

## Article

# Effects of Knowledge Anxiety and Cognitive Processing Bias on Brand Avoidance during COVID-19: The Mediating Role of Attachment Anxiety and Herd Mentality

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**Abstract:** The COVID-19 pandemic has led to an increase in users' knowledge anxiety, which has been further intensified by the diversity of information platforms and the emphasis on digital personal branding. While previous research has examined the relationship between digital personal branding and negative emotions, little is known about the mechanisms behind negative reactions to digital personal branding from non-direct factors or users' spontaneous negative emotions. To address this gap, this study draws on cognitive appraisal theory (CAT) and social identity theory (SIT) to explore the relationships between users' knowledge anxiety, cognitive processing biases, and brand avoidance, and the impacts of herding behavior and attachment anxiety on these relationships. A sample of 530 consumers completed an online survey, and the data were analyzed using a partial least squares path model. The results revealed that user knowledge anxiety directly and indirectly influenced brand avoidance behavior through cognitive processing bias, and attachment anxiety moderated the path between cognitive processing bias and user knowledge anxiety. However, herding behavior was not found to be significant in online knowledge sharing communities.

**Keywords:** knowledge anxiety; brand avoidance; herd mentality; attachment anxiety; cognitive processing bias; COVID-19 pandemic



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## 1. Introduction

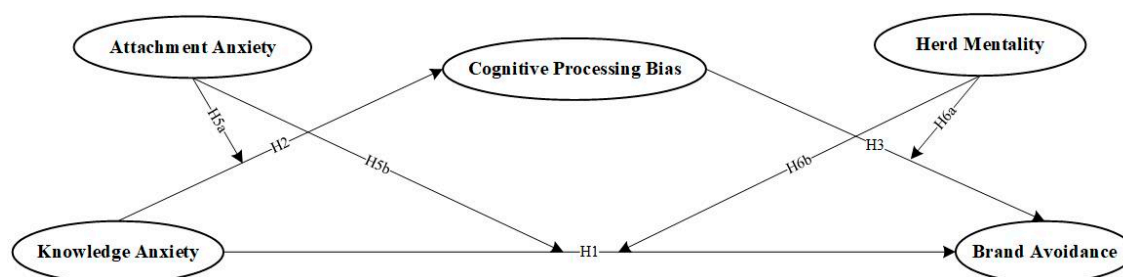
Anxiety is a negative emotional state; with the onset and evolution of the COVID-19 pandemic, it has led to a significant increase in anxiety related to knowledge and information, compared to the pre-pandemic period [1,2]. An increasing number of studies suggest that excessive and frequent exposure to COVID-19 information can cause anxiety and other negative emotions [2]. In an epidemic, the constant influx of information can blur the line between facts and rumors, making it difficult for people to deal with intellectual uncertainty [2–4]. Additionally, it can make it challenging for people in online communities to discover and learn new information. Social identity theory (SIT) posits that individuals identify with a group or think about their emotions based on a particular social identity, and people find psychological comfort by aligning their emotions with positions or groups through a process of social comparison [5]. This is particularly evident in the online environment, and this emotional response and collective effect are increasingly being recognized and studied in the context of consumer-brand relationships.

Users' negative emotional reactions are closely related to their digital personal branding, as emotions have been shown to be an important determinant of various consumer behaviors [6]. Previous studies have tested the cognitive model of emotion and found that emotions such as anger, sadness, happiness, and satisfaction can affect user emotions, and scales have been developed to measure users' negative emotions towards brands [7]. Marc Fetscherin has also pointed out that brand hatred can lead to different levels of

anti-brand behavior from users, such as disgust, brand switching, complaints, brand revenge, and brand retaliation [8]. Some scholars have suggested that anxious consumer groups are more likely to engage in negative behaviors towards brands after triggering brand-related negative emotions, and that negative consumer emotions are harmful to the brands themselves [8–10]. However, the existing marketing literature assumes that users have a negative sentiment towards the brand in the absence of consumer sentiment towards the brand [11,12]. This overlooks the further behavioral reactions to the brand that can occur after the user experiences negative emotions related to the brand elements. Simona Romani's research, based on a "feeling is action" approach, recognizes that the efficacy of emotions may influence further brand behavioral performance, and argues that specific negative emotions can indeed be a prerequisite for predicting behavior, but that anxiety is not one of the emotions involved [7]. Therefore, it is important to recognize that users' knowledge anxiety plays a critical role in the impact of digital personal branding and the sustainable development of digital media platforms.

Based on cognitive appraisal theory (CAT), the study of consumer brand emotions focuses on the behavioral reactions of anger and hatred that result from consumers' dissatisfaction with the brand after exposure to it [7,13,14]. The CAT proposes two links between cognitive appraisal and emotion. One view suggests that cognitive appraisal leads to emotion, meaning that the way in which people perceive events determines their emotions. The other view proposes that emotions lead to different evaluations, and that cognitive appraisal arises after pre-existing emotions. Current research scholars mainly apply cognitive appraisal in favor of the former view [15]. As a result, CAT is widely used as a comprehensive framework for studying the causes and effects of emotions on consumer or visitor behavior [12]. Therefore, this study aims to validate the mechanisms of emotions and users' brand behaviors in the marketing field and in today's digital personal brand sustainability arena, based on the second theoretical perspective of CAT.

However, to date, there has been no research exploring the impact of digital personal branding from the perspective of users' personal knowledge anxiety, particularly in terms of their reactions to the platform itself or to the attitude of the video author when the users experience knowledge anxiety. Based on the second view of cognitive appraisal theory, we aim to use knowledge anxiety as a trigger to investigate how cognitive appraisal affects the brand itself and how brand behavior changes when hypothetical users experience negative emotions. Therefore, understanding how users with knowledge anxiety respond to knowledge-based video authors is a crucial element for social media platforms and marketing managers to consider. While there is a lack of research on how personal knowledge anxiety affects knowledge-based digital personal brands on social platforms, we believe additional explanatory mechanisms are necessary [16]. As such, this study proposes that users' knowledge anxiety not only leads to negative brand behaviors towards knowledge creators, such as brand avoidance, but that cognitive processing bias, often associated with negative emotions such as anxiety, may mediate the relationship between brand avoidance and user knowledge anxiety. The previous literature suggests that consumers' attachment style may impact their anti-brand behavior [14], leading us to infer that attachment anxiety may also influence cognitive processing. Additionally, based on social identity theory (SIT) and the potential spread of emotions, we hypothesize that users' negative emotions can spread globally through social media and the internet [17]. Thus, we propose that there may be a herding behavior effect in internet communities, whereby users with negative feelings towards a brand may trigger a range of negative outcomes, including negative word-of-mouth, complaints, and other behavioral reactions, online or offline [18]. Please refer to Figure 1 for the conceptual framework of this study.



**Figure 1.** Conceptual framework for knowledge anxiety and brand avoidance.

Therefore, this study aims to answer several key questions, including:

1. How does knowledge anxiety negatively impact digital personal branding, and what are the underlying mechanisms?
2. What is the relationship between user sentiment and digital personal branding, and how does cognitive processing bias play a role in this relationship?
3. How do attachment anxiety and herding effects influence the behavioral responses of users experiencing knowledge anxiety?
4. Can the second perspective of cognitive appraisal theory, which suggests that emotional impact is determined by the way events are perceived, be applied to justify the mechanisms of action in this study's context?
5. Our study makes three significant theoretical contributions to the field of digital personal branding research in the context of the COVID-19 pandemic. Firstly, it represents a novel attempt to investigate the association between knowledge anxiety and users' brand attitudes, thereby advancing the existing literature on the relationship between negative emotions and consumer brands. Secondly, given the dearth of research on the relationship between anxiety and users' negative behaviors, our study represents a crucial step forward in this area. Furthermore, the majority of studies investigating the relationship between negative user emotions and brands have been based on the first type of view in cognitive appraisal theory (CAT), which emphasizes that emotions are generated through assessment. Our study reveals the biased effect of knowledge anxiety on cognitive appraisal processes based on the second type of CAT theory, thereby providing a valuable research example for the second category of the theory. Thirdly, prior research on negative brand behaviors and emotions did not account for users' spontaneous anxiety or consider the biasing effects of attachment anxiety on cognitive processing. Our study highlights the relationship between anxiety and attachment anxiety in attachment style and negative behavioral drives. From a management perspective, it is essential to identify and recognize the potential impact of user anxiety as a negative behavioral consequence for the brand. Doing so can enable marketers and managers to adopt a more flexible approach to marketing, one with multiple perspectives and more targeted solutions for personal branding or branding itself, thereby mitigating anxiety.

## 2. Literature Review and Hypothesis

### 2.1. Cognitive Appraisal Theory

Bagozzi et al. (1999) and Johnson and Stewart (2017) have suggested that cognitive appraisal theory (CAT) is a useful framework for studying emotions in a marketing context [19–21]. CAT has traditionally been used to explain coping responses to stressful situations, and according to scholars of the theory, emotions arise from cognitive appraisals of events or ideas [20,21]. The antecedents of different emotions are different situations, and these emotions may, in turn, influence consumer behavior [20]. CAT assumes that emotions are personal mental states generated by evaluating relevant information [22]. By appraising stimuli in relation to people's goals, motives, wants, and needs, CAT can help capture the subtle nuances of emotions through processing different cognitive ap-

praisals [23]. However, many studies have shown that the explanation of how emotions lead to assessment is often overlooked in CAT theory.

## 2.2. Social Identity Theory

Social identity theory (SIT) is a fundamental theory for understanding group relationships. It provides a powerful framework for explaining group behavior and intergroup dynamics. According to SIT, individuals identify with their in-group and develop prejudice toward the out-group when they perceive themselves to be a part of the group [20,24,25]. This process is facilitated by three factors: group categorization, group comparison, and positive discrimination [25]. The main distinguishing feature between the in-group and the out-group is the emotional attachment to the in-group and rejection of the out-group. V. Yzerbyt (2006) suggested that if individuals see themselves as part of the demand group (in our case, the knowledge anxiety group), they are likely to favor the in-group and exhibit negative behavior towards the out-group [5].

## 2.3. Knowledge Anxiety and Brand Avoidance

Research in psychology often investigates the relationship between anxiety, sadness, and cognitive processing, while marketing research on anxiety and branding is a new area of study. Anxiety is commonly associated with negative emotional responses [18]. While different psychologists may define anxiety in various ways, the American Psychiatric Association defines it as an anticipation of future danger and tragedy accompanied by nervous irritation and bodily symptoms. Anxiety is a future-oriented emotional state that arises when individuals perceive a risk of an impending negative event [26]. Studies by Janina Haase and other scholars have identified seven main categories of brand-related negative user emotions: disappointment, anger, frustration, rage, sadness, hatred, and disgust. Among these emotions, disappointment appears to be a prominent one [13]. However, the impact of user anxiety on brand connections has not been thoroughly explored in these studies. Social fear is a key driver of YouTube use, according to Hemant C. Sashittal. This fear of distance between where people are in their social relationships and where they expect to be can cause anxiety and emotional stress [27]. Social anxiety can make individuals avoid cognitively taxing activities and lead them to adopt coping mechanisms such as the “rabbit hole” to reduce discomfort and extend comfort [28]. Although there is no direct research on the impact of knowledge anxiety on the personal branding of knowledge-based video authors, some scholars have found that users experiencing unpleasant emotions such as boredom and anxiety are more likely to respond favorably to brands with opposite, more pleasant personality traits, such as excitement and calmness [29]. This could lead to users avoiding the personal brand impressions of knowledge-based creators in favor of more relaxed and enjoyable video experiences.

The current literature on the Impact of user emotions on digital personal brands is limited. People’s emotions affect how they perceive and feel about brands, and the brand’s reputation is formed over time based on these emotions [30,31]. In the past, research related to digital personal branding has focused on consumer brand relationships or purchase behavior. However, in the online world, personal brand identity depends on self-presentation, and social media platforms provide an important channel for self-expression and self-presentation [32,33]. Self-presentation enables individuals to communicate their message to others and to create and maintain their brand identity [34]. “Weblebrities” with expertise can influence social media marketing campaigns and attract fans to subscribe to their YouTube channels or buy their products [35]. On YouTube, expertise “weblearners” disseminate knowledge content based on their domain expertise, such as product usage, software learning, literature sharing, etc. [36]. Based on the social comparison element in social identity theory, users provide feedback on social media platforms based on their feelings and what others think and do (e.g., eWOM, like, share, follow) about self-publishers [35]. Research in emotional psychology has found that negative emotions are typically elicited when users’ expectations are not met. Scholars such as Baek have suggested that miscom-

munications and mismanagement phenomena on online social media platforms predispose users to expect uncertainty, which leads to anxiety [37]. For instance, as users progress in their search for knowledge, they may experience convergent avoidance behavior in marketing activities if they are dissatisfied with the information provided. Donovan and Rossiter discovered that customers may exhibit avoidance behaviors such as dissatisfaction, anxiety, irritability, and a desire to leave the environment when they are stimulated by an unpleasant environment in a retail store [38].

But in a study of anxious users or consumers who develop negative feelings or behaviors towards brands, Johnson was the first to suggest that fearful users tend to take actions that harm the brand soon after ending their relationship with it. This fearful feeling is known as “high anxiety and avoidance” [39]. Arnold Japutra (2018) suggests that relationship-specific anxiety, also known as brand anxiety, can result in anti-brand or compulsive behavior and may even lead to vindictive behavior [18]. It is also essential to recognize that nervous users are extremely demanding and unyielding in their emotional responses [14]. These findings highlight a direct relationship between anxiety and anti-brand behavior. When a brand behaves unexpectedly, users with strong attachments may feel a high sense of betrayal, and the subsequent unpleasant emotions can increase their desire for revenge or their propensity to behave adversely towards the company [18,40].

**H1.** *Knowledge anxiety has a positive impact on brand avoidance.*

#### 2.4. *The Mediating Role of Cognitive Processing Bias*

Based on CAT and Lazarus’ focused-emotion-type study, it has been found that different individuals have different cognitive evaluations depending on the degree of stress perception [41,42]. Anxiety is a physiological response to persistent and unavoidable physiological stressors that cause significant discomfort and affect evaluative processing [43,44]. Early cognitive theorists argued that there is a link between cognitive bias towards unpleasant information and the development, maintenance, and recurrence of mood disorders [45,46]. Scholars such as Misra and Stokols have pointed out that the rapid development of ICT (information and communications technology) can place a psychological and behavioral burden on people. Recently, researchers such as Feng et al. (2022) have experimentally and prospectively found a biased effect on cognitive processes caused by the anxiety produced by experimenters who were also exposed to exam stress in the COVID-19 environment [47]. Cognitive biases are believed to lead to a tendency to interpret perceptions and opinions negatively or positively, which, when interfered with by negative emotions, often results in negative or extreme behavioral responses [48,49]. Therefore, user perception bias may negatively impact the personal branding of knowledge-based video authors.

Recent research has highlighted that cognitive processing bias may result from a combination of interpretation bias and memory bias [50,51]. Specifically, interpretation bias refers to the inclination to consistently interpret ambiguous information either positively or negatively, while anxiety-related cognitive bias involves the prioritization of threat-related information [52]. In an experimental study, Feng and colleagues found that worry and anxiety, experienced in stressful situations, can predict the production of cognitive bias [47,53]. Other studies have also reported a tendency for anxious individuals to exhibit negative interpretations of ambiguity, particularly among adults and adolescents [47,54,55]. Consequently, anxious emotional responses are likely to affect cognitive processing. Based on these findings, the following hypothesis is proposed:

**H2.** *Knowledge anxiety has a positive impact on cognitive processing bias.*

However, as demonstrated by the graphical model study by Beck et al., anxiety can cause cognitive biases in interpretative abilities, attention, and memory, which are biased towards producing threat-related information. These cognitive biases can naturally generate negative ideas and images [56]. Additionally, the manner in which people process information and how they feel can have different effects on negative bias, and inconsistent



attitudes can make cognitive dissonance and bias worse [57]. Some researchers believe that the bias that comes with negative emotions is an important evolutionary function that allows humans to explore their environment while effectively screening out and avoiding bad situations [50,58,59].

In this study, the concept of negative brand behavior is defined as consumer avoidance attitudes or behavior. Consumer-brand relationships can deteriorate or dissolve over time, as explored in previous research [60]. Grégoire and Fisher (2006) have argued that even loving relationships can turn into hatred, indicating that negative attitudes toward brands can develop from previously positive experiences [61]. Negative emotions resulting from brand disappointment can lead to potentially hostile attitudes or behaviors from consumers, as noted by Romani et al. [9]. This can result in a variety of cognitive and behavioral responses from consumers [62], depending on the intensity of the underlying emotion, as well as the context of the situation. For instance, highly anxious individuals undergoing an important exam or business presentation may respond with feelings of disgust or anger when faced with misinformation or unsatisfactory results from an online knowledge community. The degree to which the negative brand behavior is expressed may also depend on the level of emotion experienced by the consumer [8]. Based on these insights, we propose the following hypothesis for this study:

**H3.** *Cognitive processing bias has a positive impact on brand avoidance.*

The study of Lazarus scholars' stress-based cognitive appraisal theory (CAT) highlights that individuals with a pre-existing negative bias in their appraisal processes and who are unable to change their harmful or threatening conditions tend to adopt emotion-focused coping styles, such as avoidance and distancing, for psychological protection [42]. Recent research has also shown that external stimuli such as knowledge overload during the COVID-19 pandemic can affect people's internal states (e.g., anxiety) and their subsequent processing behaviors [49,50]. The processing of information sources in CAT can explain how emotionally-relevant information is transferred through various means such as social media, online articles, forums, and news sites, and how positive or negative information content may trigger more attentional aspects of cognitive engagement [63–65]. As a direct consequence of this, users' feedback, engagement, and social sharing behaviors may differ. The purpose of this research is to examine whether cognitive processing biases mediate the relationship between knowledge anxiety and brand avoidance. Therefore, the preceding research provides a rationale for investigating the mediating effects, as follows:

**H4.** *Cognitive processing bias plays a mediating role in the relationship between the knowledge anxiety and brand avoidance.*

## 2.5. The Moderating Role of Attachment Anxiety and Herd Mentality

One of the most widely researched topics in marketing is brand attachment and how it influences consumer behavior. Traditionally, researchers have focused on how strong brand attachment leads to positive consumer behavior [66,67]. However, there is a growing recognition that negative consumer behavior towards brands is also an important area of study. In recent years, researchers have attempted to understand how attachment styles, specifically attachment anxiety and attachment avoidance, can moderate users' brand behavior [68]. Despite this, brand attachment remains a crucial factor in marketing research, as it is believed to facilitate positive consumer behavior [69].

Attachment theory suggests that the close bonds formed with caregivers in early childhood have a significant impact on social and emotional development and shape our emotional, cognitive, and behavioral strategies in adulthood [70,71]. This theory provides researchers with a framework to understand and explain attachment-related issues. In marketing research, attachment refers to the manner in which fans perceive that their idols meet their emotional needs and how an individual's attachment experiences can influence their thoughts, behaviors, and interactions with others [72]. Attachment anxiety

is a form of interpersonal or social anxiety that is an important personality trait [73,74]. It can significantly affect how individuals process emotional information and lead to negative emotions such as anxiety. Negative emotions have been found to affect cognition in various ways, although the relationship between emotion and cognition is not always consistent across studies. Mikulincer (2003) non-conformity research has shown that attachment-related strategies play a role in regulating negative emotions and in shaping cognitive responses to such emotions [75]. Individuals with high attachment anxiety tend to fear abandonment and become preoccupied with significant others or relationships [76]. To keep the attachment-object close to them, they use overactivation strategies, which can also help manage negative emotions such as stress and anxiety [77,78]. We believe that attachment anxiety can moderate an individual's negative emotions and increase the likelihood of negative behavior. These assumptions are based on the above findings.

**H5a.** *Attachment anxiety moderates the relationship between knowledge anxiety and cognitive processing bias.*

**H5b.** *Attachment anxiety moderates the relationship between knowledge anxiety and brand avoidance.*

Individual actions are often influenced by the actions of others, as explained by social influence theory and social identity theory (SIT) [24,79]. If a person sees or is told that a behavior is common, they are more likely to imitate that behavior. Studies on the herd effect have shown that when people are exposed to the opinions of the majority [80], they tend to adjust their own beliefs to align with the consensus, leading to herd behavior [81]. As a result, when users feel uncertain and anxious, the widespread effect of social media platforms can amplify the spread of this information, causing many people to exhibit similar patterns of positive or negative behavior.

The "herd effect" theory of user behavior is founded on two premises: first, that people tend to discount the information they receive and instead adopt the opinions of others as their own, repeating them in turn, and second, that people are likely to behave in the same way as others around them, as we have seen during the COVID-19 pandemic. The first concept refers to the tendency of individuals to discount the information they receive, while the second refers to the process by which they adopt the opinions of others [82,83]. Negative information has a particularly strong impact on emotions, and this negative herding effect is predictive of user behavior, particularly in negative situations or when negative emotions are generated [58]. Specifically, when users observe negative online comments and opinions of self-published authors on social media platforms, they are more likely to develop negative herding behavioral outcomes if their own emotional state is similar or identical to that of others. This phenomenon is explained by social identity theory (SIT), which suggests that users develop a coherent cognitive response to online comments based on their shared emotional state [15]. It is also believed that the herding effect may play a role in the formation of this response [84]. Given that herding effects can also exacerbate information anxiety among users, the following hypotheses are drawn from these observations:

**H6a.** *Herd mentality moderates the relationship between cognitive processing bias and brand avoidance.*

**H6b.** *Herd mentality moderates the relationship between knowledge anxiety and brand avoidance.*

### 3. Methodology

#### 3.1. Measures

This study utilized a 5-point Likert scale to evaluate participants' responses, with one indicating "strongly disagree", two indicating "disagree", three indicating "neutral", four indicating "agree", and five indicating "strongly agree". Previously validated items were employed to assess the variables in the study model, and the scale's details can be found in Appendix A (Table A1). Anxiety attachment styles were measured with three items developed by Mende and Bolton [85], while brand avoidance was assessed with

three items developed by Shin et al. (2016) [86]. Herd mentality was evaluated using three items developed by Apuke and Omar [80], based on a previous instrument. To measure knowledge anxiety, four items were adapted from a study by Muhammad Asif Naveed [3], and cognitive processing bias was assessed using three items following a study by Miao [87].

### 3.2. Data Collection

To empirically test the proposed model, this study targeted individuals who had experienced knowledge learning anxiety during the COVID-19 outbreak. To measure the negative emotion associated with brands, a scenario was created in which participants were asked to imagine a situation where a brand disappointed them severely, such as a video author causing them anxiety. Data collection was conducted between November and December of 2022. Prior to completing the questionnaire, participants were asked to recall any experiences of anxiety related to knowledge learning and specific knowledge-based video authors' videos that had caused them anxiety. The content of the videos included various topics such as economics, software learning, literature, digital, history, military topics, and exams. Screenshots of the works of knowledge-based video authors on popular domestic platforms (e.g., Tik Tok, Bilibili) were also provided. Online questionnaires were collected through the Credamo platform, and participants were required to have experienced and felt knowledge anxiety to be included in the study. We excluded participants who took less than four minutes to complete the questionnaire and those who failed the attention check question from the 641 completed online questionnaires, leaving us with 530 participant questionnaires for analysis.

### 3.3. Demographic Information

The results of demographic analysis indicate that out of the total respondents, 64% were female and 36% were male. The age distribution of the participants was as follows: 21 participants were in the age group of 0–20 years, 271 were in the age group of 21–30 years, 187 were in the age group of 31–40 years, 38 were in the age group of 41–50 years, and 13 were in the age group of 51–60 years. In terms of educational background, 69 participants had 10–12 years of education, 407 had a bachelor's degree, 51 had a master's degree, and 3 had a doctoral degree. Further details are available in Table 1.

**Table 1.** Demographic information.

Demographics	Frequency	Percentage
Gender		
Female	337	64
Male	193	36
Education		
Junior	18	3
Senior	51	10
Bachelor	407	77
Master	51	10
Doctor	3	1
Age range		
0–20 years	21	4
21–30 years	271	51
31–40 years	187	35
41–50 years	38	7
51–60 years	13	3

## 4. Data Analysis and Results

### 4.1. Reliability and Validity of the Measures

This study examines the use of structural equation modeling (SEM) with partial least squares (PLS) analysis. PLS–SEM is a variance-based method that is distinct from



covariance-based methods such as AMOS [3]. Its versatility for both confirmatory and exploratory studies is why it is commonly used [3,88]. PLS-SEM is also helpful for expanding and developing theories [89]. To test the research hypotheses, a two-step process was employed, following the recommendation of previous researchers [90]. First, the PLS-SEM algorithm was used to create a measurement model to assess the validity and reliability of the research constructs. Second, a structural model was built to test the suggested research paths [18].

This study evaluated convergent validity and observed the extracted values for factor loadings, combined reliability, and mean variance, as shown in Table 2. The framework's reliability is primarily determined by the standard values of Cronbach's alpha, composite reliability, and average variance extract [90]. The reliability of all variables in this study is presented in Tables 2 and 3. As per the criteria, the acceptable Cronbach's alpha value is up to or above 0.7 [91]. This study's research framework variables and Cronbach's alpha values are based on the given criteria. For the IV (knowledge anxiety), meditators (cognitive processing bias), DV (brand avoidance), and moderators (attachment anxiety and herd mentality), Cronbach's alpha values are 0.88, 0.86, 0.85, 0.76, and 0.75, respectively. Similar to Cronbach's alpha, the composite reliability criteria are also greater than 0.7. Thus, this reliability is acceptable. Finally, the average variance extract (AVE) value is acceptable if it is above 0.5. This study models all variable's AVE values at more than 0.5. Thus, this reliability is also supported [91].

**Table 2.** Item measurement properties.

Construct	Factor Loadings	VIF	Cronbach's $\alpha$
Knowledge anxiety			0.879
KA1	0.731	1.719	
KA2	0.780	1.862	
KA3	0.753	1.747	
KA4	0.749	1.822	
KA5	0.792	2.224	
KA6	0.784	2.281	
KA7	0.739	1.766	
Cognitive processing bias			0.861
CPB1	0.897	2.428	
CPB2	0.902	2.580	
CPB3	0.856	1.888	
Herd mentality			0.746
HM1	0.799	1.253	
HM2	0.838	1.872	
HM3	0.794	1.857	
Attachment anxiety			0.755
AA1	0.774	1.363	
AA2	0.841	1.658	
AA3	0.844	1.690	
Brand avoidance			0.854
BAV1	0.870	2.057	
BAV2	0.882	2.128	
BAV3	0.888	2.164	

Notes: AA, attachment anxiety; BAV, brand avoidance; CPB, cognitive processing bias; HM, herd mentality; KA, knowledge anxiety.

The fit indices of the model, which include SRMR = 0.068 ( $<0.08$ ),  $d_{ULS}$  = 0.886 ( $<0.95$ ),  $d_G$  = 0.285 ( $<0.95$ ), and NFI = 0.814, indicate a reliable and adequate fit [92]. Fornell-Larcker criterion and heterotrait-monotrait (HTMT) were applied to check the model-discriminant validity in this study [90]. As per the Fornell-Larcker criterion, all constructs' square root of average variance extract values were taken [91,93]. This study simulates the Fornell-Larcker criterion values described in Table 2. By achieving discriminant validity, this research model satisfies the Fornell-Larcker criteria. [79,91]. As per the HTMT criterion,

all construct of model's values should be below 0.85 [90]. Table 3 shows the values of HTMT that were used to make the models for this study. These values are based on the given threshold, since all of the values are less than 0.85. Therefore, the discriminant validity method is appropriate for this study.

**Table 3.** Reliability and validity.

Latent Variable	Correlations and the Square Root of AVE							HTMT Ratios				
	AVE	CR	AA	BAV	CPB	HM	KA	AA	BAV	CPB	HM	KA
AA	0.67	0.76	0.82									
BAV	0.77	0.86	0.64	0.88				0.79				
CPB	0.78	0.86	0.44	0.47	0.89			0.54	0.55			
HM	0.66	0.76	0.00	0.20	0.23	0.81		0.10	0.24	0.28		
KA	0.58	0.88	0.54	0.51	0.52	0.07	0.82	0.69	0.60	0.60	0.14	

Notes: AVE, average variance extracted; CR, composite reliability; AA, attachment anxiety; BAV, brand avoidance; CPB, cognitive processing bias; HM, herd mentality; KA, knowledge anxiety.

#### 4.2. Hypotheses Testing

The inner variance inflation factor (VIF) values for all combinations of constructs are below the threshold of 3, whereas the outer VIF values of all indicators are under the threshold of 5. Therefore, collinearity among the predictor constructs is not a critical issue in the structural model [91]. After looking at the measurement model, a structural model was built using a method called “boot-strapping” (5000 subsamples). In Table 4, one can see the results of the testing of the research hypotheses. For CPB, the  $R^2$  value of the latent variables is 0.367, and for BAV, it is 0.5. In this study,  $t$ -values and  $p$ -values were used to decide whether or not the hypotheses were true [91]. In Table 4, we present the standardized path coefficients. The significance of each effect is assessed with the bootstrapped confidence intervals; if 0 is not included in the confidence interval, the path coefficient is significant at the 0.05 significance level [90].

**Table 4.** Direct and indirect relationships.

Hypothesis	Model Variables	Path Coefficients	$p$ -Value	Decision
Direct effects of constructs				
H1	KA → BAV	0.167 ***	0.000	Supported
H3	CPB → BAV	0.138 ***	0.000	Supported
H2	KA → CPB	0.539 ***	0.000	Supported
Moderation effect				
H5a	AA * KA → CPB	0.147 ***	0.000	Supported
H5b	AA * KA → BAV	−0.047	0.350	Rejected
H6a	HM * CPB → BAV	−0.005	0.916	Rejected
H6b	HM * KA → BAV	0.013	0.793	Rejected
Mediating effect				
H4	KA → CPB → BAV	0.074 **	0.004	Supported

Notes: \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

The results offer support for both H1 (PC = 0.167,  $t = 3.116$ ,  $p < 0.001$ ) and H2 (PC = 0.539,  $t = 11.497$ ,  $p < 0.000$ ). Knowledge anxiety emotion positively affects cognitive processing bias. Similarly, higher knowledge-anxiety leads to higher brand-avoidance. H3 is also supported (PC = 0.138,  $t = 2.932$ ,  $p < 0.001$ ), which means cognitive processing bias positively affects brand avoidance. We focused on the bias-corrected confidence intervals to find out more about the role of cognitive processing bias as a mediator. The mediation analysis shows that the link between knowledge anxiety and brand avoidance is through cognitive processing bias; H4 is supported (PC = 0.074,  $t = 2.857$ ,  $p < 0.01$ ). This is because the bootstrap confidence intervals did not contain zero (95% CI [0.024, 0.127]). The mediation can be categorized into partial mediation, since knowledge anxiety directly

influences brand avoidance ( $PC = 0.167$ ,  $t = 3.116$ ,  $p < 0.001$ ) [18]. See Figure 2 for the path results.

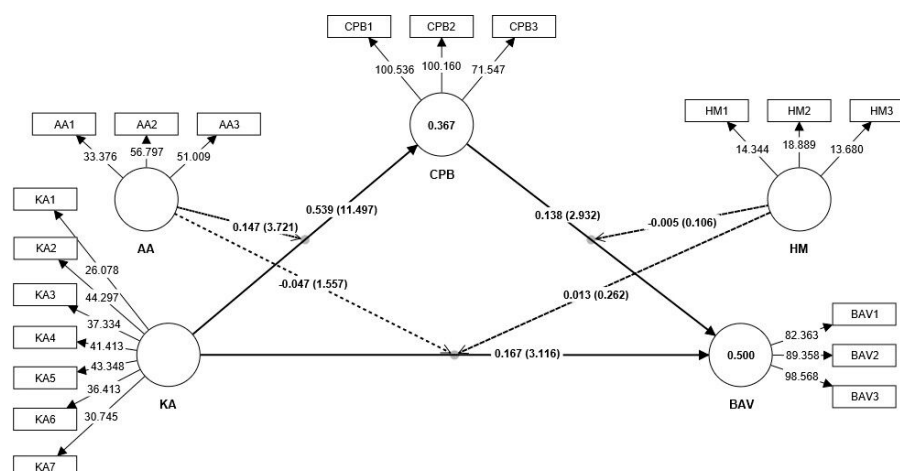


Figure 2. Path model.

For the moderating effect test, the results show that attachment anxiety enhances the relationship between knowledge anxiety and cognitive processing bias, supporting H5a ( $PC = 0.147$ ,  $t = 3.721$ ,  $p < 0.001$ ). Moreover, the direct effect of attachment anxiety on cognitive processing bias is significant ( $PC = 0.227$ ,  $t = 3.875$ ,  $p < 0.001$ ). It seems that users with attachment anxiety may be more likely to experience cognitive outbursts. As can be seen from Figure 3, groups with low attachment anxiety have higher levels of cognitive processing bias when knowledge anxiety is increasing, so attachment anxiety can further increase the likelihood of processing information bias in groups that are already knowledge-anxious. However, attachment anxiety does not have an effect on the relationship between knowledge anxiety and brand avoidance ( $PC = -0.047$ ,  $t = 1.557$ ,  $p > 0.1$ ), so H5b is not supported. At the same time, H6a ( $PC = 0.013$ ,  $t = 0.262$ ,  $p > 0.1$ ) and H6b are not supported ( $PC = -0.005$ ,  $t = 0.106$ ,  $p > 0.1$ ). The reason behind it: We infer that the user's knowledge anxiety is not a passive emotional response, but an active seeking, and when generated, the embodiment of emotions in the network platform cannot produce scale. At the same time, the users of online social platforms refrain from actively expressing their knowledge anxiety on public platforms, so the influence among each other is not strong, and the convergence reaction between people is not so obvious compared to the overall view [94,95].

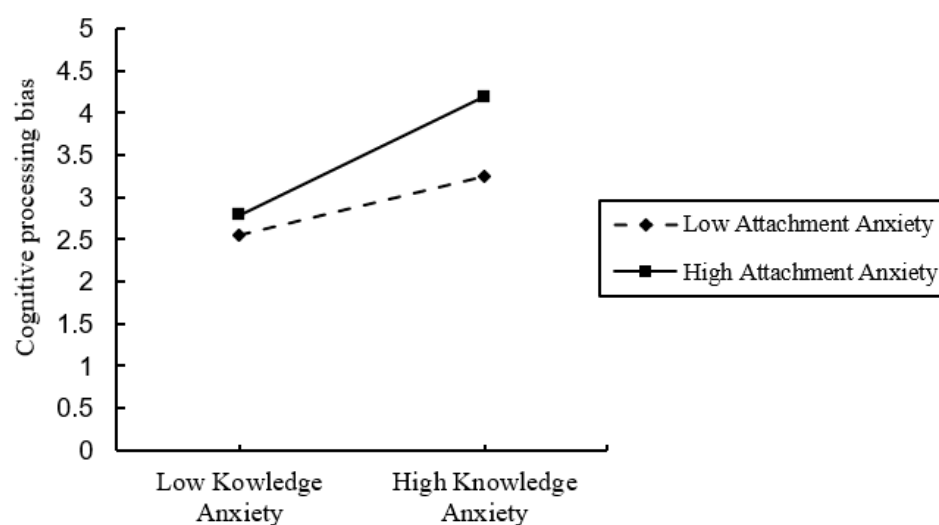


Figure 3. Moderating effect of AA.

## 5. Discussion

Knowledge anxiety plays a crucial role in the sustainability of knowledge-based digital personal brands and their relationships with users. This study contributes to the existing research on negative brand behavior by developing and testing a causal model that links knowledge anxiety, cognitive processing bias, and brand avoidance, using the CAT and SIT frameworks. The experimental findings demonstrate that knowledge anxiety can affect brand avoidance behavior in two ways: by causing users to develop certain brand avoidance behaviors, and by inducing users with attachment anxiety to develop brand avoidance intentions or behaviors due to the influence of cognitive evaluation bias. Therefore, knowledge anxiety has a direct and indirect effect on users' anti-brand behavior, which confirms the initial hypothesis of the study, leading to the establishment of a mediation model between H1, H2, and H3. These findings rectify the potential impact of overlooking users' spontaneous negative emotions in prior research on negative emotions and anti-branding [18,96], as well as overlooking anxiety as a focal object [13]. Addressing the first research question, our mediated model framework explains the response mechanisms of knowledge anxiety and brand avoidance.

Most importantly, our theoretical findings regarding cognitive appraisal theory (CAT), ones which pertain to the second and fourth research questions, have shed light on the role of cognitive processing biases in mediating users' negative emotions and anti-brand behaviors. This study extends the existing literature on CAT by exploring the relationship between cognitive processing biases and attachment-style theory. Therefore, future research should delve further into the second aspect of CAT and investigate how emotions affect cognitive appraisal results, an effect which can further exacerbate negative emotions or behaviors. This can enhance the predictive power of the theory [47]. We hope that our study will inspire more researchers to focus on the mechanisms of processing bias in cognitive appraisal and the possible predictive behaviors that may result from it [52,57].

This study employed attachment anxiety and the herd effect as moderators of cognitive affinity, and our results allowed us to fully validate H5a and partially address the third question of our study. The findings suggest that individuals who exhibit attachment anxiety and have affective traits in the context of knowledge anxiety are more prone to cognitive processing biases that lead to anti-brand behavior. However, we were unable to test the cluster effect of H5b, indicating that brand avoidance among attachment-anxious users does not occur directly in the emotional context of knowledge anxiety. Instead, attachment anxiety needs to influence cognitive processing in order to have a significant effect.

Moreover, our findings did not support the herd effect hypothesis (H6a and H6b). Prior research suggests that the herd effect is a large-scale behavioral convergent response in a population [94,95]. For instance, Vedadi and Wakentin (2018) categorized IT users' use of security technology into two stages of herd behavior and found that, when users no longer need to rely on external information for security technology information and instead rely on their own information, the impact of the herd effect on users' use of security technology decreases [97]. Therefore, the lack of support for the herd effect hypothesis in our study may be because the subjects include users who are experiencing the effects of knowledge anxiety as well as those who have experienced it but are not affected. As a result, the effect of the herd effect will likely have both positive and negative offsets.

### 5.1. Theoretical Implications

Although there has been increasing recognition of and research on the impact of negative emotions on brands, previous studies have mostly focused on negative brand emotions that occur when consumers are dissatisfied with a brand or when their expectations are not met [8,13,14,66]. However, when it comes to the maintenance and sustainability of knowledge-based digital personal brands on online social media platforms [32], the potential negative branding issues associated with users' own knowledge anxiety are often overlooked. Additionally, the second categorical view in the cognitive appraisal theory (CAT) has been overlooked in the marketing literature as a direction for research on con-

sumer brand relationships [47,50]. Therefore, we draw on the second categorical view in CAT to explain the possible mechanisms behind it [19] and find that cognitive processing bias serves as a mediating variable in the relationship between knowledge anxiety and brand avoidance behaviors. Furthermore, the second explanatory view of the theory has not been previously applied to explain the cognitive mechanisms underlying users' negative emotions and brand behavior.

This study aims to explore the ways in which users' anxiety towards knowledge and digital personal branding affects their behavior, drawing on the second viewpoint of CAT [15]. As shown in Figure 4, according to Richard Lazarus, the founder of the theory, the CAT process involves an initial assessment triggered by an event stimulus, followed by a secondary assessment or reassessment if stress is generated, leading to an emotional outcome [42]. Building on this, we propose that the original theory can be further expanded to account for how users' emotions can lead to attitude changes or behavioral responses towards the original stimulus or unrelated events. Specifically, we examine how negative emotions arising from users' anxiety can be transferred to digital personal branding (such as the video author or work on the digital media platform), as users process a specific need and relate it to the topic of digital personal branding. Our study seeks to address the potential negative impact of users' spontaneous emotions on branding, a factor which is often overlooked in branding and negative emotion research. Based on our findings, we provide four theoretical insights for marketing one's digital personal brand on social platforms online.

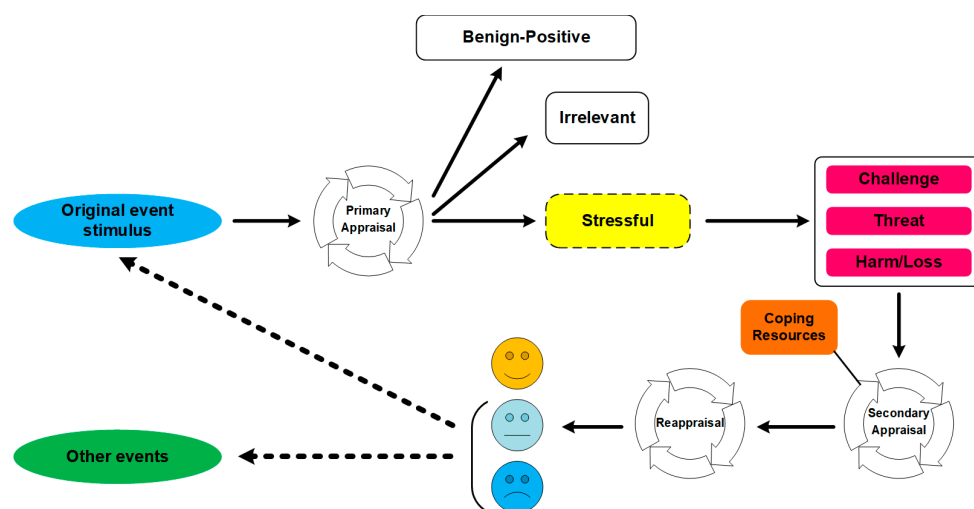


Figure 4. CAT theory expansion concept diagram [98].

Firstly, our research has uncovered that the presence of negative emotions in users can cause biases in their cognitive processing, leading to negative effects on knowledge-based digital personal brands. As a result, users' knowledge anxiety may pose challenges for building digital personal brands. We hope this finding will encourage scholars to further explore the relationship between users' spontaneous emotions and digital personal branding.

Secondly, this study's findings highlight the mediating role of cognitive processing bias in the relationship between knowledge anxiety and brand avoidance behavior. This supports the second categorical CAT-based view and expands the impact assessment results of the theory. Furthermore, the study reveals that users tend to exhibit negative cognitive processing bias under the influence of anxiety, leading to negative evaluations and behaviors towards digital personal branding. This finding sheds new light on digital personal branding research and provides a theoretical basis for understanding the impact of online social platform users' emotional issues on digital personal branding [36].

Our study has also revealed the moderating role of attachment anxiety, a view which is derived from attachment style theory. We found that attachment anxiety not only diminishes the positive effects of marketing, but also leads to differences in cognitive



processing among users who are attached to the video author [14]. This finding supports previous research indicating that anxious users tend to be more critical and unforgiving towards brands. It sheds light on how the cognitive assessment mechanism of users with negative emotions towards digital personal brands is formed and established, and suggests that future research should investigate the characteristics of fan-level users. Such users are more likely to exhibit stronger negative emotional or behavioral reactions towards their favorite authors due to their own knowledge anxiety. Moreover, our results highlight the need to consider both positive and negative effects of anxiety in marketing research, a field that has traditionally focused on the positive outcomes while ignoring the negative effects. Our study provides important boundary conditions and literature support for future research on personal branding and the applicability of CAT theory [32].

Fourthly, our study suggests that anxiety does not lead to a herding effect on users' attitudes towards video authors in the social network environment. Instead, users with anxiety tend to be relatively independent in their personal branding. This finding sheds light on the underlying mechanism of users' negative emotions on the internet and provides a more nuanced understanding of the impact of anxiety on consumer behavior in the digital era.

### *5.2. Practical Implications*

Knowledge-based video authors run the risk of damaging their personal brands if their knowledge information or competencies are perceived negatively. This study sheds light on how self-publishing platforms and their authors can proactively manage their brands by catering to their audience's emotions, given the potential spillover effects of negative emotions and social media's rapid information dissemination. The study suggests that platform managers and video authors should take users' knowledge anxiety into account to avoid losing followers and users. They must address anxiety-induced cognitive processing biases to reduce user anxiety and effectively manage content. Additionally, management must understand the negative behaviors and emotional experiences of intellectually anxious users towards the video author's personal brand. By understanding user characteristics and the varying impact levels depending on their emotions, platforms and authors can mitigate negative emotions through content or platform mechanics, create a more user-friendly viewing experience, and take recovery measures to regain lost users or followers.

Self-publishers should be cautious of demanding and sensitive users who experience knowledge-based anxiety. Platform managers and self-publishers must exercise care in creating and distributing content because users with knowledge-based anxiety are more likely to react negatively toward brands when triggered or upset. Platform managers and self-publishers should address the concerns of these anxious users promptly before their negative emotions escalate into aggressive or reactive behavior. It is essential to manage their negative emotions to avoid retaliation [18].

Platform managers and self-publishing video authors should be mindful of their fans and rabid followers' emotions, particularly those with attachment anxiety, as it moderates the relationship between negative emotions and behavior. To avoid cognitive processing biases and brand avoidance, self-publishers should consider the emotional needs of attachment-anxious fans in their content production and try to understand their desires. However, dealing with users of a particular emotional type and strong emotions is difficult, as our research shows. Moreover, knowledge-anxious users can worsen the negative effects in the existing online social platform environment, which can affect the platform's evaluation and reputation. Hence, platforms and self-publishers must be proactive in addressing such users and focus on improving content and the environment, rather than just using users' emotions to gain popularity and followers.

## **6. Conclusions**

Performed during the COVID-19 pandemic, this study introduces a moderated mediation model that sheds light on the psychological mechanisms behind negative behavior

toward knowledge-based digital personal brands in online learning platforms among people with knowledge anxiety. The findings demonstrate that knowledge-anxious users have a direct impact on digital personal branding and are more susceptible to cognitive processing biases moderated by attachment anxiety, which may lead to brand avoidance behavior. This moderated mediation model not only broadens our understanding of behavioral responses to brands through cognitive processing bias as a mediator but also emphasizes attachment anxiety for knowledge-anxious users as a crucial condition influencing cognition and user responses to brands.

This study provides insights into the underlying mechanisms of user knowledge anxiety and anti-brand behavior by employing the second categorical view of the cognitive appraisal theory (CAT). The findings shed light on how spontaneous negative emotions affect the cognitive assessment process, based on the original theory, and also expand on Richard Lazarus' theoretical interpretation of CAT. The study emphasizes the importance of considering users' cognitive processing biases and attachment anxiety, which moderate the relationship between negative emotions and brand avoidance behavior. By deepening our understanding of the psychological mechanisms underlying user behavior, this study provides valuable insights for self-publishing platforms and their video authors to assist in effectively managing their personal brands and catering to their audience's emotional needs.

This study's results suggest that the herding effect does not moderate the relationship between cognitive processing and brand avoidance, nor does it affect the impact of knowledge anxiety on digital personal brands. Users' knowledge anxiety is not a passive emotional response but rather a result of an active search process. Additionally, users with knowledge anxiety do not express their emotions openly, so they do not influence each other through a herding effect. These findings provide insights into the complex relationship between user emotions and digital personal brand marketing and emphasize the importance of considering individual user characteristics and cognitive processes when developing brand strategies.

## 7. Limitations and Future Research

The study presented has several limitations and suggestions for future research. Firstly, the research was conducted in an Asian cultural context; thus, the findings need further validation to enhance generalizability and to be replicated in different cultural settings. Future research could also investigate the relationship between negative emotions, such as knowledge anxiety, and other brand responses, such as positive brand reactions and brand hatred, rather than focusing solely on brand avoidance. Secondly, while discriminant validity was established between knowledge anxiety and brand avoidance, it is recommended that future research explores the association between other anxieties and brand responses. Thirdly, the study did not collect sufficient information regarding users' emotions and feelings towards specific brands, which can be explored further in future research. Fourthly, future research could combine the first and second theoretical assumptions of CAT theory and examine changes in emotions and trends before and after the evaluation process. Lastly, the study only considered attachment anxiety and the herd effect as moderating variables. Future research could investigate other attachment styles and how underlying emotions manifest in users' knowledge anxiety. Additionally, it is recommended that future studies explore the herd effect by stage and degree of emotion to better understand the response mechanism of the herd effect in digital media platforms.

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**Data Availability Statement:** Data available on request due to restrictions, e.g., privacy or ethical concerns. The data presented in this study are available on request from the corresponding author. The data are not publicly available in order to protect user data privacy and prevent the risk of data leakage. Questionnaire survey strictly guarantees the personal privacy of those who fill in the questionnaire. If the raw data is subsequently required, we will provide it on a peer-to-peer basis, but will not make it available to the public.

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## Appendix A

**Table A1.** Measurement items and associated values.

Construct	Items	Content
Knowledge anxiety	KA1	I often don’t know how to determine the usefulness of information about areas of knowledge I don’t understand.
	KA2	In synthesizing the ideas gathered from multiple sources of knowledge content, I felt uneasy.
	KA3	I am not sure how to use/apply this fragmented knowledge information to positively change my life and work.
	KA4	The speed of updating knowledge and information is too fast, disrupting the normal study and life.
	KA5	The authenticity of the information is often questioned when conducting knowledge content queries.
	KA6	I feel uncertain when judging the credibility of knowledge content and its sources.
	KA7	I’m worried that I’ll miss something important due to information overload.
Cognitive processing bias	CPB1	I do not understand the course knowledge in the process of learning with the video tutorials, I would think that the author of the video is not easy to understand.
	CPB2	When I learn or master a new subject, I think it’s because I understand it well.
	CPB3	When I can’t search for the answer to the question I want, I feel that the platform’s search database is not scientific enough.
Herd mentality	HM1	Whether I watch the content of a video about knowledge is influenced by the number of likes and shares of that video.
	HM2	If I realize that many people have shared a certain knowledge-based video work, I am willing to share those videos as well.
	HM3	The more people like and share that author’s video on the video platform, the more I will like and share it too.
Attachment anxiety	AA1	Knowledge video bloggers now give me a different feeling than when I first learned about them.
	AA2	This type of knowledge video writer does not seem to be suitable for users like me.
	AA3	Today’s knowledge video blogger doesn’t care about users like me as much as I care about him/her.
Brand avoidance	BAV1	I consciously distance myself from certain knowledge-based video authors’ videos (subconsciously avoiding them).
	BAV2	I have consciously cut back on watching certain knowledge-based video authors.
	BAV3	I think I’ve ended my association with a certain knowledge-based video author.

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