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Navigating the digital mirror: The role of information-seeking orientation and uncertainty tolerance in social media-driven body image anxiety

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ABSTRACT

Social trends indicate a growing prevalence of anxiety in the general population, with a notable subset stemming from dissatisfaction with body image. Individuals experiencing body image dissatisfaction are more likely to engage in anxiety-driven unhealthy behaviors. Existing research focuses on the correlation between the combined use of social media and anxiety. Discussions of information seeking and the effects of uncertainty on anxiety have been limited, and related mechanisms and pathways have been neglected. Our study identified information-seeking orientation, which refers to the willingness to seek information as a critical precursor to the dynamic of social media engagement leading to body image anxiety using a national questionnaire research (n = 374). The study also applied the tolerance of uncertainty to the context of social media engagement and body image, demonstrating that individuals with a higher tolerance of uncertainty may experience less anxiety despite higher levels of engagement. We identify tolerance for uncertainty as a new psychological factor in social media engagement leading to body image anxiety.

1. Introduction

Anxiety is an unpleasant sense of apprehension or fear characterized by uneasiness from the unknown, the unrecognized, or anticipated danger (Noyes & Hoehn, 1998). Social trends indicate a growing prevalence of anxiety in the general population, with a notable subset stemming from dissatisfaction with body image. Individuals experiencing body image dissatisfaction are more likely to engage in anxiety-driven unhealthy behaviors, such as poor eating habits, excessive exercise, and insomnia. Existing studies highlight the severe developmental consequences of anxiety, including increased risks of substance abuse, mental health issues, and suicide (Copeland et al., 2009; Gore et al., 2011; Hetrick et al., 2016). Thus, understanding the mechanisms and factors of body image anxiety is essential for promoting mental health resilience and encouraging healthy behaviors.

Information seeking on social media, a widely used information technology, has been shown to correlate with personal anxiety. It could be regarded as a "double-edged sword." Recent research during the COVID-19 pandemic underscores this duality: while social media facilitated mental health information-seeking as a coping strategy, it also exacerbated anxiety due to information overload and exposure to conflicting narratives (Akhther & Sopory, 2022). A meta-analysis of 23 studies found a correlation between problematic Facebook use and psychological distress in adolescents and young adults (Marino et al., 2018). Similarly, systematic reviews have reported significant links between social media use and symptoms of depression (Alonzo et al., 2021; Best et al., 2014). A 2024 meta-analysis of 209 studies further confirmed a moderately positive association between problematic social networking use and anxiety subtypes, including generalized anxiety, social anxiety, and fear of missing out (Du et al., 2024). Excessive social media use, specifically, has been associated with negative effects on mental well-being (Hayes et al., 2015; Nesi & Prinstein, 2015; Steers et al., 2014), with some studies directly linking it to increased anxiety (Lepp et al., 2015).

Research has consistently shown a link between high social media engagement and anxiety symptoms. For example, a study of U.S. emerging adults reported that higher daily engagement on social media correlates with more significant dispositional anxiety and increased chances of anxiety disorders (Vannucci et al., 2017). But this is not always the case. An experience sample research on Facebook use and subjective well-being showed that Facebook use predicted a decrease in subjective well-being, but worry did not predict changes in Facebook use (Kross et al., 2013). In another survey study, the psychological impact of Facebook use significantly differed between age groups. The importance of body shape and appearance decreased with age, and Facebook use did not affect body dissatisfaction as much in adults as it did in younger age

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groups (Hayes et al., 2015). Despite these mixed findings, the general consensus points to a positive association between social media engagement and anxiety/stress (Andreassen et al., 2016; Fioravanti et al., 2012; Karim et al., 2020).

Existing research has focused primarily on the broad correlation between social media use and anxiety, with limited attention to how information-seeking behaviors specifically influence anxiety. Furthermore, the role of uncertainty tolerance in moderating these relationships remains underexplored, even though it is known to play an essential role in emotional regulation (Greco & Roger, 2003; Griffin et al., 2004). For instance, Fu et al. (2023) demonstrated that individuals with low tolerance for uncertainty during COVID-19 experienced heightened state anxiety due to compulsive information consumption and repetitive negative thinking.

This study aims to explore the impact of information-seeking orientation on body image anxiety and analyze the roles of uncertainty tolerance and social media engagement as potential influencing mechanisms. The following sections review existing literature and theoretical perspectives, leading to our research hypotheses. We then outline the methodology, including sample characteristics, measurement tools, and analytical approaches. Following this, we present descriptive results and test our hypotheses. Finally, we discuss the findings, outline theoretical and practical contributions, and address study limitations.

2. Literature review

In previous research, the relationship between social media and anxiety has been widely discussed in the fields of media psychology, public health, and health communication. Valkenburg and Peter (2009) noted that frequent social media use can heighten self-consciousness, particularly among adolescents. Similarly, Fardouly et al. (2015) found that exposure to idealized images on platforms like Instagram exacerbates body image concerns and anxiety. Cyberbullying and fear of missing out (FOMO) are also critical factors that elevate stress and anxiety (Elhai et al., 2016; Kowalski et al., 2014). Together, these studies provide a foundation for understanding how social media engagement may foster anxiety-inducing behaviors and self-perceptions, particularly in young users.

Furthermore, algorithmic content curation on social media can trap users in echo chambers of anxiety-inducing content, as suggested by Ruggieri et al. (2021). Research by Keles et al. (2020) showed how the constant connectivity to such environments fosters mental health issues, particularly among adolescents. While the uses and gratifications theory explains how individuals use social media for emotional or cognitive fulfillment, it also reveals the paradox of social media—users seek connection but can end up feeling isolated and anxious (Vannucci et al., 2017; Whiting & Williams, 2013). These mechanisms highlight social media's dual role, offering connectivity while simultaneously intensifying stress and anxiety through factors like idealized beauty standards and the pervasiveness of cyber-victimization.

While combing through the research related to social media engagement and body image anxiety, we also reviewed two other concepts, information-seeking orientation, and uncertainty tolerance, to complete the current research map and support the hypotheses of this study.

2.1. Information seeking and orientation

Information seeking is a complex process involving social, communicative, and interactive behaviors. Wilson (1999) and Johnson et al. (1995) collectively define information seeking as the intentional search for and acquisition of information to satisfy specific goals or address a gap in one's knowledge. This process goes beyond simple information retrieval; it involves users' efforts to make sense of the information to enhance their understanding of a particular topic. Kuhlthau (1991) further described information seeking as a multifaceted behavior encompassing physical, cognitive, and emotional actions people engage in while acquiring information. This process can include cognitive engagement, as discussed by Dessart et al. (2016), who noted that cognitive engagement involves focused mental activity and attention toward a particular object or topic. Additionally, affective engagement reflects enjoyment or positive emotional responses to the object of engagement, while behavioral engagement encompasses observable actions like liking, commenting, and sharing (Trunfio & Rossi, 2021).

Working from Dutta-Bergman (2004, 2005), Jiang and Liu (2022), and Lee et al. (2023), we conceptualize information-seeking orientation as *the degree to which individuals actively pursue information to fulfill their specific objectives*. This orientation underscores the broader role of information-seeking in shaping behaviors and attitudes, particularly in contexts where knowledge acquisition is purposeful and goal-oriented. In the context of body image anxiety, individuals may engage in information-seeking behaviors by looking for beauty-related advice or comparing themselves with idealized images on social media. In this study, information-seeking orientation related to body image anxiety includes physical, cognitive, and affective willingness in the use of social media and technology.

Previous research widely discussed the effect of information-seeking orientation on individuals' behavior and emotions. Research suggests that individuals who are strongly willing to seek information tend to engage more actively on social media (Nam & Hwang, 2021). This is often associated with the concept of "need for cognition," which refers to a person's tendency to enjoy and engage in cognitive activities, including processing information (Verplanken, 1993). Those with a higher need for cognition are likely to create content, share information, and provide feedback more frequently on social media platforms. Du (2014) defined information utilization as the further behavior of information seeking. The need for information has a positive effect on information seeking and information utilization (Lv et al., 2023). Sufficient evidence also suggests that information-seeking orientation and behavior are strongly related to a wide range of emotions. Individuals who showed tendencies toward health anxiety utilized the Internet as a means to satisfy their health information needs (Baumgartner & Hartmann, 2011). Additionally, using panel data collected from 224 women diagnosed with breast cancer, researchers found significantly decreased levels of worry after seeking health information for 2 months (Lee & Hawkins, 2016).

2.2. Social media engagement

Social media are Internet-based channels that allow users to interact opportunistically and selectively self-present, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others (Carr & Hayes, 2015). Khan (2017) thought that social media engagement was a relative psychological perception experienced by individual interaction with social media. Hollebeek (2011) suggested a multi-dimensional concept that should comprise not only behavioral (actions) but also cognitive (thoughts) and emotional (feelings) aspects. Thus, we can understand that social media engagement refers to *the interaction among three constructs (cognitive, emotional, and behavioral) in a measurement of social media*. Specifically, the cognitive aspect refers to the understanding and comments on certain objects or issues, which could present individual perceptions in the mind; the emotional aspect is related to the positive or negative emotions toward the objects or issues, which could project individual affective involvement; and the behavioral aspect refers to the daily habitual activity involved in the objects or issues, which could unconsciously surround individual everyday life.

Uses and gratifications theory provides a framework for understanding why and how individuals engage with media to fulfill specific needs (Katz & Foulkes, 1962). This theory focuses on how individuals select media that satisfy their needs, enabling them to achieve gratifications such as knowledge enhancement, social interaction, and rewards

(Ko et al., 2005). Over the years, the uses and gratifications framework has been widely applied to examine user motivations for social media engagement. For instance, Lampe et al. (2008, pp. 721–730) identified information-seeking as a significant motivation for social media use. Similarly, Shao (2009) emphasized that both information-seeking and entertainment motives play a critical role in media engagement.

Moreover, social cognitive theory suggests that individuals acquire knowledge through social interaction and exposure to media content (Bandura, 2009). Building on these foundational studies, we hypothesize that the willingness to seek information as an important motivation for individuals' social media engagement will influence the level of social media engagement. The following hypotheses are derived.

H1. Information-seeking orientation is significantly positively correlated with social media engagement.

2.3. Body image anxiety

Body image has been defined as an individual's appraisal of and feelings about his body (Heatherton, 2001). Modern definitions of body image involve two key elements: a mental picture of one's body (including size, shape, and appearance) and, secondly, one's attitudes towards the physical self (for example, thoughts, feelings, and behavior). It is an important part of one's identity and self-concept since feelings about the body may influence how we think about ourselves and our capabilities (Chrisler & Ghiz, 1993). According to Abamara Nnaemeka et al. (2014), a person's body image is thought to be a product of their personal experiences, personality, and various social and cultural forces.

Body image dissatisfaction is defined as a subjective evaluation of the weight and shape of one's own body (Grogan, 2021). A major component of body dissatisfaction is "appearance-based social comparisons," that is, an observer becomes dissatisfied with their body when he/she unfavorably compares his/her body with other people's bodies (Joseph & Shiffrar, 2011). Body image dissatisfaction plays a role in the etiology of anxiety disorder symptoms (Vannucci & Ohannessian, 2018). Once people become dissatisfied with their body image, they can easily get caught up in the resulting emotions of anxiety, as physical appearance is central to self-evaluations. In this study, we define body image anxiety as *the negative emotions and mental status caused by body image dissatisfaction*. This anxiety can very easily affect their normal lives, prompting them to make behavioral feedback on exercise, diet, and sleep, some of which will damage their bodies.

More recently, studies have demonstrated that intensive social media use could cause negative emotions, such as depression and anxiety, through the mediating effects of self-esteem and social comparison (Moreno et al., 2016; Park & Baek, 2018). In particular, with the multidimensional factors of photo sharing, peer interactions, and mobile technology accessibility, many online platforms promote body image ideals due to the highly visual environment of social media (Holland & Tiggemann, 2016). It has been demonstrated that individuals who view attractive images on Facebook are more likely to be dissatisfied with their body image and feel more negative emotions afterward (Haferkamp & Krämer, 2011; Owen et al., 2011). A similar phenomenon has been found in the latest social media platforms. Pryde and Prichard (2022) found that exposure to fitspiration TikTok videos increased state appearance comparison and state negative mood.

These negative emotions can be explained by "appearance-based social comparisons," which often place oneself in an unfavorable position, leading to dissatisfaction and negativity. Social media allow users to engage in increased appearance comparisons, internalization of the thin ideal, and self-objectification, leading to body dissatisfaction (Dorčić et al., 2023). As individuals who engage more frequently are likely to encounter appearance-based comparisons that heighten anxiety, we formalize our hypothesis of the relationship between social media engagement and body image anxiety based on the prior discussion.

H2. Social media engagement is significantly positively correlated with body image anxiety.

The association between information-seeking and anxiety is well documented, such that information-seeking is more common in those with higher levels of anxiety (Lee & Hawkins, 2016; Muse et al., 2012). In studies on health information seeking and anxiety, greater levels of online health information seeking, as well as greater participation in the posting of health-related information on online forums, are associated with greater self-reported health anxiety (Baumgartner & Hartmann, 2011). While seeking out information as an act of reassurance may temporarily alleviate one's anxiety, overall, seeking out health-related information serves to increase one's anxiety long-term due to negative reinforcement of the information-seeking behaviors (Starcevic & Berle, 2013). Specifically, those who seek out health-related information are more likely to worry if they have higher levels of health anxiety than those who have lower levels of health anxiety (Baumgartner & Hartmann, 2011). Even though information seeking and social media participation have all independently been shown to be associated with anxiety, their interactions have been discussed to a limited extent. Considering that social media engagement may influence body image anxiety levels while receiving information-seeking orientation's influences, we propose the hypothesis that the mediating effect of social media engagement.

H3. Social media engagement mediates the relationship between information-seeking orientation and body image anxiety.

2.4. Tolerance of uncertainty

Uncertainty, as a conceptual gap or anomaly, represents a multidimensional phenomenon including concepts about probability, ambiguity, and complexity (Ford, 2004; Gillman et al., 2023). Individuals with anxiety are sensitive to uncertainty and will seek information as much as possible to improve their uncertainty discrepancy (So et al., 2019). Tolerance of uncertainty is assessed as *the level of fear of the unknown* (Carleton, 2012). Individuals who believe that the occurrence of negative events is threatening and unacceptable are considered to have a lower tolerance for uncertainty (Fergus & Bardeen, 2013).

According to the problem-solving model proposed by Wilson, uncertainty will affect the whole process from information need to information behaviors. As a risk factor and stressor, uncertainty may affect individuals with body image anxiety's cognition of their information needs and thus affect their behaviors to address information needs, including information seeking and engagement(Greco & Roger, 2003; Griffin et al., 2004). When individuals have a low tolerance for uncertainty, they need access to information to reduce uncertainty (Barsky et al., 2001). Therefore, the low tolerance for uncertainty will promote information-seeking behavior and engagement on the social media because individuals want to improve their body image or cope with emotions related to body image.

Numerous studies have found a close relationship between the degree of tolerance for uncertainty and levels of anxiety (Fergus & Bardeen, 2013; Norr et al., 2015; Yao et al., 2022). Individuals with a low tolerance for uncertainty often experience heightened anxiety due to their need for stability and predictability. Afifi and Weiner (2004) suggested that anxiety resulting from low uncertainty may stem from the nature of the certainty sought.

Moreover, individuals with anxiety disorders frequently believe that maintaining stable conditions is essential for avoiding risk. This belief further supports the connection between uncertainty tolerance and anxiety levels (Kim et al., 2013). For example, Fergus and Bardeen's research (2013) demonstrated that intolerance of uncertainty moderates the relationship between the frequency of online medical information searches and health anxiety. Anxious individuals with low uncertainty

tolerance are more likely to worry about their body image and may obsessively seek information related to appearance and health. Individuals with low tolerance for uncertainty may spend excessive time searching for weight-loss tips or comparing themselves with others online. This behavior aims to reduce their uncertainty regarding body image, yet it often leads to increased anxiety. They may frequently engage with social media content that highlights ideal body types, which exacerbates feelings of inadequacy. This preoccupation with information can create a cycle where the search for certainty and reassurance only heightens anxiety about body image.

Based on the problem-solving model and other discussions on uncertainty tolerance, we propose the following hypothesis.

H4. Tolerance of Uncertainty weakens the influence of information-seeking orientation on social media engagement.

H5. Tolerance of Uncertainty weakens the influence of social media engagement on body image anxiety.

Although some studies on anxiety have explored the role of tolerance for uncertainty, no relevant research has fully confirmed the role of the tolerance of uncertainty in the process of information-seeking orientation affecting body image anxiety. So, we take tolerance for uncertainty as the boundary condition to investigate its moderating roles in the whole transition mechanism from information-seeking orientation to body image anxiety. Understanding the moderating role of the tolerance of uncertainty in body image anxiety has direct implications for therapeutic interventions. Cognitive-behavioral therapy (CBT) techniques that address the intolerance of uncertainty, such as exposure to uncertainty and cognitive restructuring, have been effective in reducing generalized anxiety symptoms (Dugas et al., 2022). Incorporating these approaches into body image interventions may help individuals develop more adaptive coping strategies, reducing reliance on maladaptive information-seeking behaviors. By integrating these strategies, clinicians can offer more comprehensive treatment plans targeting both cognitive distortions related to body image and the underlying intolerance of uncertainty that fuels anxiety.

3. Research methods

3.1. Participants and procedures

To test the research hypotheses, we designed a four-page questionnaire to collect data. After a short message of introduction and a confidentiality statement, we presented the designed statements on three different pages, which were scored by the participants on a scale of 1–5, depending on their opinions. Depending on the topic statement, a 1 to 5 score represents attitude (strongly disagree - strongly agree) or frequency (never - very often). After that, questions regarding demographics and Body Mass Index (BMI) are included in the final section of the questionnaire.

The questionnaire was posted on Credamo (a national data survey website in China). The site selected potential participants through a random sampling strategy. The survey began with an introduction to the research topic and asked potential participants whether they used social media and would be willing to participate in the survey. The survey continued if the answer was positive; otherwise, it stopped. Participants who completed the questionnaire were provided ¥ 3 as a reward. This survey research was conducted following established ethical standards for social science research. All participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any time without penalty. Informed consent was obtained from all participants prior to data collection. The anonymity and confidentiality of participants' responses were strictly maintained throughout the study.

A total of 436 questionnaires were completed over two weeks (March 3 to March 17, 2024). The average time to complete the survey was 4 min 47 sec. 62 questionnaires were declared invalid based on three criteria: missing data, uniform responses for all questions, and excessively short completion time (less than 2 min 30 s). Finally, 374 valid questionnaires were obtained, yielding a valid completion rate of 85.8 %.

Table 1 shows the demographics. In addition, participants were asked about their Body Mass Index. Participants reported different body statuses. Nearly half of the participants had a BMI in the normal range (46.257 %, n = 173), with the majority of participants being underweight (10.695 %, n = 40) or overweight (43.049 %, n = 161).

3.2. Measures

All the constructs were measured with multi-item scales adopted from prior literature and modified to fit the research context **(**Appendix A**)**. All items were translated into Chinese statements that fit the context of the study. These translated statements were back-translated to check for accuracy. Each item was rated on a 5-point scale which ranged from strongly disagree (1) to strongly agree (5) or from never (1) to very often (5).

Items for information-seeking orientation (ISO) were adapted from Yan et al. (2018) and Han et al. (2015). It included their willingness to search for information and attitudes toward information-seeking technology. Items for social media engagement (SME) were adapted from Trunfio and Rossi (2021). Items investigated the participants' cognitive, affective, and behavioral social media engagement.

Items for tolerance of uncertainty (TOU) were adapted from Han et al. (2015), including the tolerance of probability, ambiguity, and complexity. Ambiguity is one of uncertainty's principal sources (Curley et al., 1986; Ellsberg, 1961; Keren & Gerritsen, 1999). Probability refers to the fundamental indeterminacy or randomness of future events and gives rise to what has been termed 'aleatory' or 'first-order' uncertainty (Han et al., 2011). Complexity refers to features of a phenomenon that make it difficult to comprehend, such as multiplicity in its component characteristics, causal determinants, or effects. Probability, ambiguity, and complexity each produce uncertainty once individuals perceive them-that is, they become consciously aware of them as sources of ignorance. Several items comprising existing tolerance of uncertainty measures ascertain more fundamental sources of ambiguity and complexity.

Items for body image anxiety (BIA) were adapted from Reynolds

Table 1
Demographic statistics and Body Mass Index of the participants (n = 374).

Variable		Frequency	%
Sex	Female	215	57.487
	Male	159	42.513
Age	Less than 18	33	8.824
	19~25	121	32.353
	26~35	101	27.005
	36~45	56	14.973
	46~55	47	12.567
	More than 55	16	4.278
Education	Elementary or junior high school	16	4.278
	Senior high school	58	15.508
	Vocational school	105	28.075
	University education	172	45.989
	Graduate/professional school	23	6.150
Personal annual income	Less than ¥50K	84	22.460
	¥50–150K	80	21.390
	¥160–250K	146	39.037
	¥260–350K	32	8.556
	¥360–450K	24	6.417
	More than ¥450K	8	2.139
Body Mass Index	Less than18.5	40	10.695
	18.5–23.9	173	46.257
	24~27.9	107	28.610
	More than 27.9	54	14.439

(2004). A total anxiety level was tested by three dimensions: physiological anxiety, worry/oversensitivity, and social concerns/concentration.

Reliability analysis is mainly used to examine the stability and consistency of the results measured by the scales in the questionnaire, i.e., it is used to test whether the sample of scales in the questionnaire is reliable and trustworthy. The Cronbach's α of the questionnaire shows good reliability of the questionnaire as a whole and within each construction ($\alpha > 0.8$) (Table 2).

From the result, the KMO value of .944 and Bartlett's test of sphericity with the overall significance of the correlation matrix and the Chi-square value ($p < 0.01$) indicate it is appropriate for factor analysis (Table 3). The results of factor analysis showed that all Std. Estimates are more than .6 ($p < 0.01$) (Table 4). This indicates that the measurement items for each variable are unidimensional, and the validity of the scale is good.

4. Result

4.1. Variance analysis of body image anxiety in different groups

The results of the one-way ANOVA between BMI and body image anxiety levels showed that the group with a BMI higher than 27.9 (overweight) possessed higher levels of body image anxiety, but overall, there was no significant difference in body image anxiety levels between the groups with different BMI in this study ($p > 0.05$) (Table 5). T-tests of sex and body image anxiety levels showed a small and non-significant magnitude of difference in body image anxiety levels between sexes (Cohen's $d = .021$, $p > 0.05$), even though the average anxiety level of female participants was slightly higher than that of males (Table 6). Variance in body image anxiety levels between ages was also not significantly represented ($p > 0.05$) (Table 7).

4.2. Normality and correlation test

Since the sample size of this study was less than 5000 ($n = 374$), the Shapiro-Wilk method was chosen to analyze the normality of the survey result. The results of the analysis of the terms of the four variables showed significance ($p < 0.05$), which proved that the sample data did not conform to the normal distribution **(**Appendix B**)**. So the correlation between the four variables was tested by using Spearman's correlation coefficient. The means, standard deviation, and correlation analysis results of the four variables are presented in Table 8. Correlations were found among all four variables. Tolerance of uncertainty showed a significant negative correlation with the other three variables ($\rho_1 = -.191$, $p < 0.05$; $\rho_2 = -.26$, $p < 0.05$; $\rho_3 = -.332$, $p < 0.01$). All other variables showed a significant positive correlation with each other.

4.3. Mediating effect test

Results in Table 9 indicate that information-seeking orientation has a very significant positive impact on social media engagement ($\beta = .373$, $p < 0.001$), supporting H1. Meanwhile, social media engagement has a very significant positive impact on body image anxiety ($\beta = .421$, $p < 0.001$), supporting H2. Information-seeking orientation is reported to have a positive effect on body image anxiety ($\beta = .311$, $p < 0.001$).

Table 2
Reliability analysis of the questionnaire.

	Cronbach's α	Item	n
ISO	.921	8	374
SME	.937	15	
TOU	.89	6	
BIA	.902	8	
Total	.94	37	

Table 3
KMO and Bartlett's test.

KMO Measure of Sampling Adequacy		.944
Bartlett's Test of Sphericity	Approx. Chi-Square	8502.736
	df	666
	P	.000

Table 4
Factor analysis of the variables.

Factor	Variable	Coef.	Std. Estimate	z	S.E.	P
ISO	ISO_1	1	.796	–	–	–
	ISO_2	.978	.758	15.977	.061	.000
	ISO_3	1.03	.797	17.041	.06	.000
	ISO_4	1.016	.784	16.687	.061	.000
	ISO_5	1.006	.77	16.315	.062	.000
	ISO_6	1.008	.756	15.919	.063	.000
	ISO_7	.957	.744	15.611	.061	.000
	ISO_8	.983	.749	15.728	.063	.000
SME	SME_1	1	.699	–	–	–
	SME_2	.965	.712	13.162	.073	.000
	SME_3	1.055	.75	13.84	.076	.000
	SME_4	1.007	.744	13.733	.073	.000
	SME_5	1.111	.795	14.633	.076	.000
	SME_6	1.051	.763	14.075	.075	.000
	SME_7	1.008	.755	13.924	.072	.000
	SME_8	.951	.684	12.649	.075	.000
	SME_9	1.027	.748	13.797	.074	.000
	SME_10	.974	.688	12.728	.077	.000
	SME_11	.947	.705	13.03	.073	.000
	SME_12	.892	.602	11.173	.08	.000
	SME_13	.872	.686	10.889	.08	.000
	SME_14	1.02	.69	12.761	.08	.000
	SME_15	.999	.706	13.059	.076	.000
TOU	TOU_1	1	.784	–	–	–
	TOU_2	1.032	.791	16.047	.064	.000
	TOU_3	1.094	.782	15.846	.069	.000
	TOU_4	.981	.773	15.618	.063	.000
	TOU_5	.955	.759	15.279	.063	.000
	TOU_6	.801	.662	13.023	.062	.000
BIA	BIA_1	1	.787	–	–	–
	BIA_2	.931	.745	15.211	.061	.000
	BIA_3	1.029	.757	15.505	.066	.000
	BIA_4	.905	.709	14.33	.063	.000
	BIA_5	.955	.729	14.803	.065	.000
	BIA_6	.895	.663	13.231	.068	.000
	BIA_7	1.043	.747	15.253	.068	.000
	BIA_8	.97	.729	14.811	.065	.000

Table 5
One-way ANOVA between BMI and body image anxiety.

Variable	BMI	n	Mean	SD	F	P
BIA	24~27.9	107	3.379	.962	2.024	.110
	18.5–23.9	173	3.212	.88		
	More than 27.9	54	3.477	.975		
	Less than18.5	40	3.109	.832		

Table 6
T-test between sex and body image anxiety.

Variable	Sex	n	M	SD	T	P	Cohen's d
BIA	Female	215	3.295	.93	.202	.840	.021
	Male	159	3.276	.902			

Results of the mediating effect test indicate that social media engagement mediates the relationship between information-seeking orientation and body image anxiety ($p_a < .001$, $p_b < .001$), supporting H3 (Table 10).

Table 7
T-test between age and body image anxiety.

Variable	Age	n	Mean	SD	F	P
BIA	Less than 18	33	3.159	.912	1.359	.239
	19~25	121	3.42	.85		
	26~35	101	3.4	.909		
	36~45	56	3.263	1.027		
	46~55	47	3.273	.978		
	More than 55	16	3.043	.826		

Table 8
Means, standard deviation, and correlations.

	Mean	SD	ISO	SME	TOU	BIA
ISO	3.443	.936	1			
SME	3.377	.864	.402**	1		
TOU	3.264	.974	−.191**	−.26**	1	
BIA	3.287	.917	.292***	.423***	−.332***	1

Note: ***p < 0.01, **p < 0.05.

4.4. Moderating effect test

Concerning the moderating effect of tolerance for uncertainty, the results in Table 11 demonstrate that tolerance for uncertainty can weaken the relationship between social media engagement and body image anxiety (β = −.068, p < 0.05). Therefore, H5 is supported. Nevertheless, the results (Table 12) show that tolerance for uncertainty has no significant effect on the relationship between information-seeking orientation and social media engagement (β = .108, p > 0.05), rejecting H4.

5. Discussion

Our study explored the relationship between individual information-seeking orientation and body image anxiety through an empirical study from a social media perspective. We identified social media engagement as an important link on the occasion of information-seeking orientation and body image anxiety. We further explored the moderating effect of tolerance of uncertainty on different stages of the parallel mediation model.

First, this study showed that information-seeking orientation has a positive effect on social media engagement, which likewise has a positive effect on body image anxiety. This finding corroborates Lampe et al. (2008, pp. 721–730), who emphasized that social media engagement is an important motivator for information-seeking behavior. Social media, as a dynamic and interactive environment, provides immediate access to information and enables users to control their experiences by selecting content that aligns with their interests and needs. This creates a positive feedback loop where users become more engaged as their information-seeking needs are met. Furthermore, when individuals engage in activities aligned with their intrinsic motivations (e.g., curiosity or the need to understand), they experience a greater sense of competence and autonomy further enhancing their engagement with those activities (Deci & Ryan, 2000). On social media, users who actively seek information may experience a greater sense of control over their knowledge acquisition, which enhances their overall engagement. This relationship also suggests that information-seeking behaviors, particularly in contexts like health or self-improvement, are integral to how individuals navigate and derive value from social media platforms.

Large surveys have come to similar conclusions: There is a statistically significant correlation between high-intensity internet use and higher levels of anxiety (Hampton et al., 2016; Li et al., 2017). In response to these facts, some researchers have tried to analyze the reasons for this, including (1) receiving negative feedback from peers, (2)

Table 9
Regression model of the mediating effect.

	BIA					SME					BIA				
	β	Std. E	t	P	Std. C	β	Std. E	t	P	Std. C	β	Std. E	t	P	Std. C
cons	2.216	.172	12.891	.000	–	2.094	.156	13.401	.000	–	1.334	.194	6.888	.000	–
ISO	.311	.048	6.459	.000	.318	.373	.044	8.51	.000	.404	.154	.049	3.165	.002	.157
SME											.421	.053	7.985	.000	.397
R^2	.101					.163					.233				
Adjusted-R^2	.098					.158					.227				
F	F(1,372) = 41.723,P = 0.000					F(1,372) = 72.417,P = 0.000					F(2,371) = 56.265,P = 0.000				

Table 10
Results of the mediating effect test.

Items	c	a	P-a	b	P-b	a*b	Boot SE-a*b	Z-a*b	P-a*b	95 %BootCI- a*b	c'
ISO=>SME=>BIA	.311	.373	.000	.421	.000	.157	.03	5.319	.000	.103–.219	.154

Table 11
Moderating analysis I.

	Model I				Model II				Model III			
	β	Std. E	t	P	β	Std. E	t	P	β	Std. E	t	P
const	1.637	.17	9.612	.000	1.126	.188	5.974	.000	1.977	.625	3.162	.002
SME	.489	.049	10.004	.000	.407	.049	8.262	.000	.168	.175	.961	.337
TOU					−.241	.044	5.499	.000	−.008	.18	−.047	.962
SME*TOU									−.068	.048	1.428	.012
R^2	.212				.271				.275			
Adjusted-R^2	.21				.267				.27			
F	F(374, 1) = 100.083,P = 0.000				F(2, 371) = 69.095,P = 0.000				F(3, 370) = 46.872,P = 0.000			
△R^2	.212				.271				.275			
△F	△F(1, 374) = 100.083,P = 0.000				△F(1, 371) = 30.241,P = 0.000				△F(1, 370) = 71.327,P = 0.000			

Table 12
Moderating analysis II.

	Model I				Model II				Model III			
	β	Std. E	t	P	β	Std. E	t	P	β	Std. E	t	P
const	2.094	.156	13.401	.000	1.589	.185	8.599	.000	2.871	.542	5.297	.000
ISO	.373	.044	8.51	.000	.329	.044	7.569	.000	−.023	.147	−.156	.876
TOU					−.2	−.042	4.79	.000	−.199	.164	−1.21	.227
ISO*TOU									−.108	.043	2.513	.154
R^2	.163				.212				.225			
Adjusted-R^2	.161				.207				.219			
F	F(374, 1) = 72.417,P = 0.000				F(2, 371) = 49.817,P = 0.000				F(3, 370) = 35.793,P = 0.000			
△R^2	.163				.212				.225			
△F	△F(1, 374) = 72.417,P = 0.000				△F(1, 371) = 22.945,P = 0.000				△F(1, 370) = 56.848,P = 0.000			

becoming more aware of stressful events occurring in other people's lives, and (3) internalizing the pressure to maintain social network updates (Rose & Tynes, 2015; Valkenburg & Peter, 2009). We provide additional discussion that social media platforms often emphasize idealized, edited, or unrealistic representations of beauty and success, which can lead users to engage in upward social comparisons, reinforcing negative self-evaluations. This is particularly relevant for body image anxiety, as users may feel that they fall short of these ideals (Tiggemann & Slater, 2013).

Furthermore, the algorithms used by social media platforms contribute to a reinforcement loop by continually curating content that aligns with users' previous interactions. For example, users who engage with posts related to fitness, beauty, or fashion may be shown more similar content, heightening their focus on body-related issues. This constant exposure to idealized body images can create a distorted sense of normalcy and escalate body dissatisfaction over time (Fardouly et al., 2015). Overall, while social media can serve as a platform for information-sharing and community, its engagement mechanisms can amplify body image concerns, making users more susceptible to anxiety about their appearance.

The positive impact of information-seeking orientation on body image anxiety and the mediating effect of social media engagement therein are also confirmed. This finding highlights the complex interplay between active information-seeking behaviors and their emotional consequences (Keles et al., 2020). Individuals with a higher information-seeking orientation may engage more frequently with social media platforms to gather insights related to body image, which can subsequently influence their anxiety levels. Social media engagement can inadvertently expose them to unrealistic beauty standards, reinforcing negative self-perceptions and heightening body image anxiety (Tiggemann & Slater, 2013). Consequently, while information-seeking can be a proactive approach to understanding body image, the mediating role of social media engagement reveals the dual nature of these interactions, which may lead to adverse emotional outcomes.

As the hypothesized moderating variable, the tolerance of uncertainty weakens the effect of social media engagement on body image anxiety. This finding suggests that individuals who are more comfortable with uncertainty may experience less anxiety related to body image, even when engaging with social media. This could be explained that those with a higher tolerance for uncertainty may be better equipped to handle the conflicting or idealized body standards often seen on social media without internalizing them as personal failures (Buhr & Dugas, 2002; Greco & Roger, 2001). Conversely, individuals with low tolerance for uncertainty may interpret such images more rigidly, amplifying anxiety about their appearance.

However, the tolerance of uncertainty's moderating effect among information-seeking orientation and social media engagement is not confirmed. It indicates that the information-seeking orientation may be driven by other factors that override the impact of uncertainty. People who actively seek information on social media might do so out of intrinsic motivation or a desire for control. In this case, the drive to seek information is a stable characteristic less influenced by uncertainty, focusing more on the desire for knowledge or clarity than on the emotional comfort in handling ambiguity. Engaging in superficial interactions, such as liking posts, may not provide the depth of information necessary to alleviate uncertainty, as it lacks meaningful engagement and critical information processing (Berger & Calabrese, 1974). Additionally, social media interactions may add to cognitive overload rather than reduce uncertainty. Users might be bombarded with an overwhelming amount of information, leading to confusion rather than clarity (Sweller, 1988). Therefore, while users may engage with content through likes or shares, this behavior does not equate to the purposeful information-seeking behavior that occurs when they actively search for specific knowledge.

By empirically examining the relationship between information-seeking orientation and body image anxiety, our research extends previous work that has primarily focused on the direct effects of social media use on body dissatisfaction (Fardouly et al., 2015). Existing literature often discusses how social media engagement contributes to negative self-perceptions through social comparison (Tiggemann & Slater, 2013), but our study goes further by identifying information-seeking orientation as a key precursor to this dynamic. Our study's parallel mediation model reveals social media engagement as a mediating factor between information-seeking orientation and body image anxiety, showing that the mechanism through which people engage with social media significantly impacts their emotional well-being. This differs from previous studies that have largely focused on passive consumption of social media content. By highlighting the mediating role of social media engagement, we provide insights into how specific behaviors—such as actively seeking information—contribute to body image anxiety, suggesting that users who are more engaged with content related to body image may be more vulnerable to developing anxiety due to repeated exposure to idealized images.

While previous studies have explored the moderating role of uncertainty tolerance in decision-making and risk behavior (Buhr & Dugas, 2002), our research applies this concept in the context of social media use and body image, demonstrating that individuals with higher uncertainty tolerance may experience less anxiety despite high levels of engagement. This kind of moderating effect of uncertainty tolerance on the relationship between social media engagement and body image anxiety contributes to understanding how individual psychological traits influence the interaction between media use and emotional outcomes. We identify tolerance for uncertainty as a new psychological factor in social media engagement leading to body image anxiety, in addition to social comparison, self-esteem, and internalization of societal beauty standards (Fardouly et al., 2015; Festinger, 1954; Tiggemann & Slater, 2013).

We also proposed the following practical suggestions. For people with body image anxiety, information seeking and social media engagement can satisfy the need for information to some extent. However, these behaviors can also further reinforce their anxiety levels. To mitigate this, we recommend seeking high-quality information from professional sources such as health scientists and physicians, rather than

engaging excessively in information seeking that contributes to "information noise" (Rodgers et al., 2020). Given the omnipresence of social media and its potential to reinforce body dissatisfaction (Fardouly & Vartanian, 2016), practical strategies should be in place to guide individuals toward credible sources. For instance, digital literacy interventions that educate individuals on how to identify credible health-related information and critically evaluate social media content could be beneficial (Guess et al., 2019). Additionally, social media platforms could implement mechanisms to promote evidence-based health content while reducing exposure to misleading or anxiety-inducing information.

Secondly, tolerance of uncertainty is a crucial factor influencing anxiety levels, with lower tolerance leading to greater body image anxiety at comparable levels of social media engagement (Carleton, 2016). Properly managing expectations and attitudes toward uncertainty can help alleviate body image anxiety. One effective approach is mindfulness-based interventions, which have been shown to enhance psychological flexibility and reduce distress associated with uncertainty (Keng et al., 2011). Additionally, cognitive-behavioral techniques such as exposure-based strategies and cognitive restructuring can improve individuals' ability to cope with uncertainty and reduce excessive reassurance-seeking behaviors (Dugas et al., 2012). Media literacy programs that help users critically assess and contextualize social media content can also serve as useful tools in mitigating anxiety-related outcomes. Implementing structured programs that integrate mindfulness, cognitive-behavioral strategies, and digital literacy education can provide a comprehensive approach to addressing body image anxiety.

A key strength of our study is the collection of BMI information, which allowed us to test for differences among participants based on their body mass index. This adds depth to our findings by considering the role of physical characteristics in shaping the relationship between social media engagement and body image anxiety. Additionally, our sample benefits from a relatively even distribution of males and females, ensuring that gender differences in social media use and body image concerns are adequately represented. The inclusion of a range of age groups further strengthens the generalizability of our findings by capturing variations in body image anxiety across different life stages.

However, in the present study, differences in body image anxiety across groups were not significantly confirmed. One possible explanation could be the influence of cultural homogenization driven by social media, which increasingly promotes similar beauty standards across different social or demographic groups (Tiggemann, 2011). All of the participants in this study were from mainland China, which is very prone to similar body image standards in the context of advanced Internet and media technologies and the rapid spread of aesthetic identities and attitudes. Additionally, the internalization of body image ideals might not vary significantly between certain groups if they are similarly exposed to dominant media narratives. Variations in individual coping mechanisms or resilience could also mask potential group differences, as some individuals may internalize but not exhibit anxiety (Grabe et al., 2007).

Despite the use of validated questionnaire scales and scientific empirical methods in this study, there are some limitations. First, our study used the self-report method to obtain data. Even though these scales were adapted from recognized scales with good validity, some participants' responses differed from the actual situation (some participants admitted that when they were asked to complete this questionnaire for the second time, they would respond differently than the previous time). Therefore, follow-up studies could use more advanced web-based technologies (e.g., application programming interface) to objectively measure necessary variables. Additionally, the cross-sectional design means causality cannot be firmly established. For subsequent studies, longitudinal or experimental designs are recommended to confirm causal pathways.

We haven't discussed the relationship between body image anxiety and different social media platforms. Since social media platforms differ in content, features, and user demographics, it would be valuable to examine whether these findings exist across different platforms. Finally, this study had limited exploration across populations. In this study, there were differences in levels of body image anxiety between groups, but these differences were not statistically significant, which might be caused by the sample size. We believe that this group differentiation warrants more attention. In addition to gaining a clearer understanding of the differences that exist in body image anxiety levels across groups, this will also drive researchers' attention to the effects of social media targeting a particular group, such as whether different internet use and personal backgrounds contribute to unequal body image anxiety and whether specific populations may experience more body image anxiety. Given the growing impact of social media on mental health, our findings emphasize the importance of broader follow-up studies that will have the potential to make a significant contribution to reducing the negative impact of social media on users.

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Declaration of competing interest

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Appendix A. Survey Instrument

Construction	Item	Measurement	Reference
Information-seeking orientation	ISO1	I want to search for relevant information about my life on the Internet.	Yan et al. (2018), Han et al. (2015)
	ISO2	I try to try different sources of information to seek the information I want.	
	ISO3	I think that gathering information on the Internet is helpful to my life.	
	ISO4	I have tried to use the new information-seeking techniques that have appeared on the Internet.	
	ISO5	I am curious about new ideas that appear on the Internet.	
	ISO6	I have actively searched for content related to staying in shape.	
	ISO7	I want to use the information on the Internet to help me improve my body image.	
	ISO8	I am interested in content that will help me improve my body image.	
Social media engagement	SME1	I am in the habit of using social media on a daily basis.	Trunfio & Rossi (2021)
	SME2	I want to use social media whenever I have free time.	

(*continued on next page*)

(*continued*)

Construction	Item	Measurement	Reference
	SME3	Even if it's late, I always browse through social media before going to sleep.	
	SME4	I use social media to relax.	
	SME5	I feel a sense of fulfillment when I get attention and comments from others on the internet.	
	SME6	The support and encouragement of my online friends on social media are very important to me.	
	SME7	I feel more satisfied with my life through the use of social media.	
	SME8	I feel more comfortable online and on social media than in the real world.	
	SME9	I feel empty and bored when I can't use social media.	
	SME10	When I see something I'm interested in being discussed on social media, I actively participate in the discussion.	
	SME11	I tend to browse a little longer when I come across something about body image.	
	SME12	I actively like the content of some fitness bloggers.	
	SME13	When I find information that may be useful for me to stay in shape, I bookmark or save it.	
	SME14	I feel empathy when I see some bloggers' quest and aspiration for a good body shape.	
	SME15	I seek comfort on social media when I am not feeling confident enough about my body.	
Tolerance of uncertainty	TOU1	I don't like dealing with questions that may not have precise answers.	Han et al. (2015)
	TOU2	I usually feel anxious about test scores that have not yet been released.	
	TOU3	When dealing with a task, I have to know exactly what part I am responsible for.	
	TOU4	Seeing conflicting information on the Internet can annoy me.	
	TOU5	I am not interested in information that requires a lot of searching of sources to clarify.	
	TOU6	I only like to deal with questions that I can find answers to in a short period of time.	
Body image anxiety	BIA1	I will compare my body image to others.	Reynolds (2004)
	BIA2	I will look in the mirror to check my body image.	
	BIA3	I will intentionally avoid certain activities or interactions because of my body size.	
	BIA4	I think about how to improve my body image.	
	BIA5	I am more concerned about my body than my external environment.	
	BIA6	I will actively avoid the camera.	
	BIA7	I will ask others what they think of my body.	
	BIA8	I will try to wear clothes that do not show off my figure.	

Appendix B. Normality Test

Variables	n	Skewness	Kurtosis	W
ISO	374	−.106	−1.022	.966**
SME	374	.044	−.736	.981**
TOU	374	.164	−.976	.963**
BIA	374	.18	−.867	.969**

Note: **$p < 0.05$.

Data availability

The data that has been used is confidential.

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