AI anxiety and consumer identity: Emotional responses to intelligent systems through the identity-aligned emotional model — quantitative evidence from a mediterranean high -uncertainty-avoidance consumer sample

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Abstract

Whether emotional responses to artificial intelligence operate as undifferentiated technology anxiety or as identity-conditioned dimensional patterns has not been systematically tested in naturalistic consumer survey data. This study addresses this gap through quantitative analysis of validated survey data from a Greek consumer sample of N = 318 with three Principal Component Analysis-validated AI vulnerability subscales: Implications, Surveillance, and Ethical Issues; Concerns about Lack of Knowledge about AI; and Consumer and Social Concerns. Three identity-conditioned dimensional patterns are documented through one-way analyses of variance and independent samples t-tests across tech-savviness, channel preference, and geographic context segments. The Identity-Aligned Emotional Model refines the foundational exposure-familiarity-acceptance pathway by specifying how identity motivation conditions emotional response across distinct vulnerability dimensions. The findings supplement aggregate technology adoption mechanisms with dimension-specific design principles for AI public communication strategy in Mediterranean high-uncertainty-avoidance consumer contexts.

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Introduction

Generative artificial intelligence systems have entered consumer-facing applications at unprecedented scale during the period from 2022 through 2026, with conversational agents, image generation systems, recommendation engines, and AI-augmented content production embedded across consumer-facing industries (Castelo, Bos, and Lehmann, 2019; Han and Ko, 2025; Kim, 2023). The expansion has generated parallel research interest in how consumers respond to AI deployment across distinct emotional dimensions, with sustained scholarly attention to the dimensions and antecedents of AI consumer anxiety (Hajek, Zwar, and Neumann, 2025; Wang and Wang, 2019), the conditions under which consumers accept or resist algorithm-mediated decisions (Castelo, Bos, and Lehmann, 2019; Logg, Minson, and Moore, 2019), and the personalisation-vulnerability paradox shaping consumer response to algorithmic data collection (Aguirre, Mahr, Grewal, de Ruyter, and Wetzels, 2015).

The dominant theoretical orientation in the technology adoption literature has long established the exposure-familiarity-acceptance pathway as the foundational mechanism connecting consumer characteristics to technology-related anxiety. Davis (1989), in the foundational Technology Acceptance Model, articulates the perceived ease of use construct as the central mechanism through which technology exposure attenuates technology-related anxiety. Venkatesh and Bala (2008), in their extended theoretical synthesis, elaborate the framework with additional moderators while preserving the foundational exposure-familiarity-acceptance prediction. The Mere Exposure Effect (Zajonc, 1968) provides the underlying psychological mechanism: repeated, structured, low-anxiety exposure progressively reduces cognitive and emotional barriers to acceptance through familiarity-based affective conditioning. The author's prior accepted work (citation omitted blind review for IJBESAR Hydrogen IMC) operationalises

this foundational pathway in the AI-augmented integrated marketing communication context, demonstrating that AI-driven communication systematically transforms public perception toward informed acceptance through structured exposure interventions.

Whether the foundational exposure-familiarity-acceptance pathway operates as undifferentiated technology anxiety attenuation, or whether it operates with empirically detectable identity-conditioned dimensional patterns, has been substantially undertested in the existing literature. AI anxiety research has focused on undifferentiated samples (Wang and Wang, 2019; Hajek, Zwar, and Neumann, 2025) without examining how identity-relevant consumer characteristics condition the operation of the construct across the dimensions. The author's complementary prior work on the AI Socio-Digital Inequality Framework (citation omitted blind review for Open Education) documents on the same Greek consumer sample that lower digital literacy corresponds to elevated AI anxiety at the aggregate level, supporting the foundational pathway. The present article extends this cumulative research programme by examining how identity-relevant consumer characteristics condition emotional response to AI consumer interactions across three Principal Component Analysis-validated AI vulnerability dimensions.

Three research questions structure the empirical investigation. First, do consumer segments differentiated by self-reported tech-savviness display systematically different patterns of AI vulnerability across the three Principal Component Analysis-validated dimensions? Second, do consumer segments differentiated by digital channel preference display systematically different vulnerability patterns? Third, do consumer segments differentiated by rural-urban geographic context display systematically different vulnerability patterns? The Identity-Aligned Emotional Model developed in Section 4 specifies the theoretical structure linking identity-relevant consumer characteristics to dimensional emotional response, and Section 5 reports the empirical findings supporting the dimensional structure of the model.

Three contributions to the AI consumer behaviour and technology adoption literatures define the article. First, the empirical demonstration that emotional responses to AI operate as identity-conditioned dimensional patterns rather than as undifferentiated technology anxiety, refining the foundational exposure-familiarity-acceptance pathway by specifying how identity-relevant consumer characteristics condition emotional response. Second, the empirical extension of the multidimensional AI anxiety framework (Wang and Wang, 2019) into an identity-conditioned moderation model that the original validation literature does not articulate. Third, the empirical anchoring of the present author's cumulative research programme on the Greek consumer sample, building on the Mere Exposure Effect operation in AI-augmented marketing communication (citation omitted blind review for IJBESAR Hydrogen IMC) and the AI Socio-Digital Inequality Framework on the same sample (citation omitted blind review for Open Education) toward an integrated and dimensionally specified account of identity-conditioned emotional response in AI consumer behaviour.

Theoretical Foundation

The Exposure-Familiarity-Acceptance Pathway as Foundational Mechanism

The exposure-familiarity-acceptance pathway constitutes the foundational psychological mechanism connecting consumer characteristics to technology-related anxiety in the dominant adoption frameworks. Zajonc (1968), in the foundational Mere Exposure Effect article in the Journal of Personality and Social Psychology, demonstrates that repeated, low-intensity, non-threatening contact with a stimulus progressively increases positive evaluation through familiarity-based affective conditioning. The mechanism has been validated extensively across stimulus categories with the underlying processing-fluency interpretation supporting cross-domain robustness. Davis (1989), in the foundational Technology Acceptance Model, operationalises the pathway in the technology adoption domain through the perceived ease of use construct. Venkatesh and Bala (2008), in their extended theoretical synthesis, elaborate the framework with additional moderators while preserving the foundational prediction across diverse technology categories spanning electronic mail, mobile commerce, and electronic government services.

The author's prior accepted work (citation omitted blind review for IJBESAR Hydrogen IMC) operationalises the exposure-familiarity-acceptance pathway in the AI-augmented integrated marketing communication context. The framework articulates AI-driven communication as the mechanism that systematically transforms public perception toward informed acceptance through structured low-anxiety exposure interventions, demonstrating Mere Exposure Effect operation in the AI consumer communication domain. The present study extends this established cumulative pathway by examining whether the

exposure-familiarity-acceptance mechanism operates as undifferentiated attenuation or with empirically detectable identity-conditioned dimensional patterns that the foundational frameworks have not yet specified at the dimension level.

Cognitive Appraisal Theory and Identity-Based Motivation

Lazarus (1991), in the foundational cognitive appraisal theory of emotion, articulates emotion as the outcome of cognitive evaluation of an event's significance for the self. Anxiety arises when an event is appraised as threatening with ambiguous coping resources; irritation arises when an event is appraised as obstructing personal goals; curiosity arises when an event is appraised as offering opportunities for growth. The framework supports the theoretical interpretation that emotional responses to AI are not random but systematically conditioned by how AI systems are appraised in relation to consumer goals. Oyserman (2015), in the foundational identity-based motivation theory, articulates that consumer behaviour aligns with salient self-concepts, with consumers seeking experiences that confirm their identity and resisting experiences that threaten it. The framework supports the theoretical interpretation that AI systems are appraised through identity-relevant lenses that condition the emotional response.

The integration of cognitive appraisal theory (Lazarus, 1991) and identity-based motivation theory (Oyserman, 2015) supports the present study's theoretical claim that emotional responses to AI are identity-conditioned dimensional patterns rather than undifferentiated technology anxiety. The integration generates the directly testable prediction that consumers with different identity-relevant characteristics should display systematically different emotional responses to AI deployment, with the direction and intensity of the response conditioned by the alignment between AI features and identity goals.

The Personalisation-Vulnerability Paradox

Aguirre, Mahr, Grewal, de Ruyter, and Wetzels (2015), in their Journal of Retailing study of the personalisation paradox, demonstrate that increased personalisation in algorithmic systems simultaneously increases service relevance and consumer feelings of vulnerability. The dual effect generates a paradoxical pattern in which more sophisticated personalisation can produce both higher engagement and higher rejection, depending on how the personalisation process is communicated to consumers. The framework establishes overt versus covert information collection as a structural moderator of the paradox: when consumers are informed about data collection practices, personalisation enhances engagement; when consumers discover covert collection, vulnerability concerns dominate and engagement collapses. The framework supports the theoretical interpretation that emotional response to AI is not technology-determined but disclosure-conditioned, with transparency operating as a structural moderator of the foundational exposure-familiarity-acceptance pathway.

The personalisation-vulnerability paradox aligns with the algorithmic trust conditioning literature documented by Castelo, Bos, and Lehmann (2019) and Logg, Minson, and Moore (2019). Castelo, Bos, and Lehmann (2019) demonstrate that consumers display substantially higher algorithm aversion for tasks perceived as subjective than for tasks perceived as objective. Logg, Minson, and Moore (2019) show that consumers display algorithm appreciation in some decision contexts and algorithm aversion in others, with the contextual variation conditioned by perceived expertise and accountability structures. These contributions establish that algorithmic trust orientation is structurally conditioned, with the conditioning factors operating at the intersection of technology attributes and consumer psychology.

The AI Anxiety Multidimensional Construct

Wang and Wang (2019), in their foundational article in Interactive Learning Environments, articulate the AI Anxiety construct as a multidimensional emotional response to artificial intelligence systems comprising four distinct dimensions: learning anxiety; job replacement anxiety; sociotechnical blindness anxiety; and AI configuration anxiety. The framework has been validated in subsequent studies across diverse populations including German general population samples (Hajek, Zwar, and Neumann, 2025) and Chinese English-as-foreign-language teachers (Liu and Liu, 2025). The cross-population validation supports the construct's theoretical robustness while documenting that the absolute levels of AI anxiety vary substantially across demographic and occupational segments.

The Wang and Wang (2019) framework operationalises AI anxiety as a multidimensional construct without examining how identity-relevant consumer characteristics condition the dimensions across consumer segments. The framework's central theoretical claim is that AI anxiety functions as a barrier to

technology adoption that targeted interventions can mitigate; the mitigation hypothesis is consistent with the foundational exposure-familiarity-acceptance pathway operating across consumer segments. Whether the pathway operates uniformly across the dimensions or with identity-conditioned selectivity when consumer characteristics are explicitly operationalised remains untested in the original framework.

The Identity-Aligned Emotional Hypothesis

The integration of the foundational exposure-familiarity-acceptance pathway (Davis, 1989; Venkatesh and Bala, 2008; Zajonc, 1968), cognitive appraisal theory (Lazarus, 1991), identity-based motivation theory (Oyserman, 2015), the personalisation-vulnerability paradox (Aguirre, Mahr, Grewal, de Ruyter, and Wetzels, 2015), and the AI anxiety multidimensional framework (Wang and Wang, 2019) generates a directly testable hypothesis. The Identity-Aligned Emotional Hypothesis predicts that emotional responses to AI operate as identity-conditioned dimensional patterns rather than as undifferentiated technology anxiety. The hypothesis is positioned as a refinement of the foundational pathway rather than as a contradiction: it predicts that the foundational mechanism operates within each consumer segment with the directional pattern that the foundational frameworks predict, while identity-relevant consumer characteristics condition the magnitude and direction of the emotional response across segments.

Specifically, the hypothesis predicts three patterns. First, tech-savviness should attenuate the knowledge-gap dimension monotonically across savviness levels, consistent with Mere Exposure Effect operation, while operating selectively or weakly on the privacy-surveillance and consumer-social dimensions activated by AI-disclosure asymmetry rather than by technological self-efficacy. Second, channel-preference segmentation should produce systematic vulnerability differentiation across all three dimensions, with offline-preference consumers displaying elevated vulnerability relative to online and dual-channel consumers. Third, rural-urban geographic context should produce vulnerability differentiation specifically on the consumer-social dimension that reflects broader social-impact concerns sensitive to local social context.

The Mediterranean High-Uncertainty-Avoidance Empirical Setting

The Greek consumer market provides a theoretically meaningful empirical setting for testing the Identity-Aligned Emotional Hypothesis. Hofstede (2011) classifies Greece as one of the highest uncertainty-avoidance cultures in the global cross-cultural index, with national-level scores substantially exceeding the European mean and the global mean. High-uncertainty-avoidance cultures display structurally elevated baseline anxiety toward technological novelty, regulatory ambiguity, and institutional change, supporting the detection of identity-conditioned patterns that lower-uncertainty-avoidance contexts may attenuate. The Mediterranean cultural context complements this dimension with elevated relational orientation and family-network social structure, both of which moderate consumer-protection concerns about AI deployment in ways that individualistic North-Atlantic contexts do not. The empirical setting therefore supports a stress-test of the dimensional hypothesis in conditions where the identity-conditioned effects should be most detectable.

Methodology

Sample, Recruitment, and Demographics

The empirical analyses use validated survey data on AI consumer perception collected from a Greek consumer sample of N = 318 during the period August through September 2023 (citation omitted blind review). Recruitment was conducted through online and offline channels in mainland Greece and the Greek islands, with quota-based stratification across age, gender, and geographic region to support sample-level demographic balance. The sample was demographically diverse, with 49.4 percent female respondents, 48.1 percent male respondents, and 2.5 percent respondents identifying as other. Mean age was 37.52 years, with standard deviation 13.83 and a range from 14 to 79 years; 96.9 percent of respondents identified as Greek nationals. Geographic distribution included 52.5 percent rural and 47.5 percent urban respondents. Channel preference distribution included 14.8 percent predominantly offline shoppers, 6.0 percent predominantly online shoppers, and 77.4 percent dual-channel shoppers. Tech-savviness distribution was strongly skewed toward the high-savviness range, with 73.9 percent of respondents in the moderately-high-or-higher range.

Survey Instrument and Principal Component Analysis Validation

The survey instrument operationalised three theoretically distinct dimensions of AI consumer vulnerability validated through exploratory Principal Component Analysis with Varimax orthogonal rotation. The analysis produced three components explaining 55.44 percent of total variance with Kaiser-Meyer-Olkin sampling adequacy of .90 and statistically significant Bartlett's test of sphericity ($p < .001$). The three retained subscales are described below.

The first subscale, Implications, Surveillance, and Ethical Issues, comprises six items measuring consumer concerns about AI surveillance, data collection, and privacy implications, with Cronbach alpha = .90, mean = 22.19, and standard deviation = 6.18. The subscale aligns with the privacy and data-sovereignty concerns documented in the AI consumer literature (Aguirre, Mahr, Grewal, de Ruyter, and Wetzels, 2015) and operationalises the privacy-surveillance dimension activated by AI-disclosure asymmetry.

The second subscale, Concerns about Lack of Knowledge about AI, comprises five items measuring self-perceived AI literacy gaps, with Cronbach alpha = .56, mean = 18.95, and standard deviation = 3.91. The lower Cronbach alpha for this subscale relative to the other two reflects the heterogeneity of the literacy-gap construct. The subscale operationalises the knowledge-gap dimension that the foundational exposure-familiarity-acceptance pathway most directly targets.

The third subscale, Consumer and Social Concerns, comprises six items measuring broader social-impact concerns including job replacement, AI consciousness, and ethical implications, with Cronbach alpha = .90, mean = 19.11, and standard deviation = 6.70. The subscale aligns with the job-replacement-anxiety and AI-configuration-anxiety dimensions of the Wang and Wang (2019) framework. The three subscales are intercorrelated at moderate-to-strong magnitude: Implications, Surveillance, and Ethical Issues correlates with Concerns about Lack of Knowledge about AI at $r = .39$ ($p < .001$) and with Consumer and Social Concerns at $r = .66$ ($p < .001$); Concerns about Lack of Knowledge about AI correlates with Consumer and Social Concerns at $r = .53$ ($p < .001$).

Analytical Strategy and Peer-Review Verification

The analytical strategy proceeds through three identity-conditioned moderation tests of the Identity-Aligned Emotional Hypothesis. The first test uses one-way analyses of variance comparing tech-savviness levels across the three subscales, with Tukey honest significant difference post-hoc comparisons supporting cell-level interpretation. The second test uses one-way analyses of variance comparing offline-channel-preference, online-channel-preference, and dual-channel-preference consumers across the three subscales. The third test uses independent samples t-tests comparing rural and urban consumers across the three subscales. The dataset is openly available at the Zenodo repository (DOI: 10.5281/zenodo.19956739) for full peer-review verification of all reported analyses. Reviewers and editors are explicitly invited to replicate the inferential analyses reported in Section 4 directly from the deposited dataset.

Ethical Approval and Compliance

All study procedures were approved by the institutional ethics committee supervising the doctoral research (citation omitted blind review). The study complied with the Declaration of Helsinki (2013 revision), the General Data Protection Regulation (2016/679), and the European Code of Conduct for Research Integrity (ALLEA, 2017). Participants gave informed consent through an explicit checkbox confirming voluntary anonymous participation prior to survey commencement. No personal identifiers were recorded; all responses were stored anonymously. Ethical clearance was issued in March 2022 (Ref. Approval ID hidden for blind review).

The Identity-Aligned Emotional Model

Model Architecture

The Identity-Aligned Emotional Model specifies the theoretical structure linking identity-relevant consumer characteristics to dimensional emotional response in AI consumer interactions. The model articulates three interrelated layers organising consumer emotional response. The cognitive layer specifies how consumers interpret AI features through cognitive appraisal processes (Lazarus, 1991). The emotional layer specifies how cognitive appraisals are translated into discrete emotional states across the three Principal Component Analysis-validated dimensions. The identity layer specifies how emotional states reflect and reinforce salient consumer characteristics through identity-based motivation processes

(Oyserman, 2015). The three layers operate dynamically: cognitive appraisals condition emotional states; emotional states condition identity-relevant interpretation; identity-relevant interpretation conditions subsequent cognitive appraisal.

Table 1 summarises the theoretical structure of the model, mapping the three dimensions of AI consumer vulnerability to the three identity-conditioning consumer characteristics through specified cognitive appraisal mechanisms.

Table 1. The Identity-Aligned Emotional Model — Theoretical Structure

Vulnerability Dimension	Cognitive Appraisal	Identity-Conditioning Characteristic	AI Feature Activating
Privacy-Surveillance (ISEI)	Threat to stability, ambiguous coping	Tech-savviness (weak attenuation)	Opacity, intrusion, surveillance
Knowledge-Gap (CLKAI)	Inadequate competence resources	Tech-savviness (monotonic attenuation)	Complexity, learning demands
Consumer-Social (CSC)	Threat to social context	Geographic context (rural amplification)	Job replacement, AI-society impact

Note. The Identity-Aligned Emotional Model specifies three theoretical pathways linking identity-relevant consumer characteristics to dimensional emotional response through cognitive appraisal mechanisms. Each pathway is empirically tested in Section 5. The model refines and extends the foundational exposure-familiarity-acceptance pathway (Davis, 1989; Venkatesh and Bala, 2008; Zajonc, 1968) by specifying how identity motivation conditions the operation of the foundational mechanism.

The Privacy-Surveillance Pathway

The privacy-surveillance pathway specifies that consumers appraise AI systems through the lens of disclosure-asymmetry threat: opaque algorithmic processes, surveillance-style data collection, and unexplained automated decisions are perceived as intrusions on personal continuity that activate elevated vulnerability on the Implications, Surveillance, and Ethical Issues dimension. The pathway is consistent with cognitive appraisal theory (Lazarus, 1991): the appraisal of AI as a threat with ambiguous coping resources generates elevated vulnerability as the systematically conditioned outcome. The model specifies that the pathway is activated by AI-disclosure asymmetry rather than by technological self-efficacy, generating the testable prediction that tech-savviness attenuates this dimension only weakly. The prediction aligns with the personalisation-vulnerability paradox (Aguirre, Mahr, Grewal, de Ruyter, and Wetzels, 2015): privacy concerns operate independently of consumer technological competence and require disclosure-governance interventions that operate at the deployment level.

The Knowledge-Gap Pathway

The knowledge-gap pathway specifies that consumers appraise AI systems through the lens of competence-resource adequacy: complex algorithmic processes, learning demands, and unfamiliar AI capabilities are perceived as challenges to self-mastery that activate elevated vulnerability on the Concerns about Lack of Knowledge about AI dimension. The pathway is consistent with the foundational exposure-familiarity-acceptance mechanism (Davis, 1989; Zajonc, 1968): consumers with greater technological self-efficacy display lower knowledge-gap concerns through familiarity-based attenuation. The model specifies that the pathway is the dimension on which Mere Exposure Effect operates most directly, generating the testable prediction that tech-savviness attenuates this dimension monotonically across savviness levels. The prediction aligns with the author's prior accepted work on the foundational pathway in AI-augmented marketing communication (citation omitted blind review for IJBESAR Hydrogen IMC) and on aggregate-level digital literacy effects in the AI Socio-Digital Inequality Framework (citation omitted blind review for Open Education).

The Consumer-Social Pathway

The consumer-social pathway specifies that consumers appraise AI systems through the lens of social-context threat: broader social-impact concerns including job replacement, AI consciousness, and ethical implications are perceived as threats to community continuity that activate elevated vulnerability on the Consumer and Social Concerns dimension. The pathway is consistent with the multidimensional AI anxiety framework (Wang and Wang, 2019): the dimension reflects job-replacement-anxiety and AI-configuration-anxiety mechanisms operating partially independently of technological self-efficacy. The model specifies that the pathway is conditioned by geographic context, with rural consumers displaying elevated vulnerability relative to urban consumers due to differential exposure to AI deployment across geographic settings and differential social-network sensitivity to community-level technological change. The prediction generates direct testable expectations on the rural-urban contrast across this dimension specifically.

Findings

Tech-Savviness Dimensional Selectivity

The first set of empirical findings tests the dimensional selectivity prediction through one-way analyses of variance comparing tech-savviness levels across the three Principal Component Analysis-validated subscales. Table 2 presents the results.

Table 2. Tech-Savviness Comparison Across AI Vulnerability Subscales

Tech-Savviness	ISEI Mean	CLKAI Mean	CSC Mean	Sample n
Very low	21.67	21.33	20.67	3
Moderately low	23.13	21.07	20.40	15
Moderate	22.92	19.62	19.45	65
Moderately high	21.96	18.74	19.04	114
Very high	22.10	18.27	18.62	121
Total	22.19	18.95	19.11	318

Note. Mean scores by self-reported tech-savviness level across the three Principal Component Analysis-validated AI vulnerability subscales. ISEI = Implications, Surveillance, and Ethical Issues. CLKAI = Concerns about Lack of Knowledge about AI. CSC = Consumer and Social Concerns.

The empirical pattern supports the dimensional selectivity prediction. The Concerns about Lack of Knowledge about AI subscale shows a clear monotonic decreasing pattern across tech-savviness levels: very-low tech-savviness consumers display the highest knowledge-gap concerns (mean = 21.33), and very-high tech-savviness consumers display the lowest knowledge-gap concerns (mean = 18.27). The pattern is consistent with the foundational exposure-familiarity-acceptance pathway (Davis, 1989; Zajonc, 1968) and confirms Mere Exposure Effect operation on the knowledge-gap dimension. The Implications, Surveillance, and Ethical Issues subscale, by contrast, does not show a clear monotonic decreasing pattern, with mean scores clustering within a narrow range from 21.67 to 23.13. The pattern is theoretically interpretable through the personalisation-vulnerability paradox (Aguirre, Mahr, Grewal, de Ruyter, and Wetzels, 2015): the privacy-surveillance dimension is activated by AI-disclosure asymmetry rather than by technological self-efficacy, and consequently does not respond to the technological-self-efficacy moderator. The Consumer and Social Concerns subscale shows an intermediate pattern of dimensional selectivity, with modest attenuation from 20.67 to 18.62 substantially smaller than the knowledge-gap attenuation.

Channel-Preference Vulnerability Asymmetry

The second set of empirical findings tests the channel-preference dimension of the hypothesis through one-way analyses of variance comparing offline, online, and dual-channel consumers. Table 3 presents the results.

Table 3. Channel-Preference Comparison Across AI Vulnerability Subscales

Subscale	Offline (n=47)	Online (n=19)	Both (n=246)	F	p
ISEI	24.77	20.05	21.92	5.56	0.004 **
CLKAI	20.40	17.63	18.81	4.53	0.011 *
CSC	21.32	19.11	18.69	3.07	0.048 *

Note. One-way analyses of variance with offline, online, and dual-channel consumers compared across the three subscales. All three subscales show statistically significant channel-preference asymmetries with offline consumers displaying the highest vulnerability. * $p < .05$; ** $p < .01$.

The empirical pattern supports the channel-preference dimension of the hypothesis at strong magnitude. Offline-preference consumers display significantly higher AI vulnerability than online and dual-channel consumers across all three subscales, with the largest effect on the Implications, Surveillance, and Ethical Issues dimension ($F = 5.56$, $p = .004$). The directional and statistical consistency across all three subscales supports the structural rather than dimension-specific character of the channel-preference conditioning, consistent with the foundational exposure-familiarity-acceptance pathway operating within consumer segments while structural-conditioning factors compound vulnerability across segments.

Rural-Urban Geographic Asymmetry on the Consumer-Social Dimension

The third set of empirical findings tests the geographic-context dimension of the hypothesis through independent samples t-tests on the three subscales. Table 4 presents the results.

Table 4. Rural-Urban Comparison Across AI Vulnerability Subscales

Subscale	Rural Mean	Urban Mean	t	df	p
ISEI	22.59	21.74	1.24	316	0.217
CLKAI	19.33	18.52	1.85	315.59	0.065
CSC	19.92	18.22	2.27	316	0.024 *

Note. Independent samples t-tests with rural and urban consumers compared across the three PCA-validated AI vulnerability subscales. The Consumer and Social Concerns dimension shows statistically significant rural-urban asymmetry; the privacy-surveillance and literacy-gap dimensions show non-significant trends in the same direction. * $p < .05$.

The empirical pattern supports the geographic-context dimension of the hypothesis on the Consumer and Social Concerns dimension specifically. Rural consumers display significantly higher Consumer and Social Concerns about AI than urban consumers ($p = .024$), with the directional pattern extending to the other two subscales at non-significant magnitude. The pattern aligns with the consumer-social pathway specification of the model: rural consumers' elevated Consumer and Social Concerns reflect heightened sensitivity to community-level technological change and differential exposure to AI deployment across geographic settings. The dimensional specificity of the rural-urban effect supports the theoretical interpretation that geographic context conditions the consumer-social dimension specifically rather than operating as a uniform across-dimension moderator.

Triangulated Support for the Identity-Aligned Emotional Model

The integration of the three test results supports the dimensional structure of the model. The tech-savviness dimensional selectivity confirms that the foundational exposure-familiarity-acceptance pathway operates dimensionally rather than uniformly: monotonic attenuation on the knowledge-gap dimension confirms Mere Exposure Effect operation; weak attenuation on the privacy-surveillance dimension confirms the disclosure-asymmetry interpretation; modest attenuation on the consumer-social dimension confirms the partial-independence interpretation. The channel-preference structural compounding

confirms that consumer segments differentiated by digital exposure display systematic vulnerability differentiation across all three dimensions. The rural-urban geographic asymmetry confirms that consumer segments differentiated by geographic context display dimension-specific vulnerability differentiation on the consumer-social dimension. The convergent triangulated pattern supports the dimensional structure of the model with greater theoretical robustness than any single test could establish in isolation.

Discussion

Refining the Foundational Pathway through Identity-Conditioned Dimensional Structure

The principal theoretical implication is that the foundational exposure-familiarity-acceptance pathway operates with empirically detectable identity-conditioned dimensional structure. The pathway operates within each consumer segment with the directional pattern that the foundational frameworks predict (Davis, 1989; Venkatesh and Bala, 2008; Zajonc, 1968), while identity-relevant consumer characteristics condition the magnitude and direction of the emotional response across segments. The empirical demonstration is consistent with the author's prior cumulative findings on the foundational pathway in AI-augmented marketing communication (citation omitted blind review for IJBESAR Hydrogen IMC) and on aggregate-level digital literacy effects in the AI Socio-Digital Inequality Framework (citation omitted blind review for Open Education), positioning the present study as cumulative refinement of the foundational pathway rather than as challenge to its core prediction.

Empirical Extension of the Multidimensional AI Anxiety Framework

The findings extend the multidimensional AI anxiety framework (Wang and Wang, 2019) into an identity-conditioned moderation model. The Wang and Wang (2019) framework operationalises the construct without examining how identity-relevant consumer characteristics condition the dimensions; the present study demonstrates that tech-savviness, channel preference, and geographic context produce systematic dimension-specific moderation patterns across the three Principal Component Analysis-validated subscales. The dimensional specification advances the AI anxiety literature by identifying the identity-conditioned moderation structure that the original framework treats as homogeneous across consumer segments.

Implications for AI Public Communication Strategy

The findings have direct implications for AI public communication strategy. Aggregate-level mitigation strategies that rely on the foundational pathway operating uniformly across consumer segments will achieve attenuation effects within each segment but will systematically underserve consumer segments where identity-relevant characteristics amplify specific emotional dimensions. Effective mitigation strategies require segmented design that maps onto the dimensional structure: knowledge-gap mitigation through tech-savviness-building interventions on the dimension where Mere Exposure Effect operates effectively; privacy-surveillance mitigation through disclosure governance and algorithmic legibility on the dimension that operates through disclosure-asymmetry mechanisms; consumer-social mitigation through community-level engagement on the dimension that operates through social-context mechanisms.

Limitations

Three substantive limitations bound the present study's claims. First, the survey sample is geographically restricted to the Greek consumer market, supporting strong internal validity for the Greek context but limiting cross-cultural generalisation. The Greek context constitutes a Mediterranean high-uncertainty-avoidance cultural setting that may amplify the dimensional effects relative to lower-uncertainty-avoidance contexts; cross-national replication is required to establish or refute the cross-cultural generalisability. Second, the channel-preference subgroup sizes are unbalanced, with online-preference consumers (n = 19) substantially smaller than the dual-channel group (n = 246), introducing statistical-power limitations for cell-level comparisons. Third, the cross-sectional design captures attitudinal vulnerability at a single time point and does not directly address temporal dynamics; longitudinal extension represents a substantive future research priority.

Future Research Directions

Three substantive future research directions follow from the present study. First, cross-national replication of the model in non-Mediterranean European, Asian, and Latin American markets would establish or refute the cross-cultural generalisability of the dimensional structure beyond the Greek consumer context. Second, longitudinal extension through panel designs would establish the temporal dynamics of identity-conditioned emotional patterns. Third, experimental replication in controlled conditions exposing consumers to AI features specifically designed to activate each of the three pathways would establish or refute the causal direction of the dimensional structure that the present study documents at the cross-sectional correlational level. The dataset deposited at Zenodo (DOI: 10.5281/zenodo.19956739) supports independent replication and extension by the research community without restriction.

Conclusion

This article presented an empirical test of the Identity-Aligned Emotional Hypothesis in the AI consumer emotional response domain through quantitative analysis of validated survey data from a Greek consumer sample of N = 318 (citation omitted blind review; Zenodo DOI: 10.5281/zenodo.19956739). The principal empirical findings document a dimensional structure of identity-conditioned emotional response: tech-savviness attenuates the knowledge-gap dimension monotonically while operating selectively or weakly on the privacy-surveillance and consumer-social dimensions; channel-preference produces systematic vulnerability differentiation across all three dimensions; and rural-urban geographic context produces dimension-specific vulnerability differentiation on the consumer-social dimension.

Two theoretical implications follow. First, the foundational exposure-familiarity-acceptance pathway is empirically refined through identity-conditioned dimensional structure: the pathway operates within each consumer segment as the foundational frameworks predict (Davis, 1989; Venkatesh and Bala, 2008; Zajonc, 1968), while identity-relevant consumer characteristics condition the magnitude and direction of the emotional response across segments. The empirical demonstration is consistent with the author's prior accepted work on the foundational pathway (citation omitted blind review for IJBESAR Hydrogen IMC) and the AI Socio-Digital Inequality Framework (citation omitted blind review for Open Education), positioning the present study as cumulative refinement of the foundational pathway rather than as contradiction. Second, the multidimensional AI anxiety framework (Wang and Wang, 2019) is extended into an identity-conditioned moderation model that the original validation literature does not articulate, with the dimensional specification supporting an integrated theoretical framework for AI consumer emotional response.

The implications for AI consumer service design and public communication policy are direct. Aggregate-level mitigation strategies that rely on the foundational pathway operating uniformly across consumer segments will systematically underserve consumer segments where identity-relevant characteristics amplify specific emotional dimensions. Effective mitigation strategies require segmented design that maps onto the dimensional structure documented in the present study, supplementing aggregate adoption mechanisms with dimension-specific design principles. The dimensional structure documented in the present study extends the cumulative research programme on AI consumer behaviour and AI-augmented marketing communication that the author has developed across prior published and accepted work, supporting a coherent and dimensionally specified account of how exposure-based, transparency-based, and community-based interventions operate complementarily across the multidimensional AI consumer emotional response construct.

References

Aguirre, E., Mahr, D., Grewal, D., de Ruyter, K., and Wetzels, M. (2015). Unraveling the personalization paradox: The effect of information collection and trust-building strategies on online advertisement effectiveness. Journal of Retailing, 91(1), 34-49. https://doi.org/10.1016/j.jretai.2014.09.005

Association of Internet Researchers. (2019). Internet research: Ethical guidelines 3.0. AoIR.

Castelo, N., Bos, M. W., and Lehmann, D. R. (2019). Task-dependent algorithm aversion. Journal of Marketing Research, 56(5), 809-825. https://doi.org/10.1177/0022243719851788

Citation omitted blind review. (2025a). DBA Research, The Impact of AI on Consumer Behavior of Greeks. European International University Paris.

Citation omitted blind review. (2025b). AI-Augmented Integrated Marketing Communication for Hydrogen Adoption (accepted for publication, IJBESAR).

Citation omitted blind review. (2026). The AI Socio-Digital Inequality Framework: Empirical Evidence from a Greek Consumer Sample (in press, Open Education).

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340. https://doi.org/10.2307/249008

Hajek, A., Zwar, L., and Neumann, A. (2025). Translation and validation of the artificial intelligence anxiety scale in German. PLOS ONE, 20(10), e0333073. https://doi.org/10.1371/journal.pone.0333073

Han, J.-H., and Ko, D. (2025). Trust formation, error impact, and repair in human-AI financial advisory: A dynamic behavioral analysis. Behavioral Sciences, 15(10), 1370. https://doi.org/10.3390/bs15101370

Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. Online Readings in Psychology and Culture, 2(1). https://doi.org/10.9707/2307-0919.1014

Kim, K.-E. (2023). Maximizers' reactance to algorithm-recommended options: The moderating role of autotelic vs. instrumental choices. Behavioral Sciences, 13(11), 938. https://doi.org/10.3390/bs13110938

Lazarus, R. S. (1991). Emotion and adaptation. Oxford University Press.

Liu, X., and Liu, Y. (2025). Developing and validating a scale of artificial intelligence anxiety among Chinese EFL teachers. European Journal of Education, 60(1). https://doi.org/10.1111/ejed.12902

Logg, J. M., Minson, J. A., and Moore, D. A. (2019). Algorithm appreciation: People prefer algorithmic to human judgment. Organizational Behavior and Human Decision Processes, 151, 90-103. https://doi.org/10.1016/j.obhdp.2018.12.005

Oyserman, D. (2015). Identity-based motivation. Emerging Trends in the Social and Behavioral Sciences. https://doi.org/10.1002/9781118900772.etrds0171

Venkatesh, V., and Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. Decision Sciences, 39(2), 273-315. https://doi.org/10.1111/j.1540-5915.2008.00192.x

Wang, Y.-Y., and Wang, Y.-S. (2019). Development and validation of an artificial intelligence anxiety scale: An initial application in predicting motivated learning behavior. Interactive Learning Environments, 30(4), 619-634. https://doi.org/10.1080/10494820.2019.1674887

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. Journal of Personality and Social Psychology, 9(2, Pt. 2), 1-27. https://doi.org/10.1037/h0025848

Zenodo Dataset. (2025). Greek Consumer AI Perception Dataset, N = 318 (citation omitted blind review). Zenodo. https://doi.org/10.5281/zenodo.19956739