly, Communication and Advocacy Skills (CA) resonated with elements of source attractiveness, such as likability and reliability in SAT (16). Notably, the Cognitive Analysis and Judgement (AJ) dimension extends traditional models by emphasizing critical evaluation and green scepticism, suggesting a necessary evolution of the credibility-attractiveness paradigm in sustainability contexts. This mapping validates the appropriateness of the ad hoc theoretical integration and provides new directions for theory refinement.

The first dimension underscores that AR plays a key role in framing follower perceptions. Respondents linked a greenfluencer's cognitive ability to perceive environmental subtleties, their comprehensive awareness, and their capacity to relate products to extended environmental effects as attractive. Endorsement trust also emerged prominently, based on influencers' factual support for their assertions (66). This implies that aside from superficial advocacy, followers appreciate a profound eco-awareness among influencers, which is consistent with earlier research on environmental source credibility (65). The second dimension AJ highlights followers' value for greenfluencers' critical thinking ability. To recognize genuine green claims from attempts at green washing, to verify advertising copy with fact-checking, and to provide insights on sophisticated systems like the circular economy was seen to be key as credibility markers. This supports scepticism theory in consumer responses to green marketing and serves to underscore the importance of depth in analysis for influencer postings. Additionally, KE covers the aspiration that trustworthy green influencers have not merely surface knowledge but a deep, actionable awareness of corporate greener practices, product life cycles, and sustainability consequences (65, 67).

In the third dimension, CA items are statistically strong in reliability, indicative of strong cognitive anchoring. This indicates the CA measure is extremely congruent with how participants would naturally deal while interacting with their source (68). The uniform robustness of CA items (Efficiency, Concept simplification, and usage of less jargons) indicates that respondents strongly get and connect to the greenfluencers' communication being measured, linked to perceived message logic, usefulness, or reasoning (69, 70). The findings coincide with communication theories which highlight that, clarity, reliability, and message customization is perceived as credible. The fourth dimension which emphasised the influence understanding the impact of the product is important alongside knowing about the product and the green practices of the body corporate. Further, it revealed that cognitraction is a strongest determinant for credibility. This is consistent with the conclusion of previous studies, which claim that in areas like sustainability and green consumption, where consumer involvement is greater, the reliability of information becomes more important (71). It is the influencer's perceived cognitive ability that holds on to their long-term impact on consumer decision-making. This aligns with research on consumer skepticism, suggesting that contemporary consumers, especially those with higher digital literacy, are becoming more adept at detecting fake or misleading content (72). Moreover, it highlights the risk of consumer skepticism towards influencers who fail to support their claims with verifiable information. Therefore, influence is largely diminished if the influencer is viewed as not credible or relies solely on their looks without genuine expertise.

Theoretical Contributions

The study has made a significant contribution to the literature by making an integrated framework for exploring cognitive ability-driven attraction perceptions in new media. This study coined the term cognitraction and clarifies how cognitive ability is crucial for a greenfluencer. It challenges the conventional focus on physical attractiveness within source attractiveness theory by exploring the role of perceived attractiveness towards cognitive ability. 'Beyond skin depth; beauty or brain?' the test on cognitraction as a source attribute emphasizes that for a source rationale thinking and making logical reasoning based on available evidence is of utmost importance while discussing serious topics like climatic change and environmental concerns in the posts. How a source presents his content and delivers claims is also perceived as attractive. The qualitative phase I of the study delivered a logical progression for the theory developed; First and foremost, an influencer needs to be observant and cognizant of sustainability challenges. After that, they have to assess assertions critically to ascertain their veracity. After that, to bolster their credibility, they must also have real knowledge about the product. Lastly, they need to communicate their perspectives to the audience effectively.

Strengths of the Present Scale

Cognitive ability has been a recognized as a valid construct in psychology and marketing to be measured by scales. This was earlier measured as subscales within broader attraction measures. However, its correlation to attractiveness perception is more intricate and complex on social

media. This is primarily the reason why there is now a pressing need for more advanced measurement techniques that would take into account a lot of contextual aspects. The unique blend of strengths this scale possesses are; Firstly, while other existing scales have adopted a comprehensive approach by integrating expertise as one of the dimensions of other interpersonal attraction, they lack exclusivity. The present scale specifically focuses only on cognitraction, this ensures conceptual rigor in measuring the construct by ignoring other broad concepts of attractiveness (such as physical and emotional attractiveness). Secondly, this scale explores cognitraction with multiple dimensions. This multifaceted nature makes the scale stand out. Thirdly, the study is backed by a conceptual framework that discusses a phenomenon (between a green influencer and his/her follower) by integrating two well-established theories. Next, the Mixed Methods Model of Scale Development and Validation Analysis with its methodological rigor surpass all the fitness checks starting from face validity to composite reliability. Moreover, the scale is not developed for any specific industry or market segment (such as; food, finance, lifestyle, fashion, technology, banking, or beauty) rather it attempts to capture a nuanced understanding of green endorsers' perceived attractiveness. This facilitates its replicability according to the phenomenon of other study objectives.

Managerial Implications

The development of the greenfluencer cognitraction scale holds significant managerial implications for organizations aiming to position themselves as environmentally responsible while leveraging the persuasive power of green influencers. In a digital ecosystem increasingly driven by social media endorsements, body corporates and marketers face the challenge of not only identifying the right influencers but also ensuring that their messages resonate with authenticity, clarity, and credibility. This scale offers a data-driven lens into how followers cognitively and emotionally engage with green influencers, thus serving as a strategic tool for assessing influencer impact. By providing quantifiable insights into the effectiveness of influencer communication-especially dimensions such as message clarity, cognitive anchoring, and product impact awareness - brands can better select influencers whose communication styles align with consumer expectations. In doing so, marketers can ensure that their environmental messaging is not only received but also trusted, helping companies bolster brand image, foster consumer trust, and differentiate themselves in an increasingly eco-conscious marketplace.

Moreover, the scale's utility extends beyond influencer selection and endorsement strategy. It can function as a critical component in the holistic assessment of green marketing campaigns, allowing brands to evaluate influencer effectiveness alongside other performance indicators such as reach, engagement, and conversion. Importantly, this tool enables marketers to move beyond superficial metrics and delve into the cognitive perceptions that followers associate with sponsored content. For instance, if an influencer scores high on cognitive anchoring, it indicates their messages are processed as logical, useful, and relatable—attributes known to enhance message retention and influence purchase decisions. Consequently, organizations can tailor their content strategies to align with the communication strengths of their chosen influencers, ensuring greater message consistency and impact. Additionally, this scale can serve as a feedback mechanism not only for brands but also for influencers and policymakers. Influencers can use it to refine their content focus, enhance message delivery, and build stronger rapport with followers. Policymakers and regulatory bodies can adopt this scale to monitor influencer messaging in the context of ethical and transparent sustainability communication. Overall, the scale empowers stakeholders across the marketing ecosystem to make informed, strategic decisions that amplify both commercial goals and social responsibility in green branding initiatives.

Conclusion

The study provided a conceptual framework by addressing the potential limitations in the existing theories and integrating them for its applications in new media through the Ad hoc theory integration method. The development process consisted: conducting a qualitative investigation with experts, converting the findings into scale items, validating the items through pilot testing, administering the scale to a larger sample and performing quantitative validation. The post hoc

analysis from the interview data supported the dimensions added to the existing theories. It further revealed four dimensions for cognitraction. This rigorous approach ensured that the scale was rooted in strong theoretical underpinnings. From the items generated from the interview, the scales were subject to rigorous statistical analysis tests grounded in robust methodological literature. The model fit indices gave satisfactory results. The exploratory factor analysis results proved that the items in each dimension of the scale are distinct from one another, yet holistically capture the nuances of the construct. The confirmatory factor analysis ensures the scale's theoretical soundness and replicability. The study facilitates the observation of sources' cognitraction on posts broadly, but certain limitations exist. One-on-one interviews were considered instead of panel interviews or Delphi methods. This restricts the opportunity for collaborative discussion of the scale items in real time. It emphasizes perceived attractiveness of sources generally rather than focusing on a specific body corporate within an industry and their product category. Various body corporate, industries, or product classes may employ different strategies in their posts, which may effectively persuade consumers in distinct ways. This scale is based on self-reported measures, which are susceptible to social desirability bias. Future scale development could target more objective measures (such as industry or campaign-specific metrics) or behavioral indicators of Cognitraction. Additionally, further cross-cultural validation is needed to assess its adaptability and applicability globally. Understanding how economic, social, and cultural differences impact the effectiveness of green influencer marketing, especially posts made by greenfluencers, requires comparisons between developed and developing nations. This field is evolving with new considerations for measuring attraction perceptions on social media. Although the four dimensions of the scales were derived from existing literature and previous interviews, other dimensions may still need to be uncovered due to rapid technological developments; future studies can incorporate those dimensions into cognitraction. Most importantly, there must be greater emphasis on the influencer's domain competence and authenticity. This may necessitate deeper investigations in the future, exploring how credibility gained through cognitraction differs among product types and cultural backgrounds.

Abbreviations

AJ: Analysis and Judgement, AR: Awareness and Recognition, BQ: Beauty Quotient, CA: Communication and Advocacy Skills, IA: Intellectual Attractiveness, KE: Knowledge and Environmental Consciousness, SAT: Source Attractiveness Theory, SCT: Source Credibility Theory, SM: Social Media, SMI: Social Media Influencers.

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Author Contributions

Attchaya Harikumar: written original draft, Usha Swaminathan: Supervision of the whole research work, edited the manuscript.

Conflict of Interest

There is no potential conflict of interest reported by the authors.

Ethics Approval

The study is approved by the Institutional Ethical Committee for Studies on Human Subjects (IECH) Ref.No.VIT/IECH/XIVa/2023/21.

Declaration of Artificial Intelligence (AI) Assistance

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