



Brand Equity Moderates the Effect of Loneliness on Trust and Purchase Intentions in Conversational AI



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ABSTRACT

Objective - Despite rapid growth in conversational AI adoption, the emotional mechanisms shaping AI-mediated purchase behavior remain underexplored. Grounded in Need to Belong Theory and Brand Equity, this study tests a moderated mediation model in which consumer loneliness influences purchase intentions through brand trust, with brand equity conditioning this indirect pathway.

Methodology/Technique - A survey of 378 UK adults using conversational AI platforms (ChatGPT, Gemini, Grok, Copilot) was conducted via Prolific Academic. A scenario-based design manipulated brand equity (high vs. low), with data analyzed via Partial Least Squares Structural Equation Modeling (PLS-SEM). The study tested direct, mediating, moderating, and conditional indirect effects.

Findings – Consumer loneliness did not directly affect brand trust, yet brand trust strongly predicted purchase intention. Brand equity significantly moderated the loneliness–trust relationship, amplifying the indirect effect of loneliness on purchase intention through brand trust. High-equity brands converted loneliness-driven relational motivations into stronger trust and purchase intentions more effectively than low-equity brands, confirming the moderated mediation.

Novelty - This study reconceptualizes consumer loneliness as a conditional relational motivator contingent on brand equity, repositions brand equity as a relational amplifier in conversational AI settings, and establishes brand trust as the affective conduit through which unmet belonging needs translate into purchase behavior — bridging consumer psychology, branding, and human–AI interaction research.

Type of Paper: Empirical

JEL Classification: M31, D91, O33

Keywords: consumer loneliness; brand trust; brand equity; purchase intention; conversational AI; artificial intelligence; moderated mediation

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1. Introduction

Loneliness has emerged as a salient concern in consumer behavior, with individuals often turning to consumption experiences as a means of coping (Shrum et al., 2023). Recent estimates suggest that nearly one-quarter of adults report high levels of loneliness, rising to over 80% among younger consumers who experienced loneliness (McCarthy et al., 2025).

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Characterized by perceived social isolation and unmet relational needs, loneliness is increasingly recognized not merely as a social concern, but as a fundamental driver of consumption behavior (Cacioppo & Cacioppo, 2014). To alleviate feelings of disconnection, consumers often turn to brands, products, and digital platforms as substitutes for human interaction, fundamentally altering consumer–brand dynamics (Pieters, 2013) (Epley et al., 2008). Despite growing interest in applications of artificial intelligence (AI) in marketing, the role of consumer loneliness (CL) in shaping trust and purchase intentions (PI) remains underexplored. Trust is widely acknowledged as critical in digital interactions, particularly when traditional relational cues are replaced by algorithmic interfaces (Glikson & Woolley, 2020) (P. Hu et al., 2023). Yet, the ways in which emotional states such as loneliness interact with brand-related cues to influence trust and subsequent behavior have received limited attention. Similarly, although brand equity (BE) influences consumer choices in conventional settings (Halbauer et al., 2022), its moderating role in AI-mediated interactions, especially in amplifying relational compensation mechanisms has not been systematically examined. Conversational AI is particularly well-suited for investigation in this study due to its distinctive ability to foster more personal, relational, and human-like interactions with consumers (Mari et al., 2024) (Bergner et al., 2023).

This study addresses these gaps by integrating Need to Belong Theory and Brand Equity to examine the relational and brand-based mechanisms through which consumer loneliness shapes purchase intentions in AI-mediated contexts. Specifically, this study proposes a moderated mediation model in which consumer loneliness affects purchase intentions indirectly through brand trust (BT), with this indirect effect strengthened when brand equity is high rather than low. AI recommendations serve as the channel through which affective motivations are translated into marketplace behavior, highlighting the interplay of psychological and brand-level drivers in consumption.

The study contributes to both theory and practice. Theoretically, it advances understanding of loneliness as a psychological driver that interacts with brand characteristics to influence consumer behavior in AI-mediated contexts—a perspective rarely examined in prior research. Practically, it offers guidance for marketers and designers in conversational AI systems that foster trust and engagement among socially motivated consumers.

This research makes three principal contributions. First, it extends the consumer loneliness literature beyond compensatory consumption to examine trust formation as a relationally motivated process in AI-mediated environments, demonstrating that loneliness functions not only as a driver of brand attachment but also as a catalyst for trust-based reliance on algorithmic recommendations. Second, it advances understanding of brand equity by positioning it as a moderator that amplifies the conversion of affective deficits into behavioral outcomes, illuminating the boundary conditions of relational compensation in digital contexts. Third, it provides actionable insights for marketers navigating AI recommendation systems, highlighting how brand-level resources interact with consumer emotional states to influence trust and purchase intentions.

Building on this foundation, the study pursues three research objectives:

Research objective 1: *To investigate the effect of consumer loneliness on brand trust and the mediating role of brand trust in shaping purchase intentions.*

Research objective 2: *To examine whether the effect of consumer loneliness on brand trust varies with the level of brand equity, testing the moderating role of brand equity.*

Research objective 3: *To assess whether the indirect effect of consumer loneliness on purchase intentions through brand trust is strengthened by higher brand equity, testing a moderated mediation effect.*

The following sections build on this foundation by reviewing relevant literature, developing the theoretical framework, formulating hypotheses, and presenting the methodology used to empirically examine the interplay of loneliness, trust, brand equity, and purchase intentions in AI-mediated brand interactions.

2. Literature review

2.1 Consumer loneliness

Loneliness, conceptualized as perceived social isolation arising from discrepancies between desired and actual social relationships, is increasingly recognized as a critical factor influencing consumer behavior (Cacioppo & Cacioppo, 2014) (J. Wang, 2023). Importantly, loneliness reflects a subjective evaluation of unmet belonging needs rather than the sheer number of social ties (Hawkley & Cacioppo, 2010), encompassing both personal disconnection and insufficient social bonds with others, including interactions with marketplace actors (De Jong-Gierveld & van Tilburg, 2006) (Lim & Kim, 2017). Recent surveys suggest that nearly one-quarter of adults report high levels of loneliness, with younger consumers being particularly affected (B. Hu et al., 2024) (McCarthy et al., 2025).

In consumer research, loneliness is often framed as a psychological antecedent of compensatory and relational consumption behaviors (Pieters, 2013) (J. Wang et al., 2012). Drawing on protection motivation theory, loneliness can be viewed as an interpersonal threat that triggers coping appraisals, including perceived vulnerability and severity, which in turn drive protective consumption behaviors (J. Wang, 2023). Consumption thus fulfills both compensatory and affiliative functions: lonely consumers are more likely to engage in experiential or relational consumption to re-establish social connection (Atalay & Meloy, 2011) (Rippé et al., 2018). They frequently anthropomorphize brands and products (Chen et al., 2017), treating them as social surrogates capable of mitigating feelings of rejection or isolation (Epley et al., 2008) (Dang & Liu, 2023).

Beyond general consumption, loneliness shapes material and experiential behaviors in specific ways. Lonely individuals tend to develop stronger attachments to possessions, forming “self-product” bonds that discourage disposal (B. Hu et al., 2024), and exhibit heightened preference for anthropomorphized brands or nonhuman agents (Epley et al., 2008). At the same time, loneliness can deplete self-regulatory resources, leading to more impulsive or escapist consumption patterns (Shrum et al., 2023) (Mendini & Furchheim, 2025).

The rise of digitalization and AI-mediated platforms has further amplified these dynamics. Online environments and AI-driven recommendation systems offer opportunities for social and emotional engagement, yet they may also exacerbate isolation if social substitutes fail to meet relational needs (J. Wang, 2023). Evidence indicates that lonely consumers increasingly form affective bonds with conversational AI and voice assistants, integrating these tools into their self-concept to restore social connection (Alabed et al., 2024). Loneliness also influences channel preferences: in physical retail, consumers seek hedonic and social interactions, whereas online channels are pursued for community and engagement, albeit with the risk of deepening isolation when social substitutes are inadequate (J. Wang, 2023).

Collectively, these findings indicate that consumer loneliness is a pervasive emotional state shaping relational consumption across the acquisition, usage, and disposal stages. In AI-mediated environments, these dynamics are particularly salient because conversational agents and recommendation systems can be

experienced as quasi-social partners that either partially satisfy or frustrate consumers' belonging needs. Crucially, loneliness functions as a driver of trust formation, brand attachment, and relational engagement with products or AI-based recommendations. In technology-mediated contexts, these dynamics may interact with brand equity, which can amplify or attenuate the influence of loneliness on brand trust and purchase intentions.

Understanding consumer loneliness as a psychological driver of affiliative and compensatory behaviors provides a foundational framework for investigating its effects on trust, brand attachment, and responses to AI-mediated recommendations in contemporary marketing contexts (see Appendix 1 for key literature on consumer loneliness).

2.2 Trust, brand equity and purchase intentions in AI recommendations

As artificial intelligence increasingly mediates consumer–brand interactions through recommendation algorithms, chatbots, and virtual influencers, understanding the interplay of trust, brand equity, and purchase intentions becomes essential (Hasan et al., 2021) (Zheng et al., 2023). In AI-driven contexts, traditional relational cues are replaced by algorithmic interfaces, fundamentally reshaping how consumers evaluate, interpret, and engage with brands.

2.2.1 Brand trust and purchase intentions in AI recommendations

Brand trust has emerged as a central determinant of consumer decision-making in AI-mediated environments (Zhang & He, 2025). Conceptually, trust comprises both cognitive trust, reflecting beliefs in an AI system's competence and reliability, and affective trust, reflecting consumers' emotional confidence when interacting with AI-powered brand touchpoints (Zheng et al., 2023). This duality is especially pronounced in anthropomorphic AI agents, where human-like features foster emotional connection while maintaining functional reliability (Jham et al., 2023).

Empirical evidence in ChatGPT-based service applications indicates that trust is the most influential predictor of consumers' intention to rely on AI-generated recommendations for shopping decisions (Foroughi et al., 2025). Trust exerts both direct and moderating effects: while it positively drives adoption intentions, excessively high trust can paradoxically diminish consumers' critical evaluation of AI performance, attenuating the influence of other key drivers such as performance expectancy. This nuanced pattern underscores that trust is necessary but not sufficient for optimal AI adoption.

Further, AI influencer endorsements shape trust primarily through perceived agency, with lower perceived agency reducing brand trust and, in turn, dampening purchase intentions via serial mediation (Zhang & He, 2025). Trust also interacts with factors such as psychological distance and perceived product usage barriers, mitigating negative effects and reinforcing consumer–brand relationships in AI-mediated contexts (Jham et al., 2023). Additionally, emotional attachment and hedonic experiences act as mediators in trust formation, particularly when AI agents or virtual influencers are anthropomorphized, subsequently enhancing brand love and purchase intentions (Rehman et al., 2025).

2.2.2 Brand equity as a moderator in trust–purchase intention relationships

Brand equity functions as a strategic asset that strengthens the influence of AI-mediated trust on purchase intentions (France et al., 2025). High-equity brands amplify the effect of anthropomorphic AI features on trust and brand love, reinforcing consumer engagement (Rehman et al., 2025). AI interactions that foster parasocial engagement through responsiveness, personalization, and reliability further enhance brand equity,

generating a positive feedback loop wherein trust reinforces equity and equity amplifies trust effects (S. Wang et al., 2025) (Jham et al., 2023).

Evidence also suggests that brand presentation order influences consumer choices in AI-mediated environments. For instance, in voice-based AI recommendations, presenting high-equity brands first results in a unimodal choice distribution, whereas initiating with low-equity brands produces a bimodal pattern, illustrating the moderating role of brand equity in sequential decision-making (Halbauer et al., 2022). Moreover, brand equity serves as a buffer against negative perceptions of AI technology, optimizing trust effects across diverse consumer expertise levels and cultural contexts (Zheng et al., 2023) (Niros et al., 2025).

Together, these findings demonstrate that consumer trust in AI recommendations interacts dynamically with brand equity to shape purchase intentions. Trust is both a driver and a lens through which consumers interpret AI-mediated brand interactions, while brand equity moderates these effects, providing a critical mechanism for understanding psychological and brand-related processes in digital consumer behavior. (See Appendix 2 for an overview of key literature on trust, brand equity, and purchase intentions in AI recommendations).

3. Need to belong and brand equity as a theoretical framework

Building on the literature reviewed, this study integrates Need to Belong Theory (Baumeister & Leary, 1995) and Brand Equity (Aaker, 1991) (Keller, 1993) to explain how consumer loneliness shapes trust and purchase intentions in AI-mediated brand interactions.

Need to Belong Theory posits that humans possess a fundamental drive to form and maintain meaningful social connections (Baumeister & Leary, 1995). When these needs are unmet, individuals experience loneliness, which motivates compensatory behaviors aimed at restoring a sense of social inclusion. In consumption contexts, this drive manifests as relational consumption, where brands or AI-based agents act as social surrogates to fulfill unmet belonging needs (Epley et al., 2008) (Alabed et al., 2024). As a result, lonely consumers are more likely to engage in trust-based interactions with brands or AI recommendation systems, seeking to satisfy relational motivations through consumer–brand engagement.

Brand Equity provides a complementary lens by emphasizing the relational and evaluative resources embedded in brands. High-equity brands—characterized by credibility, perceived quality, and relational value—enhance trust formation, particularly for consumers motivated by social needs (Aaker, 1991) (Keller, 1993). In AI-mediated contexts, brand equity can strengthen the perceived reliability and emotional appeal of algorithmic recommendations, amplifying the relational compensation effect of loneliness.

Conversational AI recommendations occupy a theoretically ambiguous but analytically critical position in this framework. They can function along a spectrum from passive conduit to active relational agent. In their passive form, conversational AI tools such as ChatGPT or Copilot serve as neutral information channels that deliver brand recommendations without substantially altering the consumer's relational experience. In their active form, however, such systems deploy anthropomorphic cues (human-like language, tone, and responsiveness), personalization (tailoring recommendations to inferred preferences), and transparency (disclosing the basis of recommendations) in ways that meaningfully shape trust formation (Jham et al., 2023) (Bergner et al., 2023) (Alabed et al., 2024).

This distinction matters for the present framework. The study does not treat AI merely as a neutral backdrop; rather, it treats conversational AI as a contextual condition that mediates the expression of loneliness-driven relational motivations. Specifically, AI's relational properties determine whether loneliness-

motivated consumers find interactional satisfaction in a given brand encounter. When AI interfaces exhibit anthropomorphic or personalized features, lonely consumers may experience partial social fulfillment, thereby lowering their relational threshold for trust. Conversely, when AI recommendations feel algorithmic and impersonal, they may fail to address the consumer's belonging needs, attenuating the loneliness–trust pathway. Critically, the degree to which AI relational properties amplify or suppress this pathway is expected to interact with brand equity: high-equity brands can compensate for lower AI relational sophistication by offering pre-existing symbolic reassurance, whereas low-equity brands have no such reservoir. This framing positions AI characteristics (anthropomorphism, personalization, transparency) as boundary conditions that future research should test directly as moderating variables. In the present study, conversational AI functions as the common relational context—held constant across conditions—within which the loneliness–brand equity–trust dynamic is examined.

Integrating these perspectives, the present framework rests on three theoretical pillars. Consumer loneliness, grounded in Need to Belong Theory, functions as a motivational driver: unmet belonging needs heighten relational sensitivity and motivate engagement with brand-based surrogates. Brand equity, drawn from (Aaker, 1991) and (Keller, 1993), acts as a moderating resource: high-equity brands provide the credibility and relational warmth necessary to convert loneliness-driven motivation into trust. Conversational AI recommendations serve as the enactment channel: through personalization, responsiveness, and perceived reliability, they translate emotional motivation and brand-based reassurance into behavioral intention. Together, these pillars yield a moderated mediation model in which loneliness affects purchase intention indirectly through trust, and in which brand equity determines the strength of that indirect pathway.

4. Hypothesis development

4.1 Consumer loneliness and brand trust in AI recommendations

Consumer loneliness, as the subjective experience of social isolation and unmet relational needs (Baumeister & Leary, 1995) (Epley et al., 2008), influences consumer behavior in contexts with limited social support. In conversational AI environments, brands and AI recommendation systems may act as relational substitutes, offering social reassurance and fostering trust (Alabed et al., 2024). Yet, lonely consumers are especially sensitive to cues of social responsiveness; interactions perceived as impersonal or lacking human warmth—as often occurs in AI recommendations—may undermine trust in the brand (J. Wang, 2023) (Loh et al., 2021). Based on these insights, and acknowledging that lonely consumers may be especially sensitive to perceived social coldness in AI interactions, it is proposed that consumer loneliness negatively affects brand trust in AI-mediated recommendations.

H1: Consumer loneliness negatively influences brand trust in conversational AI recommendations.

4.2 Brand trust as mediator

Brand trust converts psychological and emotional states into behavioral outcomes, including purchase intentions (McKnight & Chervany, 2001) (Alabed et al., 2024) (Khamitov et al., 2024). In AI-mediated contexts, trust reduces perceived risk and uncertainty, increasing adoption and purchase behavior (Zhang & He, 2025) (Foroughi et al., 2025). While prior work has documented trust as a mediator in offline or standard online contexts, its role in translating loneliness into behavior via AI recommendations remains underexplored.

H2: Brand trust mediates the relationship between consumer loneliness and purchase intention.

4.3 Brand equity as moderator

Brand equity, reflecting perceived quality, credibility, and relational value (Aaker, 1991) (Keller, 1993), strengthens trust formation. High-equity brands serve as effective relational substitutes for lonely consumers, whereas low-equity brands may provide insufficient social reassurance (Alabed et al., 2024). Empirical evidence shows that high brand equity amplifies reliance on AI-mediated recommendations (Rehman et al., 2025) (France et al., 2025). By considering brand equity, this study contributes to understanding boundary conditions of relational compensation in digital consumer behavior.

H3: Brand equity moderates the effect of consumer loneliness on brand trust, such that the effect is stronger for high brand equity brands.

4.4 Moderated mediation effect on purchase intention

High brand equity is also expected to strengthen the downstream impact of brand trust on purchase intentions. As established in H2, trust mediates the link between loneliness and purchase intention; however, the magnitude of this indirect relationship likely depends on brand equity. High-equity brands provide greater symbolic assurance and relational consistency, enhancing the translation of loneliness-driven trust into actual purchasing behavior (Halbauer et al., 2022) (Zheng et al., 2023). Low-equity brands, in contrast, may fail to sustain such conversion, as consumers perceive weaker emotional reciprocity or reliability. This moderated mediation framework captures a conditional process through which affective deficits (loneliness) are transformed into marketplace actions via trust and brand signals. It extends prior work by demonstrating how emotional and brand-based mechanisms interact in AI-mediated consumer decision-making.

H4: The indirect effect of consumer loneliness on purchase intention via brand trust is stronger under high (vs. low) brand equity, highlighting the boundary conditions of relational compensation in AI-mediated contexts.

4.5 Model summary

Together, these hypotheses propose a moderated mediation framework linking emotional state, trust formation, brand equity, and purchase intention in AI-mediated environments. By integrating Need-to-Belong theory and Brand Equity, the framework Figure 1 elucidates both the psychological and brand-level mechanisms underlying relational compensation in digital consumption. The next section details the survey-based methodology used to empirically test these relationships.

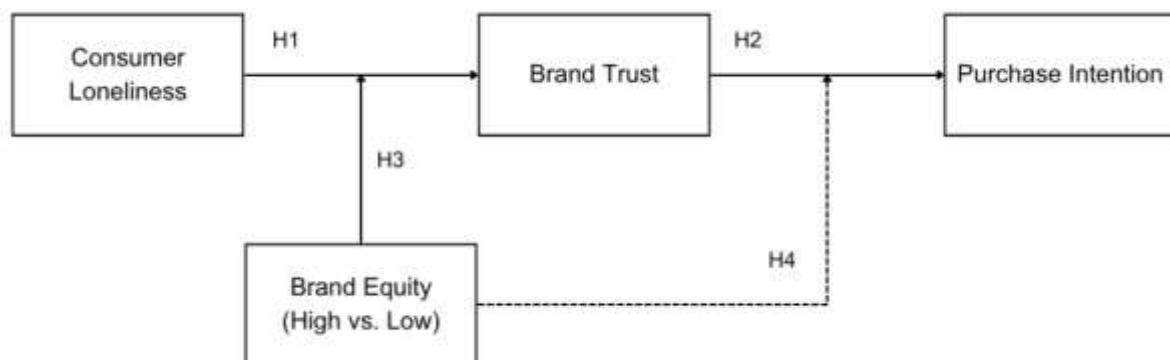


Figure 1. Conceptual model

5. Methodology

5.1 Sample and data collection

Data were collected via Prolific Academic, an established online platform for recruiting diverse research participants (Bergner et al., 2023). The study targeted individuals who actively use conversational AI platforms, including ChatGPT, Gemini, Grok, and Copilot, and who regularly receive AI-generated recommendations. Given the absence of a complete population frame of AI users, a non-probability purposive sampling approach was employed, appropriate for empirically testing a hypothesized model rather than estimating population parameters (Bryman & Bell, 2015).

Participants were adults residing in the United Kingdom, with no restrictions on gender, occupation, or education, allowing for variation in demographics and AI usage patterns. Eligible respondents completed an online questionnaire hosted on Qualtrics and were compensated at £7.56 per hour in line with Prolific's fair-pay guidelines.

The initial dataset comprised 697 complete responses. To ensure relevance to the study's focus on consumer loneliness, 287 respondents (41.2%) who reported "never" or "rarely" experiencing social isolation over the past 12 months were excluded on the basis of a pre-planned eligibility criterion. This criterion was theoretically motivated: the study examines how experienced loneliness shapes trust and purchase intentions; respondents with no subjective experience of loneliness cannot contribute variance to the focal psychological mechanism under investigation. The 58.8% retention rate is consistent with population-level loneliness prevalence reported in recent large-scale surveys (McCarthy et al., 2025).

Researchers and readers should note that this eligibility criterion constitutes a deliberate sampling scope restriction, not a deficiency in study design. The resulting sample accurately represents the population of loneliness-experiencing AI users, which is the theoretically relevant population for the research questions posed. However, it does restrict generalizability: the findings cannot be extrapolated to individuals who rarely or never experience loneliness, among whom the loneliness–brand equity–trust pathway may operate differently or not at all. This limitation is important and is addressed further in Section 8. An additional 32 responses (4.6%) were removed because participants had not used AI-based recommendation tools in the past three months. Both exclusion criteria were implemented automatically through Qualtrics' skip logic. The final sample consisted of 378 respondents, exceeding recommended thresholds for PLS-SEM analysis (Hair, 2021).

5.2 Respondent profile

The final sample ($N = 378$) demonstrated heterogeneous age and gender distributions. Most participants were aged 31–50 years (72.75%), with 7.67% aged 21–30 and 19.58% aged 51–60. Gender distribution was nearly balanced, with 50.79% male and 49.21% female respondents. Regarding frequency of AI-based recommendation tool usage, the majority reported using such tools sometimes (43.12%) or often (32.01%), while 24.07% reported very frequent use and only 0.79% indicated never using these tools. Detailed demographic and usage information is presented in Table 1.

Table 1. Respondent profile

Variable	Category	Count	%
Age			
	21–30	29	7.67
	31–40	120	31.74
	41–50	155	41.01
	51–60	74	19.58
Gender			
	Male	192	50.79
	Female	186	49.21
	Non-binary / third gender	0	0
	Prefer not to say	0	0
Frequency of AI-based recommendation tool usage			
	Never	3	0.79
	Sometimes	163	43.12
	Often	121	32.01
	Very often	91	24.07

5.3 Measures

This study adopted the operational definitions of variables/constructs from prior literature and employed pre-validated scales with minor modifications to fit the context of AI-mediated brand interactions. Thirteen AI users, representing the target population, pre-tested the survey for face validity. Given that all scales were previously validated and only minor wording adjustments were made where necessary, this pre-testing was deemed sufficient to ensure clarity, comprehension, and contextual relevance.

All scale items were measured using a seven-point Likert-type scale ranging from 1 (“strongly disagree”) to 7 (“strongly agree”). Consumer loneliness (CL), reflecting perceived social isolation, was measured using the short version of the UCLA Loneliness Scale (Hughes et al., 2004), including items such as “I feel isolated from others” and “I feel left out.” Brand trust (BT), representing consumers’ willingness to rely on a brand’s integrity and reliability, was assessed using the scale developed by (Delgado & Alemán, 2003), including items such as “I trust this brand,” “This brand is reliable,” and “This brand keeps its promises.” Brand equity (BE), reflecting consumers’ perceptions of brand quality, reputation, and emotional value, was measured using the consumer-based brand equity scale by (Yoo & Donthu, 2001), with items such as “This brand has a good reputation,” “This brand is well-known and respected,” and “I have positive feelings toward this brand.” Purchase intention (PI) was measured using the scale by (Dodds et al., 1991), including items such as “I intend to purchase this brand” and “I will consider buying this brand the next time I shop.”

To examine brand equity as a moderating factor, respondents were randomly assigned to one of two scenario-based conditions describing either a high-equity or low-equity brand context prior to completing the

questionnaire. Random assignment was implemented via Qualtrics to ensure that observed differences between conditions could be attributed to the scenario-based design rather than extraneous factors. Full scenarios were provided in Appendix 3.

All scales were subsequently evaluated for reliability and validity. Internal consistency was assessed using Cronbach's alpha ($\alpha \geq 0.70$) and composite reliability. Convergent and discriminant validity were verified through confirmatory factor analysis. These psychometric evaluations ensured that the measurement model was robust and appropriate for subsequent analyses.

Given that all data were self-reported at a single point in time, common method bias (CMB) was also evaluated, as described below.

5.4 Common method bias

Since this study collected self-reported data at a single point in time, there is potential for common method bias (CMB), which can inflate observed relationships between constructs (Chang et al., 2010). To mitigate this risk, several procedural remedies were implemented: participants were assured of anonymity, the survey was designed to reduce ambiguity and social desirability, and item order was randomized.

Statistically, CMB was assessed using Harman's single-factor test and full collinearity VIFs. The unrotated single-factor solution accounted for 53.48% of the total variance, slightly above the recommended 50% threshold, suggesting a modest potential for common method variance. Complementarily, full collinearity VIFs were computed for all latent constructs: CL = 5.29, BT = 2.56, BE = 2.70, PI = 4.65, and CL $\times$ BE = 5.27. Two constructs—CL (VIF = 5.29) and the interaction term CL $\times$ BE (VIF = 5.27)—marginally exceed (Kock, 2015) collinearity threshold of 5 in the full collinearity assessment. However, this warrants careful interpretation rather than alarm for two reasons. First, the elevated VIF for the interaction term CL $\times$ BE is methodologically expected: interaction terms are algebraic products of their constituent variables and therefore correlate with both components by construction, inflating VIF independently of any true common method variance (Aiken, 1991). Second, the VIF exceedances are marginal (≤ 5.29) and occur against a backdrop of strong discriminant validity—all HTMT ratios remain below 0.85—indicating that the latent constructs are meaningfully distinct. Per (Hair, 2021), PLS-SEM is robust to minor collinearity inflation when measurement quality is high, as is the case here. Taken together, these diagnostics suggest that CMB, while potentially present to a modest degree (as indicated also by the Harman single-factor test at 53.48%), is unlikely to materially distort the observed structural relationships.

6. Data analysis and results

To test the hypothesized relationships in the proposed model, Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed using the *semr* package in R (Hair et al., 2019) (Ray et al., 2025). PLS-SEM is suitable for complex models involving mediating and moderating mechanisms and is robust to violations of multivariate normality. The dataset comprised 378 valid responses, and constructs were specified as reflective latent variables for consumer loneliness (CL), brand trust (BT), brand equity (BE), and purchase intention (PI). Continuous interaction terms were created to test moderation (CL $\times$ BE). The analysis followed a two-step approach: first, the measurement model was validated, followed by assessment of the structural model and conditional process (moderated mediation) (Preacher et al., 2007).

6.1 Scenario validation

As a preliminary step, a scenario validation test was conducted to ensure that the high-equity and low-equity brand scenarios were perceived as intended. An independent samples t-test confirmed that participants in the High BE scenario reported significantly higher perceived Brand Equity than those in the Low BE scenario (see Table 2).

Table 2. Independent Samples T-Test for Brand Equity (BE) by Scenario Group

Group	N	Mean	SD
High BE	192	5.805	0.610
Low BE	186	3.456	0.794

Welch's t-test: $t(347.17) = 32.17$, $p < 0.001$, 95% CI [2.206, 2.493]

6.2 Measurement model validation

An exploratory factor analysis with parallel analysis was conducted on all 19 scale items, confirming a four-factor structure consistent with the hypothesized constructs and supporting their distinctiveness (see Appendix 4 for the parallel analysis scree plot). The measurement model was then assessed for reliability, convergent validity, and discriminant validity.

Internal consistency reliability: Cronbach's alpha values exceeded the recommended threshold of 0.70 for all constructs: CL = 0.824, BT = 0.949, BE = 0.949, PI = 0.941, indicating satisfactory reliability (Nunnally, 1978).

Convergent validity: Average Variance Extracted (AVE) values were above 0.50 for all constructs (CL = 0.508, BT = 0.792, BE = 0.804, PI = 0.803), confirming adequate convergent validity (Fornell & Larcker, 1981) (see Table 3).

Discriminant validity: Heterotrait-Monotrait (HTMT) ratios were all below 0.85, suggesting acceptable discriminant validity. Factor loadings for BT, BE, and PI exceeded 0.70, while CL items showed moderate loadings but remained acceptable given the reflective nature of the construct (Henseler et al., 2015) (see Table 4).

Table 3. Reliability and Convergent Validity of the Measurement Model

Construct	# Items	Cronbach's α	Composite Reliability (CR)	Average Variance Extracted (AVE)
CL	5	0.824	0.832	0.508
BT	5	0.949	0.950	0.792
BE	5	0.949	0.953	0.804
PI	4	0.941	0.942	0.803

Table 4. Discriminant Validity of Constructs (HTMT Method)

Construct	CL	BT	BE	PI
CL	1	0.084	0.673	0.089
BT	0.084	1	0.683	0.837
BE	0.673	0.683	1	0.630
PI	0.089	0.837	0.630	1

6.3 Structural model validation

The structural model's in-sample predictive ability was assessed using R^2 and adjusted R^2 values (Hair, 2021), reported in Appendix 5. The model explains 50.5% of the variance in brand trust ($R^2 = 0.505$; Adj $R^2 = 0.503$) and 62.9% of the variance in purchase intention ($R^2 = 0.629$; Adj $R^2 = 0.628$), indicating substantial explanatory power with minimal adjustment effects. These results demonstrate that the endogenous constructs are well-predicted by the model (see Appendix 5 for R^2 and adjusted R^2 values).

6.3.1 Direct Effects

The hypothesized negative direct effect of consumer loneliness on brand trust (H1) emerged in the predicted direction ($\beta = -0.268$) but did not achieve statistical significance across bootstrap resamples (95% CI $[-0.702, 0.012]$, $p = .181$). Therefore, H1 is not supported.

This non-significant finding is theoretically coherent rather than anomalous, and can be interpreted in at least three complementary ways. First, per Need to Belong Theory, loneliness is a motivational state—it activates relational seeking—rather than a uniformly inhibitory state. In isolation, loneliness may amplify the desire for brand engagement without necessarily undermining the confidence invested in that engagement. The directional suppression of trust (captured in the negative β) may only materialize when the relational context is wholly impersonal, a condition that conversational AI platforms—with their inherent responsiveness and personalization features—may partially offset. Second, the non-significance of H1 is consistent with the moderated mediation story: if loneliness primarily affects trust through its interaction with brand equity (as H3 shows), then the direct, unconditional effect of loneliness on trust would be expected to be weak or negligible. The significant interaction term ($CL \times BE \rightarrow BT$: $\beta = 0.782$, $p < .001$) absorbs the relational variance that a direct H1 path would otherwise carry. Third, the sample restriction to participants who experience loneliness at least sometimes (see Section 5.1) may have attenuated range in the CL construct, reducing the statistical power available to detect a direct effect. Importantly, the non-significance of H1 does not undermine the overall model; rather, it strengthens the argument that loneliness is a conditional relational driver—one that requires brand equity as a catalyst—consistent with the study's central theoretical contribution.

In contrast, brand trust significantly and strongly predicted purchase intention (H2: $\beta = 0.790$, $p < .001$), fully supporting its mediating role between loneliness and purchase intention (see Table 5).

Table 5. Hypotheses Testing (Bootstrapping with 5,000 Subsamples)

Hypothesis	Path / Effect	β / Effect	SD	95% CI	p-value	Supported
Direct paths						

H1	CL → BT	-0.268	0.199	[-0.702, 0.012]	0.181	Not Supported
H2	BT → PI	0.790	0.024	[0.743, 0.834]	0.000	Supported
H3	CL × BE → BT	0.782	0.141	[0.650, 1.124]	0.000	Supported
Conditional Indirect paths						
H4 (LowBE)	CL → BT → PI (LowBE)	2.013	NA	[1.368, 3.089]	NA	Supported
H4 (HighBE)	CL → BT → PI (HighBE)	3.373	NA	[2.476, 5.133]	NA	Supported

As shown in Figure 2, the full PLS-SEM model displays all constructs, observed indicators with standardized loadings (λ), path coefficients (β), and R^2 values. This figure provides a comprehensive visualization of both measurement and structural components, allowing readers to assess construct validity, reliability, and structural relationships simultaneously. The conditional indirect effects indicate that the influence of consumer loneliness on purchase intention via brand trust is amplified under higher levels of brand equity.

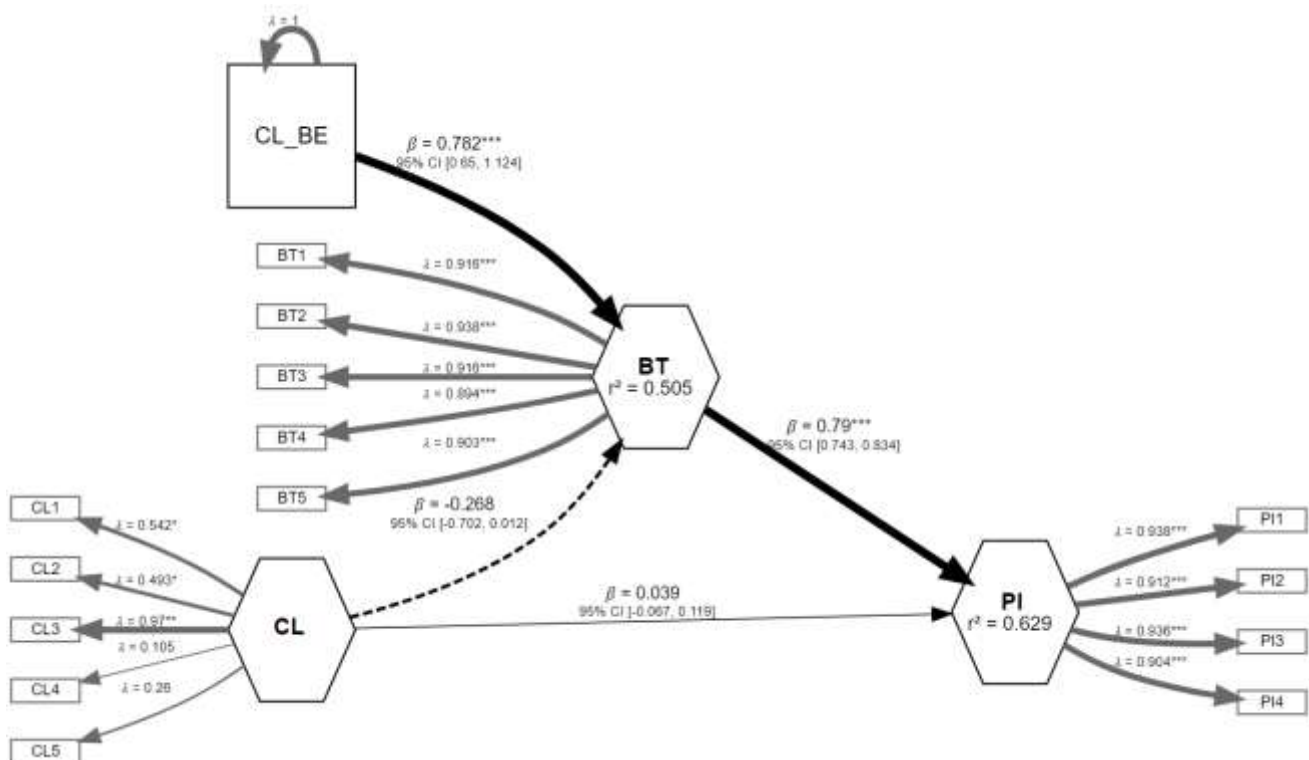


Figure 2. PLS-SEM Model

6.3.2 Moderation Effects

Moderation by brand equity was tested using the interaction term (CL × BE → BT). As shown in Table 5, results indicated a significant positive moderation effect ($\beta = 0.782$, $t = 5.54$, 95% CI [0.650, 1.124]), supporting H3. This indicates that higher brand equity amplifies the impact of consumer loneliness on brand

trust, consistent with the hypothesized boundary condition that high-equity brands can function as relational substitutes for socially isolated consumers in AI-mediated recommendation contexts.

6.3.3 Moderated Mediation Effects

To investigate how brand equity shapes the indirect effect of consumer loneliness on purchase intention via brand trust, a moderated mediation analysis was conducted using Monte Carlo simulations with 5,000 iterations. Results indicate that while loneliness alone does not significantly reduce brand trust (H1 unsupported), its influence on purchase intention emerges through brand trust in a manner that is entirely contingent on brand equity. Specifically, under low brand equity (25th percentile), the conditional indirect effect was 2.013 (95% CI [1.368, 3.089]), while under high brand equity (75th percentile), the effect increased by 67.5% to 3.373 (95% CI [2.476, 5.133]). These findings support H4 and constitute the study's central empirical contribution.

The magnitude and pattern of these conditional indirect effects warrant substantive theoretical interpretation. From a relational compensation perspective (Pieters, 2013) (Epley et al., 2008), loneliness activates a relational need state—a motivational readiness to engage with available social surrogates. Crucially, however, motivational readiness is not sufficient to generate trust; the brand must provide credible relational resources to 'catch' the lonely consumer's engagement. High-equity brands fulfill this role through three interconnected mechanisms: (1) cognitive reassurance—their established reputation reduces perceived risk in AI-mediated recommendations; (2) affective resonance—their emotional associations provide symbolic warmth that partially substitutes for human connection; and (3) relational consistency—their track record of reliable behavior reduces uncertainty for consumers whose relational vigilance is heightened by loneliness. Under low brand equity, none of these relational resources are robustly available, and the loneliness–trust–purchase chain consequently attenuates. This explains why the indirect effect at low brand equity, while still statistically supported, is 40% smaller than at high brand equity.

A theoretically important implication concerns potential nonlinear and threshold effects. The present design captures brand equity as a binary contrast (high vs. low) rather than as a continuous variable, precluding formal nonlinearity testing. However, the magnitude gap between the low-BE (2.013) and high-BE (3.373) conditional effects suggests that brand equity may not exert a smooth, linear amplification effect. Instead, it is plausible that a threshold level of brand equity—below which it functions inadequately as a relational substitute—must be crossed before the loneliness–trust amplification mechanism activates meaningfully. If this threshold exists, brands near the 'medium' equity range may exhibit sharply different consumer responses than the contrast captured here implies. Future research using continuous brand equity measurement and quadratic or piecewise regression terms in PLS-SEM could formally test this nonlinearity. Such evidence would have important practical implications: it would help identify whether incremental brand equity investment yields disproportionate returns in loneliness-rich consumer segments.

Overall, the PLS-SEM results reveal that brand trust functions as the psychological mechanism through which emotional deficits (loneliness) are converted into behavioral outcomes (purchase intention), but only when brand equity provides the relational scaffolding to activate this conversion. The interplay of these three constructs—loneliness as motivational driver, trust as relational conduit, and brand equity as amplifying moderator—forms a coherent, theoretically grounded process model of relational compensation in conversational AI contexts.

Figure 3 visualizes this conditional indirect effect, showing that the mediating role of brand trust is strongly contingent upon brand equity. By mapping both low and high levels of brand equity, the figure provides an intuitive depiction of how emotional states (consumer loneliness) translate into behavioral

intentions (purchase intention) through brand-based mechanisms. This approach complements conventional PLS-SEM reporting by providing a nuanced and practically relevant illustration of moderated mediation effects in AI-mediated recommendation contexts.

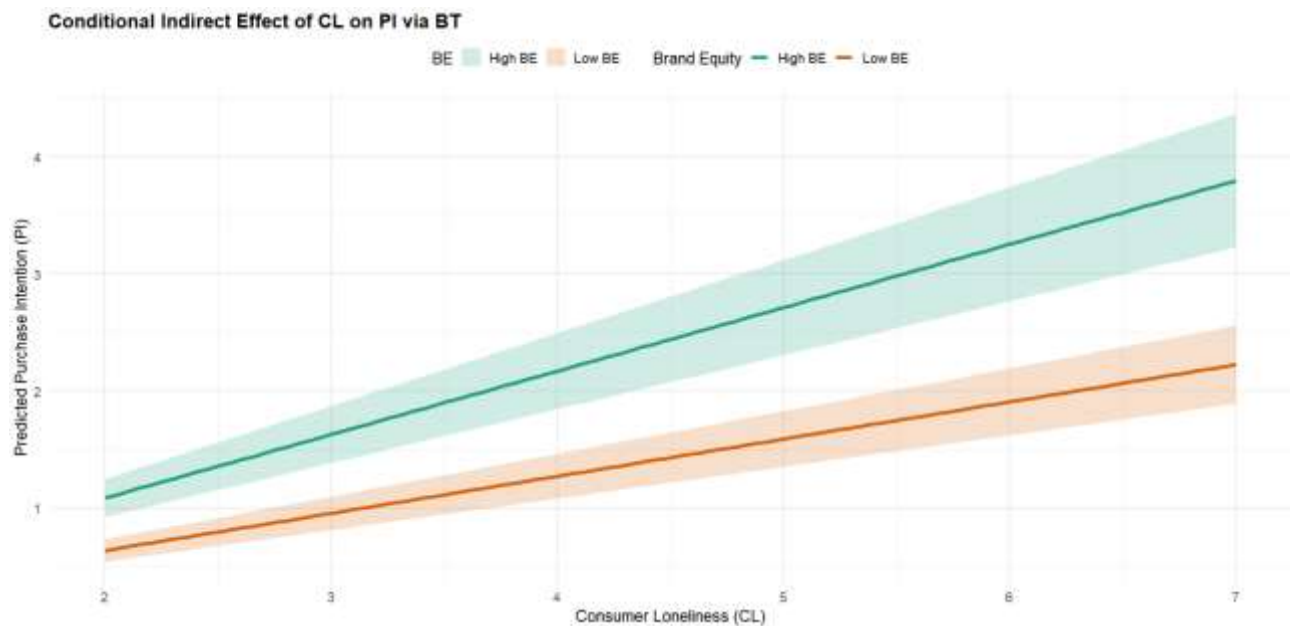


Figure 3. Conditional Indirect Effect of Consumer Loneliness on Purchase Intention via Brand Trust at Low and High Levels of Brand Equity

7. Discussion, theoretical contributions and implications

The present study investigated the interplay of consumer loneliness, brand trust, brand equity, and purchase intentions in AI-mediated recommendation contexts. By integrating Need to Belong Theory and Brand Equity, this research explored how emotional states interact with brand-level signals to shape consumer behavior in technologically mediated environments. The findings provide nuanced insights into the psychological and brand mechanisms underlying relational compensation through AI interactions.

7.1 Theoretical contributions

This study advances theory at the intersection of consumer psychology, branding, and artificial intelligence (AI)-mediated marketing by revealing how consumer loneliness interacts with brand-based and relational mechanisms to shape trust and purchase intentions. Integrating Need to Belong Theory (Baumeister & Leary, 1995) with Brand Equity (Aaker, 1991) (Keller, 1993), the findings contribute to three central streams of literature: (1) consumer loneliness and compensatory consumption, (2) brand trust and relational processes in AI-mediated contexts, and (3) the contingent role of brand equity as a boundary condition in emotion-driven consumption.

First, this study reconceptualizes consumer loneliness as a conditionally relationally motivated driver of brand trust formation rather than a uniformly negative antecedent or merely a precursor to compensatory or materialistic consumption. The non-significant direct effect of loneliness on brand trust (H1) is itself a theoretically meaningful finding. It rules out the simple, context-independent claim that loneliness erodes trust across all AI-mediated encounters—a view implicitly assumed in prior work on social isolation and technology distrust (J. Wang, 2023) (Loh et al., 2021). Instead, the present findings indicate that loneliness functions as a latent relational motivator whose effect on trust is not automatic but contingent: it is activated

and amplified when the brand environment offers sufficient relational resources (i.e., high brand equity), and it remains suppressed or weak when such resources are absent. This reframing advances prior research (Pieters, 2013) (Shrum et al., 2023) by demonstrating that the loneliness–behavior pathway is fundamentally conditional, not linear. It further positions the construct of loneliness within trust-based relational consumption in digital environments, offering a more nuanced theoretical account of how emotional deficits are translated—or fail to be translated—into marketplace behaviors absent the appropriate brand-level amplifier.

Second, the study advances theoretical understanding of brand trust in AI-mediated environments by establishing it as a central psychological mechanism that links emotional states to behavioral intentions. While prior studies have treated trust primarily as a technological or cognitive construct (Foroughi et al., 2025) (Zhang & He, 2025), the current findings position trust as an affective and relational conduit through which consumers enact social motivations in interactions with algorithmic agents. This relational interpretation of trust complements and extends traditional technology acceptance perspectives by highlighting how trust can emerge from socio-emotional motivations rather than from system-based assessments of functionality or reliability. In doing so, the study contributes to the emerging body of work on relational trust in AI branding, demonstrating that AI recommendations serve as emotionally meaningful interactional spaces through which belonging needs are partially fulfilled.

Third, the findings contribute to Brand Equity by establishing brand equity as a boundary condition of relational compensation in AI-mediated consumption. Empirical results show that brand equity significantly moderates the effect of consumer loneliness on brand trust and strengthens the indirect effect of loneliness on purchase intention via trust. This conditional process underscores the relational value of high-equity brands as psychological substitutes for social connection, providing affective reassurance and symbolic security that lonely consumers seek in digital interactions. By positioning brand equity as an amplifier of affective–behavioral translation, the study extends theoretical perspectives on brand equity from a purely evaluative asset to a relational resource that shapes the emotional efficacy of consumer–brand interactions. This introduces a novel conceptualization of brand equity as a form of social capital—that is, a brand-level resource that helps mitigate emotional deficits and fosters trust in technology-mediated contexts, particularly among consumers experiencing loneliness.

Finally, this study contributes to the broader literature on AI-mediated consumer–brand relationships by introducing a theoretically grounded moderated mediation framework that integrates emotional (loneliness), relational (trust), and brand-level (equity) mechanisms. A key theoretical advance is the explicit treatment of conversational AI as a relational context rather than merely a technological tool. By positioning AI recommendations along a passive-to-active spectrum—from neutral information delivery to anthropomorphic, personalized interaction—this framework identifies AI characteristics as theoretically meaningful boundary conditions that modulate the loneliness–trust pathway. In particular, this study suggests that anthropomorphism, personalization, and transparency are not simply interface features but relational affordances that interact with consumer emotional states and brand equity to determine whether AI encounters fulfill or frustrate belonging needs. Future studies that operationalize these AI characteristics as distinct constructs will be able to test whether they amplify the moderated mediation effects identified here, thereby advancing both human–AI interaction theory and brand relationship literature.

Taken together, these contributions deepen theoretical understanding of how emotional, relational, and brand-based mechanisms coalesce in the digital marketplace by articulating a process model of relational compensation in which loneliness, moderated by brand equity, operates through trust to influence purchase intentions in AI-mediated interactions. This multidimensional contribution offers a conceptual foundation for

future research on the emotional underpinnings of brand trust formation, the socio-psychological functions of brand equity, and the humanization of AI-driven brand engagement.

7.2 Practical Implications

The findings offer concrete, actionable guidance for brand managers, AI platform designers, and digital marketers operating in conversational AI environments. These implications are organized around three strategic priorities—brand equity operationalization in AI interfaces, trust-building mechanisms, and differentiated strategies by brand equity tier—reflecting the study's key empirical findings.

7.2.1 Operationalizing Brand Equity Within AI Interfaces

The study's central finding—that brand equity amplifies the conversion of loneliness-driven relational motivation into trust and purchase intention—has a direct implication: brand equity must be actively encoded into AI interaction design, not merely assumed to transfer automatically from offline brand associations. Managers should treat conversational AI touchpoints as brand expression surfaces, not neutral utility tools. Practically, this means:

Maintaining brand voice consistency. The language, tone, and personality of AI-generated recommendations should be calibrated to reflect the brand's established positioning. A brand known for warmth and approachability should configure AI responses with empathetic phrasing, conversational hedging, and affirmative language. Conversely, a brand built on expertise should ensure AI responses foreground accuracy, evidence, and authority. Discrepancies between AI tone and brand identity—what might be called "voice misalignment"—risk undermining the relational credibility that high brand equity provides.

Embedding brand signals in recommendation framing. High-equity brands should leverage their reputational assets explicitly within AI recommendations. For example, incorporating heritage cues ("As a brand trusted for over 30 years..."), quality signals ("Our most recommended product by dermatologists is..."), or community cues ("Thousands of customers in similar situations chose...") activates the cognitive reassurance component of brand equity that lonely consumers specifically seek. These signals should be concise and naturally integrated into the recommendation flow, not presented as formal advertising disclosures, which break the relational conversational register.

Personalizing at the relational level, not just the informational level. Standard AI personalization focuses on matching product recommendations to inferred preferences. Managers should direct AI systems to go further: acknowledging context, validating the consumer's situation, and responding to emotional register in addition to functional needs. For loneliness-experiencing consumers, AI recommendations that feel seen—not merely relevant—are more likely to generate the affective trust that drives purchase behavior. This is achievable through simple natural language adjustments (e.g., "We noticed you're looking for something special—here's what we think you'll love") rather than through complex emotional AI.

7.2.2 Trust-Building Mechanisms in Conversational AI Design

Brand trust is the mechanism through which loneliness translates into purchase intention. AI interface design should therefore explicitly support trust formation rather than treating trust as a downstream outcome of functional accuracy alone. Concrete design principles include:

Transparency about recommendation logic. Disclosing why a recommendation is made ("We suggest this because you previously purchased X and our community of similar customers found Y most useful") reduces the perceived opacity of algorithmic decision-making. This is especially important for loneliness-experiencing consumers, who are relationally vigilant and sensitive to the authenticity of brand interactions. Transparency need not be exhaustive; a single sentence of reasoning meaningfully elevates perceived trustworthiness.

Human-brand hybrid touchpoints. While AI handles recommendation breadth and personalization at scale, building in optional transitions to human customer service—and clearly communicating this option—signals to lonely consumers that the brand's relational commitment extends beyond automation. This does not require anthropomorphic AI design (giving AI a name or avatar); rather, it signals that the brand stands behind its AI recommendations with human accountability.

Reducing uncertainty through consistency. Trust accrues through repeated reliable interactions. Brands operating conversational AI systems should design for consistency of recommendation quality and response reliability across sessions. Erratic AI behavior—varying recommendation quality, inconsistent tone—disproportionately damages trust among consumers already sensitized by relational needs, as each inconsistent interaction reactivates uncertainty about whether the brand can serve as a dependable social surrogate.

7.2.3 Differentiated Strategies by Brand Equity Tier

The study's moderated mediation finding has directly differentiated implications for high-equity and low-equity brands. Managers should adapt their AI strategies accordingly.

High-equity brands possess the relational capital to make conversational AI a powerful instrument of emotional engagement. For this tier, the strategic priority is amplification: leveraging AI to extend and deepen the trust that brand equity already generates. Specific recommendations: Invest in sophisticated personalization that activates and expresses brand heritage, community belonging, and quality assurance. Use AI touchpoints to proactively identify and engage consumer segments with higher propensity for loneliness (identifiable via behavioral signals such as session length, repeat engagement, time-of-day usage patterns) with tailored relational messaging. Design loyalty program integrations within AI recommendations that reward trust-based engagement, creating a feedback loop between relational investment and behavioral outcomes.

Low-equity brands face a different, more foundational challenge. The study shows that in the absence of established brand equity, AI-mediated recommendations fail to amplify the loneliness–trust–purchase pathway—the conditional indirect effect is substantially smaller, and the relational compensation mechanism is correspondingly weaker. For this tier, the strategic priority is equity-building first, AI-scaling second. Specific recommendations: Prioritize traditional brand equity investments—perceived quality signaling, reputation management, consumer testimonial programs, and consistent product delivery—before expecting AI-mediated touchpoints to generate trust among relationally motivated consumers. Avoid deploying anthropomorphic or highly personalized AI features prematurely; without equity to anchor relational expectations, anthropomorphic AI may feel presumptuous or inauthentic, further eroding the limited trust available. Consider using AI initially for purely functional applications (inventory queries, order tracking, FAQ resolution) while brand equity is built through product and service excellence. Once equity reaches a credibility threshold, relational AI applications can be introduced with greater expectation of trust-building efficacy.

In sum, the present findings position conversational AI as a brand equity multiplier—a strategic tool whose relational value is directly proportional to the brand equity invested in it. Firms that recognize this dependency and align their AI design, personalization strategy, and brand communication accordingly will be best positioned to convert the growing population of loneliness-experiencing consumers into trust-anchored, purchase-motivated brand advocates.

8. Limitations and future research directions

This study advances understanding of how consumer loneliness influences purchase intentions via brand trust in AI-mediated recommendations, yet several limitations suggest avenues for future research. First, the sample consisted of UK-based AI users recruited via Prolific, which limits cross-cultural and demographic generalizability; future studies could adopt cross-national and longitudinal designs to examine cultural and temporal variations in loneliness-driven trust and behavior. Second, all variables were self-reported, introducing potential social desirability or common method bias; integrating objective behavioral data, such as transaction logs or AI usage metrics, could validate intentions and capture actual adoption patterns. Third, focusing solely on conversational AI restricts insights into other digital interfaces, including social media influencers, metaverse platforms, or personalized e-commerce apps; comparative studies across AI modalities could clarify boundary conditions of relational compensation effects. Fourth, brand equity was manipulated as high vs. low, overlooking multidimensional components such as experiential or symbolic value; future research could examine real-world brands or continuous measures to assess how specific equity dimensions interact with loneliness-driven trust. Fifth, and critically, the sample was restricted to participants who reported experiencing loneliness at least sometimes, which introduces a deliberate but consequential selection constraint. By construction, this study can only speak to the loneliness–brand equity–trust pathway among consumers for whom loneliness is an experiential reality. Three implications follow. First, the findings do not generalize to the roughly 41% of surveyed adults who report rarely or never experiencing loneliness; this is not a minority segment—it represents a substantial share of the consumer population whose AI-mediated brand encounters may follow entirely different psychological pathways (e.g., driven by functional utility or hedonic novelty rather than relational compensation). Second, the range restriction in the loneliness construct arising from exclusion of the 'never' and 'rarely' categories may have contributed to the non-significant direct effect of consumer loneliness on brand trust (H1), since attenuated variance reduces statistical power to detect moderate-sized effects. Future research should test this boundary by including the full loneliness distribution and examining whether the moderated mediation pattern persists, weakens, or bifurcates across loneliness levels. Third, the selection criterion, while theoretically justified, precludes identification of the threshold level of loneliness at which the brand equity–trust amplification mechanism activates. Nonlinear or discontinuous loneliness effects—for instance, a minimum severity level required for brand equity to function as a relational substitute—cannot be detected in the present design. Longitudinal panel designs incorporating continuous loneliness tracking (e.g., using ecological momentary assessment) alongside behavioral data from AI platforms would allow researchers to map these nonlinearities and establish generalizability across the full population spectrum. Finally, emerging AI technologies and ethical considerations—including anthropomorphism, personalization, transparency, and overreliance—represent critical areas for exploration to understand their influence on trust and purchase behavior. Addressing these limitations through cross-cultural, longitudinal, behavioral, and technological research can further advance both theoretical and practical understanding of emotional, brand, and AI mechanisms in contemporary consumer behavior.

Competing Interests

The author(s) declare that they have no competing interests.

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