“Viral on TikTok”: The New Language of Social Proof in Hedonic Product Packaging

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1. Abstract

Title: “Viral on TikTok”: The New Language of Social Proof in Hedonic Product Packaging

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Product packaging has long used popularity cues, from “Best Seller” labels to “#1 in Sales” claims, to leverage a fundamental tendency in human decision-making: reliance on others’ behavior as a guide for one’s own choices. As social media reshapes consumer culture, marketers have introduced a new form of social proof into the retail environment, with packaging claims such as “Viral on TikTok” or “Popular on Instagram”. Whether these cues influence consumers through the same mechanisms as traditional social proof, which often functions as a simple heuristic of widespread adoption, or through distinct psychological processes linked to new online reference groups, remains unclear.

This thesis examines how social proof displayed on product packaging influences purchase intention for hedonic products and whether these effects operate through a sense of belonging. It also investigates whether purchase uncertainty and consumers’ social media usage moderate these relationships.

A 3×2 experimental study tested consumers’ responses to packaging stimuli varying in social proof and informational uncertainty. The findings show that social media–based social proof did not directly increase purchase intention. Instead, sense of belonging predicted purchase intention and mediated the relationship between social media–based social proof and purchase intention. Neither uncertainty nor weekly social media usage moderated these relationships.

Overall, the results suggest that contemporary popularity cues influence consumers less through direct persuasion and more through identity-related mechanisms linked to belonging.

Keywords: Social proof; Social media marketing; Purchase intention; Sense of belonging; Hedonic consumption; Consumer behavior.

2. Sumário

Título: “Viral no TikTok”: a Nova Linguagem da Prova Social nas Embalagens de Produtos Hedónicos

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As embalagens de produtos recorrem há muito a sinais de popularidade, utilizando afirmações como “Best Seller” ou “#1 em vendas”, explorando uma tendência fundamental da tomada de decisão: utilizar o comportamento dos outros como referência para as próprias escolhas. Com o crescimento das redes sociais e da sua influência na cultura de consumo, os profissionais de marketing começaram a transportar sinais de popularidade associados ao ambiente digital para o contexto do retalho. Expressões nas embalagens como “Viral no TikTok” ou “Popular no Instagram” são cada vez mais frequentes. No entanto, não é claro se estes sinais influenciam os consumidores através dos mesmos mecanismos da prova social tradicional, que funciona como uma heurística simples que indica que um produto é amplamente escolhido, ou se ativam processos psicológicos distintos associados a novos grupos de referência.

Esta tese investiga de que forma a prova social apresentada nas embalagens influencia a intenção de compra de produtos hedónicos e se esse efeito ocorre através do sentimento de pertença. Analisa ainda se a incerteza na decisão de compra e a utilização de redes sociais pelos consumidores moderam estas relações.

Para tal, foi realizado um estudo experimental com um desenho 3×2. Os resultados mostram que a prova social baseada em redes sociais não aumentou diretamente a intenção de compra. Em contrapartida, o sentimento de pertença revelou-se um preditor significativo da intenção de compra e mediou a relação entre prova social e intenção de compra. Nem a incerteza nem a utilização de redes sociais apresentaram efeitos moderadores significativos.

Palavras-chave: Prova social; Marketing nas redes sociais; Intenção de compra; Sentimento de pertença; Consumo hedónico; Comportamento do consumidor.

3. Acknowledgements

Completing this thesis marks the end of an important chapter in my academic path, one that would not have been possible without the support and encouragement of several people.

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I am also grateful to Católica Lisbon School of Business and Economics for the incredible program and opportunities provided through the International Master's in Management, which greatly contributed to my academic and personal development.

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If I have reached this milestone today, it is largely thanks to my family, particularly my parents and my brother, whose constant guidance, encouragement, and unwavering support have been present at every step of this path. Their belief in me has always been a source of strength and motivation, and they remain a constant example to me of perseverance, dedication, and integrity.

I would also like to thank my friends, who have heard the words "social proof" far too many times over the past few months. A special thank you goes to my friend Zahra, who generously took the time to read my thesis and provide thoughtful feedback. Here lies my promise to return the favor when the time comes for me to read hers.

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4. Disclaimer on the use of artificial intelligence

Artificial intelligence tools (ChatGPT) were used in a supportive capacity during the preparation of this thesis. Specifically, AI was employed for:

- rephrasing, shortening, and improving the clarity of text passages;
- drafting and refining formulations;
- supporting the development and refinement of data collection procedures (e.g., survey and interview design) and experimental stimuli.

All uses of AI were limited to language and methodological assistance. The intellectual content, theoretical framing, research design, interpretation of results, and final conclusions are my own work. AI tools were not used to generate original arguments, data, or literature, and all sources cited in this thesis were identified and verified.

This disclosure is made in accordance with academic integrity guidelines requiring transparency regarding the use of artificial intelligence in scholarly work.

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8. Introduction

8.1. Background

Unlike common belief, consumers rarely decide what goods to purchase in isolation. In fact, few forces shape consumer behavior as powerfully as social influence. Marketers have used tools such as social proof, defined as a form of social influence in which individuals look to others' behavior to guide their actions, especially in conditions of uncertainty (Cialdini, 2007)for many years. Traditionally, social proof has taken the form of claims such as “7 out of 10 women use this product”, “Best Seller” or “Over 1 million satisfied customers” seen in advertising or product packaging.

In recent years, a new form of social proof emerged. The rise of social media platforms has created spaces where trends develop daily, communities share views, and popularity is quantified by likes, views, and shares. Marketers have begun to integrate social proof into offline retail by using claims such as “Viral on *Instagram*”, “Trending on *TikTok*” or “Over a million likes on Facebook” on their packaging. These cues are not just another way of signaling popularity: they represent a new form of social influence, tied to real engagement and communities with which consumers interact daily.

8.2. Problem Statement

Social influence is one of the most powerful drivers of consumer behavior, with one form being social proof. This kind of social influence is usually seen in advertising, on packaging, or directly next to the product at the point of sale. Examples of this are “7 out of 10 people recommend this product”, “Best Seller”, “1 million units sold” and many others.

Despite the widespread use of social proof, little is known about the effectiveness of social media–based social proof claims in offline retail contexts.

Digital platforms quantify popularity through likes, views and shares. Marketers have used these metrics in online environments for a long time but, more recently, they have begun to transfer these signals into the offline environment. One of the ways this has been done is by using social media claims (such as “viral on Instagram” or “1 million likes on *TikTok*”) on product packaging. Unlike traditional ones, these social media-based claims may go beyond signaling popularity. They might

also link products to digital communities where consumers can construct identities and search for belonging, which is a fundamental human motivation (Allen et al., 2022; Baumeister & Leary, 1995).

This question is especially relevant for hedonic products, which emphasize enjoyment, self-identity, and emotional value (Hirschman & Holbrook, 1982). Consumers use products (especially hedonic ones) to signal belonging to aspirational groups and to avoid association with dissociative groups. Consequently, social media–based claims may shape consumer responses not only by indicating popularity, but also by signaling the type of social group with which the product is associated.

Even though recent work has shown that popularity cues may be less effective for hedonic products (Das et al., 2018), the introduction of social media claims may shift this dynamic by combining popularity with identity-based cues.

The outcome variable in this study is purchase intention. As described in the Theory of Planned Behavior, intentions are an indication of how much effort a person is prepared to put into performing a behavior (Ajzen, 1991). Meta-analytic evidence shows that hedonic shopping values are positively associated with purchase intention, confirming the relevance of this construct as a standard consumer response in the field (Vieira et al., 2018).

Purchase decisions may also vary with the level of uncertainty consumers face. Classic theories of social proof emphasize that individuals are more likely to rely on others when they lack clear preferences or product knowledge (Cialdini, 2007). For hedonic products, however, uncertainty is both informational and identity based. This means that for hedonic goods, consumers may struggle not only with a lack of knowledge, but also with doubts about whether the product will deliver the desired experience. This happens because these products are more difficult to evaluate before having tried them, and because they fulfill emotional and social needs, and not merely functional ones (Hirschman & Holbrook, 1982; Liu et al., 2020; Vieira et al., 2018).

Lastly, the impact of social media-based claims may also depend on consumers' level of social media usage. Individuals who spend more time on these platforms are more familiar with digital engagement metrics such as likes, shares, and views, and thus may see them as credible signals of popularity (Duffett, 2015). Still, it remains unclear whether familiarity with these platforms

enhances or diminishes the influence of social media–based claims when they are transferred to offline packaging contexts.

Although prior research established the strong effects of social influence on consumer decisions (Cialdini, 2007; Nolan et al., 2008), comparative evidence with social media-based social proof is novel. Finally, contextual factors such as uncertainty about the product and social media usage may moderate these effects, but existing literature has not clarified, for social media-based social proof, if this is the case.

The problem statement for this study is clearly defined:

How do traditional and social media–based social proof claims on product packaging affect consumers' purchase intention?

Based on this problem, three research questions were elaborated:

RQ1: How does the type of social proof (none vs. traditional vs. social media-based) displayed on product packaging affect consumers' purchase intention?

RQ2: Does uncertainty about the purchase (induced uncertainty vs. no induced uncertainty) moderate the relationship between social proof and purchase intention?

RQ3: Does daily social media usage moderate the relationship between social media-based social proof and sense of belonging?

8.3. Relevance

This dissertation is academically relevant because it extends classic theories of social influence into an emerging context that remains understudied. While traditional forms of social proof are well documented, there is a gap in research about how social media-based social proof operates or whether it relies on the same underlying mechanisms. By distinguishing absence of social proof with traditional and social-media-based claims, the study tests whether digital communities function as a new reference group, with which people wish to associate or diverge from.

In doing so, the research contributes to social influence and consumer behavior literature by clarifying if contemporary digital signals represent an evolution of classical social proof mechanisms.

For marketers and product managers, the research offers practical insights into packaging communication strategies for hedonic products. Although social media-based social proof claims are already widely used, there is limited evidence about their impact, especially in comparison to traditional forms of social proof or settings with no social proof claims.

Finally, at a societal level, the study draws attention to how social influence operates in everyday purchasing contexts. Especially when leveraging tools as powerful as social media, it is important to recognize their persuasive potential, but also consider ethical and responsible marketing boundaries, to avoid misleading practices.

8.4. Research Methods

This dissertation adopted a quantitative experimental research design. A 3 (social proof: none vs. traditional vs. social media–based) x 2 (uncertainty: no induced uncertainty vs. induced uncertainty) between-subjects experiment was conducted using product packaging stimuli for a hedonic product. Participants were randomly assigned to one of the six conditions.

Stimuli consisted of product packaging mock-ups for a product, pre-tested and validated in interviews and a pilot survey. Then, an online survey was designed and distributed through personal and professional networks.

The key constructs examined in the study included purchase intention, sense of belonging, and social media usage. Data were analyzed using SPSS to characterize the sample and to test the proposed relationships.

8.5. Dissertation Outline

This dissertation is structured as follows. Chapter 9 reviews literature on social influence, social proof, hedonic consumption, uncertainty, and sense of belonging, and develops the conceptual framework and research hypotheses. Chapter 10 describes the research methodology, including experimental design, stimulus development, measures, and data collection procedures. Chapter 11 presents the results of the analysis. Chapter 12 discusses the findings in relation to existing theory and prior research, outlines theoretical and managerial implications, and addresses the study's limitations and directions for future research.

9. Literature Review

9.1. Introduction

Understanding consumer behavior does not only mean diving into the internal preferences of consumers. It also requires attention to the social forces that guide decision-making. A key concept in this process is social proof, whereby individuals look to the behavior of others to guide their own actions, especially in conditions of uncertainty (Cialdini, 2007; Nolan et al., 2008).

In this literature review, I make a distinction between traditional social proof (for example, claims such as *"*7 out of 10 women recommend this product*"*) and social media-based social proof (for example, references such as *"*viral on Instagram*"* or *"*5M likes on TikTok*"*) placed on packaging. Sense of belonging is examined as a mediator between social proof and purchase intention, alongside moderation by purchase uncertainty, which refers to the lack of confidence consumers experience when deciding whether to buy a product, and consumers' social media usage.

Despite extensive research on social influence, limited work examines social media–based social proof on packaging.

9.2. Social Proof in Hedonic Products (Independent Variable)

Hedonic products are especially relevant for studying social proof because their purchase often reflects self-expression and social identity (Batra & Ahtola, 1991). These products communicate who consumers are (or want to be) and therefore tend to activate stronger in-group and out-group dynamics (Escalas & Bettman, 2005; Hirschman & Holbrook, 1982). This makes them particularly suitable for exploring how social proof works through feelings of belonging and identity.

The distinction between hedonic and utilitarian consumption has long been established in research work. Batra and Ahtola (1991) demonstrate that consumer attitudes can be decomposed into hedonic evaluations and utilitarian evaluations. While the first are associated with pleasure and with sensory and experiential product attributes, the latter are linked to functional attributes. I will use this definition to guide the discussion about social proof in hedonic products.

In a meta-analytic review of hedonic and utilitarian shopping values, Vieira et al. (2018) add to these types of evaluations, showing that utilitarian shopping values are rational and thus focus on task completion, while hedonic shopping values are focused on pleasure. This way, it might not

make sense to treat hedonic goods as objects for which the consumer desires to maximize utility, making their evaluation more subjective and uncertain (Batra & Ahtola, 1991), which consequently makes them more susceptible to the power of social influence.

In summary, it is widely acknowledged that hedonic products imply a more complex decision-making process and that their evaluation is highly subjective, with a focus on emotion and pleasure.

Escalas and Bettman (2005) found that consumers use brands to build and communicate their self-image through reference group associations. Unlike Batra and Ahtola (1991), who focus on internal evaluation motives, these authors highlight social identity processes. Even though they do not frame this in terms of hedonic or utilitarian products, their findings are particularly relevant in the case of products with symbolic or identity-related meaning. These meanings can be present in utilitarian goods and hedonic goods, but the latter are particularly likely to embody such values because of their emotional value (Hirschman & Holbrook, 1982).

Building on the idea of identity-based consumption, Wood and Hayes (2012) explain that social influence works in three modes: informational influence (using others' behavior as evidence of appropriate behavior), normative influence (conforming to the expectations of others to gain approval), and identification-based influence (adopting the behaviors of aspirational groups). One of the key processes through which these kinds of social influences operate is social proof, where individuals look to the behavior of others to guide their own actions, especially in conditions of uncertainty (Cialdini, 2007). Social proof can signal identity and belonging, making it especially relevant in hedonic consumption.

In contrast, Das et al. (2018) suggest that for hedonic products, popularity cues may be less effective. However, social media-based social proof may differ from traditional claims, as it can serve as a marker of identity and community, meaning that the same idea of "following others" can activate different psychological processes depending on the context.

These findings indicate that the literature remains divided on how social proof works in hedonic products.

One explanation for these disagreements is the context in which social influence occurs. The rise of social media introduced new forms of social influence. Examples of this are the growth of influencer marketing and the emergence of virtual influencers. Moreover, online/offline integration is seen as a key direction for the future of social media (Appel et al., 2020).

Given this new paradigm, it is crucial to understand how social media-based claims (for example, “viral on TikTok”) work in the retail setting for hedonic products, especially as part of product packaging, integrating online and offline communication.

Despite the vast amount of research, there is little evidence about these newer social media-based forms of social proof in packaging. This gap highlights the need to understand the effectiveness of these, particularly in relation to traditional social proof. Importantly, such claims may function as an identifier of new types of reference groups, because social media platforms create communities and audiences that consumers identify with, aspire to (for example, “viral on TikTok” may signal trendiness), or dissociate from (for those who do not want to be associated with trending behavior).

9.3. Purchase Intention (Dependent Variable)

Spears and Singh (2004, p.56) define purchase intention as an “individual’s conscious plan to make an effort to purchase”.

Accordingly, intentions can be thought of as motivational factors that indicate how much effort a person is willing to exert to perform a behavior (Ajzen, 1991), making them a good measure to predict behavior. In the Theory of Planned Behavior (Ajzen, 1991), intention represents the immediate antecedent of behavior, translating motivation into behavior. Together, these perspectives justify the use of purchase intention as an indicator of consumer behavior for this study.

Actual purchase behavior is difficult to capture, so purchase intention is usually a reliable proxy. Research shows that purchase intention is a robust measure, because it incorporates the effects of different factors that contribute to the perceived value of a product (Chang & Wildt, 1994; Dodds et al., 1991). It has been used by various researchers to evaluate the effectiveness of marketing strategies across different contexts (X. Liu & Zheng, 2024), cementing this approach as a standard for understanding decision-making.

9.4. Effect of Social Proof on Purchase Intention

Research consistently shows that social influence shapes consumers’ purchase intention. Across contexts, the effect is robust. In a study with Chinese consumers, Liang et al. (2024) found that social influence (be it from peers, social media, or word of mouth) significantly shapes brand

perceptions and increases purchase intention. Complementing this, in a meta-analytic review, Pan et al. (2024) found that influencer marketing (which signals popularity and credibility) significantly increases purchase intention as well. Additionally, East et al. (2008) show that positive word of mouth considerably boosts brand purchase probability. All these studies converge on the idea that consumers rely on others' behavior when forming these intentions.

This pattern corroborates Cialdini's (2007) principle of social proof, which posits that individuals often look at others' behavior as a guide to their own choices, explaining why social proof cues in marketing (reviews, endorsements, or popularity signals) have consistently been found to increase purchase intention.

H1. The presence of traditional social proof increases purchase intention compared to no social proof.

9.5. Sense of Belonging (Mediator)

Mellinger et al. (2024) describe sense of belonging as "a sense of being valued, accepted, included, and fitting into a social environment" (p. 347). This definition highlights the emotional and relational dimensions of belonging, which are fundamental human needs (Baumeister & Leary, 1995). Building on the belongingness hypothesis (Baumeister & Leary, 1995), Allen et al. (2022) argue that belongingness is universal and shapes human behavior. The authors note that people are strongly motivated to maintain social connections, and that feelings of exclusion can undermine well-being. Moreover, they argue that nowadays, the need to belong is also expressed through online interactions.

Together, these studies show that belongingness is both a fundamental human drive and one that evolves and fits new social contexts.

9.6. Effect of Social Proof on Sense of Belonging

Specifically, in marketing contexts, belonging plays a big role in explaining why consumers use certain products over others. Raimondo et al. (2022) state that consumption is used by consumers for identity signaling towards social groups. This makes belonging a key driver of symbolic consumption. Not only do consumers adjust their preferences to align with desired groups, but they also adjust them to distance themselves from dissociative groups to secure social acceptance (White

& Dahl, 2006). Similarly, Escalas and Bettman (2005) find that brands work as identity markers, used to express in-group affiliation or avoid association with out-groups.

These studies suggest that a sense of belonging might be a central mechanism through which social influence works. Specifically, social proof cues make group norms explicit by making claims such as “Best Seller” or “Viral on TikTok”, signaling inclusion in a community.

H2a. The presence of traditional social proof increases the sense of belonging compared to no social proof.

H2b. Weekly social media usage moderates the effect of social media-based social proof on sense of belonging.

9.7. Effect of Sense of Belonging on Purchase Intention

Sense of belonging has long been leveraged by marketers through social proof. Muniz and O’Guinn (2001) show that admirers of a common brand develop stronger ties. Building on this, Bagozzi and Dholakia (2006) find that when belonging mechanisms are in play, group members form more collective intentions, which then lead to various outcomes such as making more purchases that align with the group. Similarly, Stokburger-Sauer et al. (2012) identify brand social benefits as a key driver of consumer-brand identification, which increase brand loyalty and advocacy. It is important to note, however, that belonging might also make consumers want to distance themselves from communities or brands associated with dissociative groups (White & Dahl, 2006).

Together, these studies confirm that when consumers feel a stronger sense of belonging, be it to a group or to a brand, this connection translates to loyalty, advocacy and purchase intentions and behaviors. These findings confirm that sense of belonging is a crucial mechanism linking social proof and purchase intention.

H3. A stronger sense of belonging increases purchase intention.

H4a. Sense of belonging mediates the effect of traditional social proof on purchase intention.

H4b. Sense of belonging mediates the effect of social media–based social proof on purchase intention.

9.8. Uncertainty about the purchase (Moderator)

Classic theories of social proof define uncertainty as a lack of clear preferences or product knowledge (Cialdini, 2007; Deutsch & Gerard, 1955; Nolan et al., 2008), which makes consumers more likely to rely on the behavior of others.

In consumer psychology, this logic is reaffirmed. Argo (2020) reviews informational influence in consumption, building on evidence that these cues are more influential in ambiguous situations (Deutsch & Gerard, 1955).

It is important to note, however, that the effect of uncertainty is not always linear. He & Rucker (2023) propose that the effect of uncertainty in purchase contexts follows an inverted-U pattern, where low and moderate uncertainty increases information search, but very high uncertainty diminishes it because consumers avoid the additional effort it takes to decide. These findings highlight the need for further research into the role of uncertainty in purchase contexts.

In the case of hedonic goods, however, uncertainty is not only informational (when consumers do not have sufficient knowledge about product attributes), but also evaluative and identity based. Unlike utilitarian goods, which can be evaluated on clear functional criteria, hedonic goods are associated with symbolism and identity expression, which is much more subjective (Hirschman & Holbrook, 1982). This subjectivity makes hedonic goods harder to evaluate before purchase. Contemporary meta-analysis confirms that hedonic value has strong effects on satisfaction, purchase intention and loyalty (Vieira et al., 2018), so when consumers are uncertain about hedonic products, they are likely to see the consequences of a wrong choice as greater. Moreover, research in online shopping demonstrates that a hedonic expectation of the product amplifies the emotional weight of decisions (F. Liu et al., 2020). These findings suggest that not only might consumers struggle due to not having enough knowledge, but they also may be unsure if the product will deliver their expected enjoyment. This subtype of uncertainty will be referred to as product fit uncertainty (Hong & Pavlou, 2014) in this study.

Together, these findings suggest that there is a layered uncertainty when it comes to hedonic products.

At the same time, studies on uncertainty marketing show that when companies leave product or promotional details undisclosed, it can make the experience more exciting and enjoyable for consumers, especially for hedonic products (Kovacheva & Nikolova, 2024).

As a result, uncertainty is expected to moderate the relationship between social proof and purchase intention, since in more ambiguous situations, consumers are more likely to look to others' behavior through social proof (Venema et al., 2020).

Finally, although uncertainty about a purchase may increase the motivation to seek social connections, it does not alter the strength of the link between social proof and sense of belonging and thus uncertainty is not expected to moderate the relationship between social proof and sense of belonging.

H5. Uncertainty about the purchase moderates the effect of social proof on purchase intention, with a stronger effect under induced uncertainty.

9.9. Weekly Social Media Usage (Moderator)

Aichner et al. (2021) conduct an extensive literature review and, despite variations, find that researchers generally agree that social media can be defined as internet-based platforms that connect users, facilitate interaction, and enable the creation and exchange of user-generated content.

Social influence has recently been unfolding in digital environments, especially in social media platforms. Appel et al. (2020) affirm that social media may be understood both as a digital marketing channel through which firms communicate with consumers and as a digital environment where people engage in significant parts of their everyday lives. Complementing this, recent research about virality on platforms such as Tiktok highlights the emotional and identity-driven nature of social media engagement (Barta et al., 2023), justifying our study on hedonic products.

In 2024, according to DataReportal (n.d.), Europeans spent an average of 1 hour and 48 minutes on social media per day. This level of daily exposure reinforces the role of social media as a central part of consumer life.

Within the context of the Belongingness hypothesis (Allen et al., 2022), which sees belonging as a fundamental human motivation, social media can be seen not just as a matter of time spent online, but also as a way for consumers to seek connections. In marketing, belonging plays a big

role in explaining why people adopt certain products over others. Previous studies show that consumption is often used to signal affiliation with aspirational groups and to seek difference from dissociative groups (Escalas & Bettman, 2005; Raimondo et al., 2022; White & Dahl, 2006). Social media usage can therefore reflect the degree to which consumers are part of communities where identity expression and social comparison are constant. Moreover, heavy users of social media, merely by being more exposed to social media popularity cues such as likes, shares and views, may find these signals relevant, even in offline settings. Duffett (2015) suggests that Millennials who spend more time logged on to Facebook show higher purchase intention of brands advertised on this platform. In contrast, light users may not place the same weight on these cues, as their consumption decisions are less integrated with digital communities. In fact, they might want to reject these cues, because they might identify with being outside of these digital communities, seeing these as dissociative groups (Escalas & Bettman, 2005; Raimondo et al., 2022; White & Dahl, 2006).

As such, weekly social media usage is expected to moderate the effect of social media-based social proof on sense of belonging, amplifying it for heavy users and weakening it for light users. This moderation is specific to the belonging pathway, as social media usage primarily reflects identity engagement rather than direct purchase motivations.

9.10. Conceptual Model

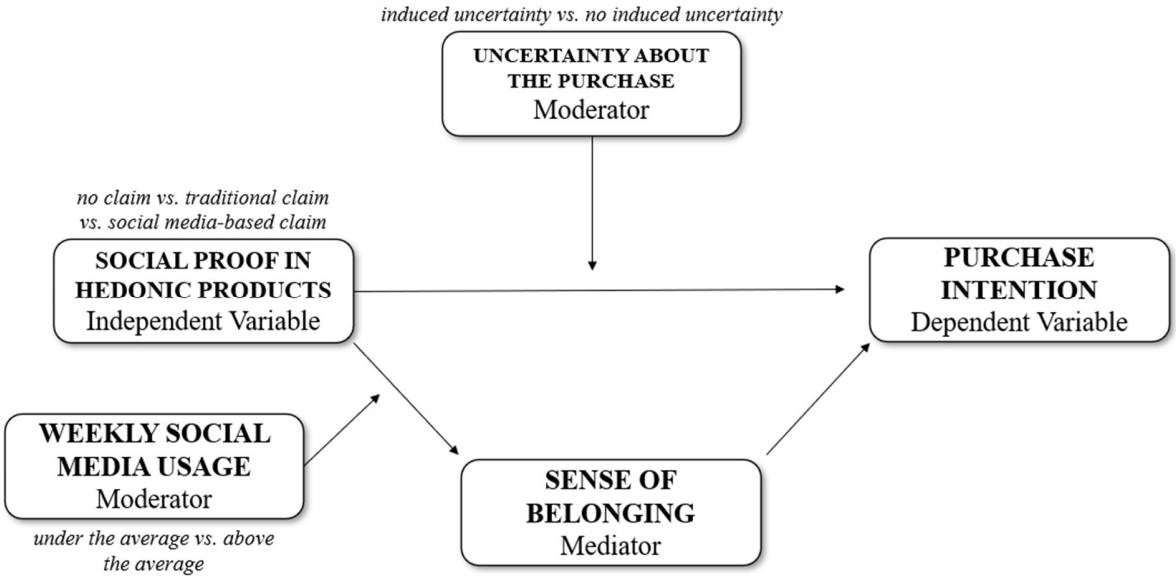


Figure 1. Conceptual Model

10. Methodology

10.1. Research Approach

This study adopts a post-positivist perspective, assuming that causal relationships can be examined through hypothesis testing while acknowledging the fallibility of empirical evidence Creswell & Creswell (2018). Accordingly, the research tests the proposed relationships using quantitative data, while recognizing the inherent limitations of studying consumer behavior.

In this study, mixed methods, combining both qualitative and quantitative research design (Creswell & Creswell, 2018; Leedy & Ormrod, 2018), will be used. Qualitative interviews and a pilot survey will help in stimulus development and validation (Leedy & Ormrod, 2018). The main phase will consist of a quantitative survey, allowing hypotheses to be tested in a statistically meaningful way.

In this dissertation, the focus is on an experimental design (Kothari, 2004), since social proof is manipulated to test its effect on purchase intention, supported by inferential statistics to generalize the results.

This study follows a deductive approach, deriving hypotheses from existing theory before data collection (Saunders et al., 2015), aiming to verify whether existing theories about social proof hold in an experimental context.

Research can also be characterized into problem-identification or problem-solving (Malhotra et al., 2020). This study is included in problem-solving, as it seeks to test whether different types of social proof influence consumers' purchase intention.

This dissertation is composed of an exploratory phase, used to define variables and stimuli. This is followed by a descriptive phase, where the characteristics of the sample will be presented, and a hypothesis-testing phase, which comprises most of the research: determining if there is a causal relationship between different types of social proof and purchase intention (Kothari, 2004).

A cross-sectional approach(Saunders et al., 2015) will be used, given that the dissertation is focused on immediate consumer responses to social proof, and not on changes over time.

10.2. Data Collection

10.2.1. Data Type

The study used primary data collected for the purpose of addressing the research hypotheses. The choice to use primary data was made so that the experiment is tailored to the conceptual model, delivering more accurate results.

10.2.2. Collection Method

The data collection method followed a mixed approach, composed of two stages. First, a pilot survey took place; then, interviews were conducted to test and validate stimuli. Lastly, a main online survey was conducted to allow for hypothesis testing. The use of mixed methods ensured depth and quantitative insights.

The main online survey was administered through Qualtrics, a convenient method for respondents. The sampling method was non-probabilistic (convenience and snowball sampling) (Saunders et al., 2015), via personal and professional networks such as social media, e-mail and word of mouth. These methods were chosen for pragmatic reasons, given the limited time and resources available for this project.

The target was the general population, without restrictions regarding demographics. This decision was made because the aim is to study responses to social proof across individuals according to their social media usage, which is not defined by demographic characteristics.

Participants were randomly assigned to one of six experimental conditions that varied according to the type of social proof and uncertainty level. Regarding the sample size, given that the experiment follows a 3x2 between-subjects design, a total of 180 observations (30 per condition) is advisable, as this ensures approximate normality of the distribution, according to the Central Limit Theorem. To allow for exclusions due to incomplete responses, failed manipulation checks and failed attention checks, the goal was to collect 50 observations per condition (a total of 300 observations).

All participants received information explaining the purpose of the study and acknowledging their right to withdraw at any time. Participation was voluntary and anonymous, and no identifying

information was collected. In accordance with Sekaran and Bougie (2009) confidentiality was guaranteed, and data was securely stored to ensure participants' privacy.

10.3. Variable Measurement

The product selected for the experiment was a scented candle. Further detail on this choice is explained in the stimuli creation section.

All measurements were adapted to follow a 7-point Likert scale, unless stated otherwise. This required adaptation from original scales, to ensure consistency across measurements.

10.3.1. Social proof in hedonic products

The independent variable was manipulated through stimuli. Three conditions were used: (1) No social proof claim (control condition), (2) Traditional social proof claim ("Best Seller"), (3) Social media-based social proof claim ("Viral on TikTok").

A manipulation check was included to make sure participants perceived the claim as intended: "Which claim did you see?" ("Best Seller", "Viral on TikTok", "I didn't see a claim").

10.3.2. Uncertainty about the purchase

Uncertainty was conceptualized with two components: informational uncertainty and product fit uncertainty.

10.3.2.1. Uncertainty about the purchase: Informational

Two conditions were used for informational uncertainty, which was manipulated through stimuli: (1) No induced uncertainty, where information was not ambiguous ("Vanilla" scent). (2) Induced uncertainty, where informational uncertainty was manipulated by making a product attribute ambiguous ("Mysterious Scent").

A manipulation check confirmed the effectiveness of the informational uncertainty manipulation by asking participants first "Which scent was the candle?" ("Vanilla", "Mysterious Scent", "No scent was mentioned").

10.3.2.2. Uncertainty about the purchase: Product Fit

Because product fit uncertainty naturally characterizes hedonic products, it was not manipulated, but measured, employing a previously established construct used by Dimoka et al. (2012) in their study of product fit uncertainty.

The original and adapted items were as follows:

Table 1. Adapted items from the Product Fit Uncertainty Scale

Original Statement (Dimoka et al., 2012)	**Adapted Statements**
I was not certain the product would match my requirements.	I was not certain that this candle would match my preferences.
I was certain that the product would match my tastes. (R)	I was certain that this candle would match my taste. (R)
I was sure that the product would fit my preference. (R)	I was sure that this candle would fit my preference. (R)
I was not certain the product with these characteristics was what I was looking for.	I was not certain that a candle with these characteristics was what I was looking for.
I feared that product attributes (such as color size, texture, style, type or content (whatever applies)) were not what I wanted.	I feared that the candle's attributes (such as scent, color, or style) were not what I wanted.

Reverse-coded items (R) were recoded prior to analysis so that higher scores represented a stronger product fit uncertainty.

The original version demonstrated excellent internal consistency, with Cronbach's alpha of 0.897.

10.3.3. Weekly social media usage

Weekly social media usage was measured with a single item: "About how many hours a week do you spend visiting social media sites (such as TikTok)?". This item was adapted from Twenge et al. (2018), from the original "About how many hours a week do you spend visiting social

networking sites (such as Facebook)?", to reflect the recent changes in the most popular social media platforms.

In the original measure, participants responded from this pool of possible answers: None, Less than 1 hour, 1-2 hours, 3-5 hours, 6-9 hours, 10-19 hours, 20-29 hours, 30-39 hours, 40 or more hours.

However, to facilitate statistical analysis and recoding of the variable, participants answered on a continuous scale from 0 to 70 hours (allowing even extreme scenarios of 10 hours of daily social media usage).

10.3.4. Sense of belonging

Mellinger et al. (2024) developed and validated a sense of belonging scale which serves as a general version that can be adapted to specific contexts by changing the referent in the items. The scale captures feelings of acceptance, connection, value, and fit within a context. In this study, the items were adapted to the consumption context to reflect participants' sense of belonging toward others after being exposed to the stimulus.

In the original scale, items were rated on a 5-point Likert scale. In this study, participants rated their agreement with each statement on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). This change was made to ensure consistency across measures and to allow for greater response variability. The mean score represented the overall sense of belonging. The eight original and adapted items are as follows:

Table 2. Adapted items from Sense of Belonging original scale

Original statements (Mellinger et al., 2024)	**Adapted statement**
I feel like I fit in.	I feel like I fit in with others who would use this product.
I feel connected with others.	I feel connected with others who would use this product.
I feel like I don't really fit in with others. (R)	I feel like I didn't really fit in with others who would use this product. (R)
I feel so distant from others. (R)	I feel distant from others who would use this product. (R)
I feel accepted by others.	I feel accepted by others who would use this product.
I feel disregarded. (R)	I feel disregarded by people who would use this product. (R)
I feel valued by others.	I feel valued by others who would use this product.
I feel disconnected from the world around me. (R)	I feel disconnected from others who would use this product. (R)

Reverse-coded items (R) were recoded prior to analysis so that higher scores represented a stronger sense of belonging.

The original version demonstrated excellent internal consistency, with a Cronbach's alpha of 0.96.

10.3.5. Purchase intention

Purchase intention was measured using a five-item semantic differential scale developed and validated by Spears and Singh (2004). The mean score across all five items represented the participant's overall purchase intention.

This scale assesses the individual's conscious plan to buy a product, as proposed by Ajzen (1991), after being exposed to a stimulus.

Participants indicated their purchase intentions by selecting a point on a 7-point scale between two opposite statements. The items were:

Table 3. Items from Purchase Intention Scale (Spears & Singh, 2004)

I would never buy this product.	I would definitely buy this product.
I definitely do not intend to buy this product.	I definitely intend to buy this product.
My purchase interest in this product is very low.	My purchase interest in this product is very high
I would definitely not buy this product.	I would definitely buy this product.
I would probably not buy this product.	I would probably buy this product.

The original scale demonstrated excellent internal consistency, with a Cronbach's alpha of 0.96 (Spears & Singh, 2004) and has been widely validated in consumer behavior research.

10.3.6. Operational Model

Table 4. Operational Model

Framework	Measure	Items	Scale	Reference	α
IV	Social proof	Stimuli	*na*	*na*	*na*
Moderator	Uncertainty about the purchase: Informational	Stimuli	*na*	*na*	*na*
Moderator	Uncertainty about the purchase: Product Fit	1	7-point Likert	Dimoka et al. (2012)	0.897
Moderator	Weekly social media usage	1	Open-ended (hours per week)	Twenge et al. (2018)	*na*
Mediator	Sense of belonging	8	7-point Likert	Mellinger et al. (2024)	0.96
DV	Purchase intention	5	7-point semantic differential	Spears & Singh (2004)	0.96

10.4. Stimuli Design

10.4.1. Creating the Stimuli

The stimuli were developed to operationalize the independent variable, social proof in hedonic products, and to induce the manipulation of informational uncertainty.

The product chosen for the experiment was a scented candle, which is a markedly hedonic product (Klein & Melnyk, 2016; Li et al., 2025) characterized by pleasure, emotion and self-

expression. In addition, candles are widely familiar, affordable, and gender-neutral, allowing participants to relate to the product without requiring prior knowledge.

Firstly, AI software (ChatGPT) was used to create images of the stimuli to be used in the pilot survey. The following prompt was used to generate the images: “Create a realistic image of a minimalist scented candle with an empty white label and a shelf in the background, in neutral tones.”

Different wording alternatives were then added on the design software Canva, to be tested: “Best Seller” versus “#1 in Sales”, “Viral on TikTok” versus “Viral on Social Media” as well as different scent names: “Mysterious Scent” versus no scent reference (“Scented Candle”) on the candle to see which one creates a moderate level of informational uncertainty. This allowed the determination of which combinations appeared most believable and natural to consumers. All versions maintained an identical layout, typography, color palette, product imagery, and information density to ensure that only the manipulated cues differed across conditions. A pre-survey was carried out with a small group of participants to choose the 6 final conditions. The resulting conditions were “Best Seller” as the stimulus for Traditional Social Proof, “Viral on TikTok” as the stimulus for Social media-based Social Proof, “Mysterious Scent” as the stimulus for Informational Uncertainty and “Vanilla Scented Candle” for No Informational Uncertainty.

The full results from the pre-survey are available in the Pre-survey Results Section of the Appendix.

10.4.2. Validating the Stimuli

After reviewing the insights from the pre-survey, the stimuli were updated and tested through five one-on-one interviews.

These validated the created stimuli as credible, realistic and a good measure of the intended manipulations. The summary of these interviews is available in the Qualitative Interviews: Results Section of the Appendix.

For the main survey, manipulation check questions were asked immediately after exposure to the stimulus. These were used to verify that participants noticed and interpreted the manipulations as intended. Respondents who did not pass the manipulation checks were excluded from the results.

10.4.3. Final Stimuli

Based on the pilot survey and interviews' results, the stimuli were finalized. Six versions were created, each combining one social proof condition with one informational uncertainty condition.

Condition 1: No social proof x
No informational uncertainty

Condition 2: No social proof x
Informational uncertainty

Figure 2. Final Stimuli (Conditions 1 and 2)

Condition 3: Traditional social proof x
No informational uncertainty

Condition 4: Traditional social proof x
informational uncertainty

Figure 3. Final Stimuli (Conditions 3 and 4)

Condition 5: Social media social proof x
No informational uncertainty

Condition 6: Social media social proof x
informational uncertainty

Figure 4. Final Stimuli: Conditions 5 and 6

Each participant was randomly assigned to view only one stimulus. All other visual elements remained identical.

10.5. Questionnaire Design

10.5.1. Experimental Design

The study employed a 3x2 between-subjects design, resulting in six conditions. Participants were randomly assigned to one condition.

The decision to follow a between-subject design was made because it eliminates carryover effects, making sure that respondents are not influenced by previous exposure to another condition (Malhotra et al., 2017). Although this approach requires a larger sample, it allows clearer attribution of differences in purchase intention to the experimental manipulation.

10.5.2. Survey Flow

The main Qualtrics survey started by outlining the study's purpose, confidentiality and participants' rights. After agreeing to participate, respondents were exposed to one of the six experimental conditions, to prevent priming effects. After the exposure, to avoid recall errors, manipulation checks were asked to confirm that participants perceived the social proof and informational uncertainty manipulations.

Next, sense of belonging was measured, product fit uncertainty and weekly social media usage questions were presented in a randomized order.

Although willingness to pay (WTP) was not part of the conceptual model, it was included as an exploratory variable to provide additional insights into consumers' valuation of the stimuli for future research. It followed the approach of van Westendorp (1976). This measure and purchase intention measure were presented in a randomized order.

Lastly, demographic questions were asked to characterize the sample.

The order of items within each construct was random and an attention check was implemented.

The survey followed a block structure, where related items were grouped to ensure clarity.

10.6. Data Analysis

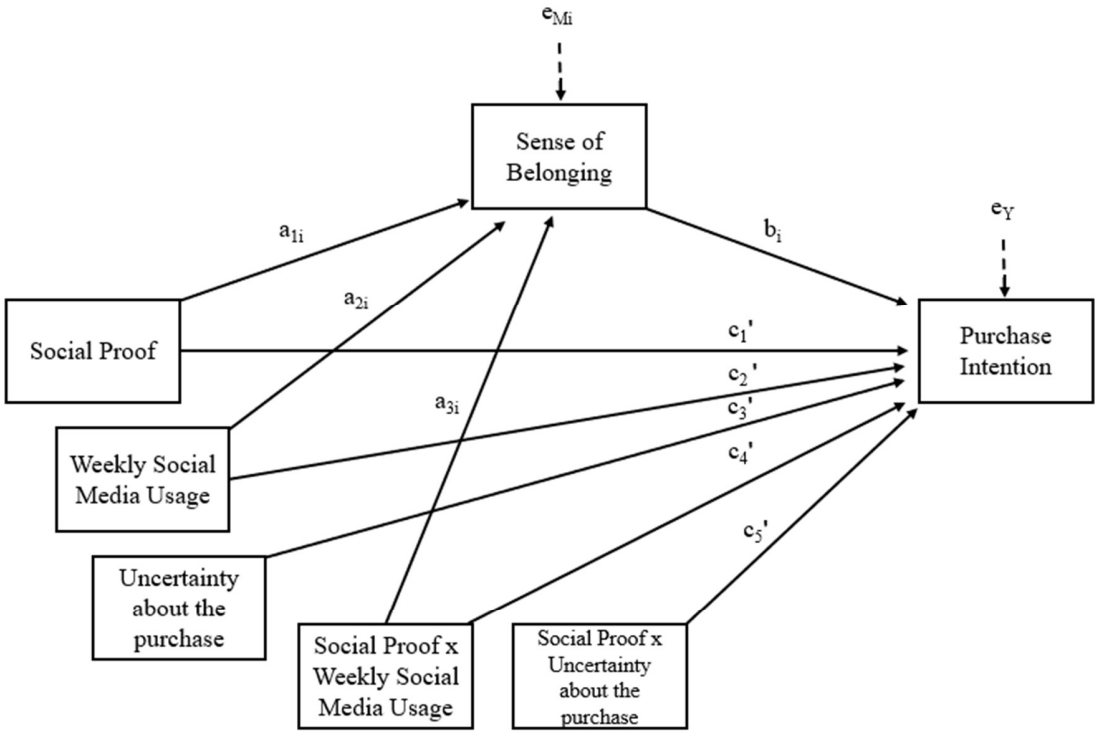
The data collected in the survey were analyzed using SPSS Statistics. The data preparation process included excluding failed attention or manipulation checks and incomplete answers. Reverse-coded items were recoded, and the dataset was checked for missing values and outliers.

Table 5 shows the statistical tests employed for each hypothesis.

Table 5. Hypotheses and Respective Statistical Tests

Hypothesis	Statistical Test
H1. The presence of traditional social proof increases purchase intention compared to no social proof	One Way ANOVA
H2a. The presence of traditional social proof increases the sense of belonging compared to no social proof.	One Way ANOVA
H2b. Weekly social media usage moderates the effect of social media-based social proof on sense of belonging.	PROCESS Model 1
H3. A stronger sense of belonging increases purchase intention.	Linear Regression
H4a. Sense of belonging mediates the effect of traditional social proof on purchase intention.	PROCESS Model 4
H4b. Sense of belonging mediates the effect of social media-based social proof on purchase intention.	PROCESS Model 4
H5. Uncertainty moderates the effect of social proof on purchase intention, with a stronger effect under induced uncertainty.	PROCESS Model 1
Full Model	PROCESS Model 10

The statistical model used for the full model is shown in Figure 5:



Conditional indirect effect of X on Y through $M_i = (a_{1i} + a_{3i}W)\, b_i$

Conditional direct effect of X on Y = $(c_{1i}' + c_{5i}'Z)$

Figure 5. Statistical Model

11. Data Analysis

11.1. Data Preparation

11.1.1. Missing Data

Given that survey completion was a priori inclusion criterion and all questionnaire items were mandatory, incomplete responses were excluded by design rather than because of post-hoc missing-data treatment decisions. Consequently, missing data mechanism diagnostics were not applicable to the final analytic sample.

A total of 385 responses were initially recorded. However, only respondents who were exposed to experimental stimulus and proceeded beyond the stimulus presentation were retained for data cleaning and analysis. This resulted in an initial analytical sample of 215 observations.

To clean data into a workable sample, failed attention checks were removed, as well as incomplete responses, resulting in 212 responses.

After removing duplicate IPs, the number of valid responses was 196 responses.

11.1.2. Manipulation Checks

Individuals who failed the manipulation check questions were automatically excluded through the survey logic. Thus, all retained participants accurately identified the claim shown and the candle scent presented, indicating strong manipulation fidelity.

Manipulation effectiveness of the social proof condition was assessed by examining differences in purchase intention across the three social proof conditions (no claim, traditional social proof, and social media–based social proof). A one-way ANOVA revealed no statistically significant differences in purchase intention between conditions ($p = .115$). Manipulation effectiveness was also assessed by examining differences in sense of belonging across the three social proof conditions. A one-way ANOVA revealed a statistically significant effect of social proof on sense of belonging ($p = 0.003$). Mean sense of belonging was highest in the no-claim condition ($M = 4.55$), followed by the traditional social proof condition ($M = 4.19$), and lowest in the social media social proof condition ($M = 4.01$, $SD = 1.03$). These results indicate that exposure to different social proof cues was associated with systematic differences in sense of belonging. Taken together, these

findings suggest that while social proof cues influenced participants' sense of belonging, these differences did not translate into differences in behavioral intention in the present study.

Inspection of the descriptive statistics indicated that the largest mean differences were observed between the no-claim condition and the social media–based social proof condition for both purchase intention and sense of belonging. Accordingly, subsequent analyses focus on this analytically central contrast, which captures the most pronounced differences observed in the data.

In the reduced analysis excluding traditional social proof, the comparison between the no-claim and social media–based social proof conditions revealed no statistically significant difference in purchase intention ($p = .054$), but a statistically significant difference in sense of belonging ($p < 0.001$).

The effectiveness of the informational uncertainty manipulation was assessed by comparing purchase intention across low and high-uncertainty conditions for the No social proof and social media social proof conditions. A one-way ANOVA revealed a statistically significant difference in purchase intention between conditions, ($p = .012$). Participants exposed to the low-uncertainty condition reported higher purchase intention ($M = 3.53$) than those exposed to the high-uncertainty condition ($M = 2.90$), indicating that the uncertainty manipulation was effective.

11.1.3. Outliers Analysis

To assess the presence of multivariate outliers, the Mahalanobis distance was computed based on sense of belonging, weekly social media usage, and willingness to pay, using a chi-square cutoff of 16.27 ($df = 3$, $p < .001$). 2 cases were identified as multivariate outliers and excluded from subsequent analyses.

Table 6 shows the steps of dataset observations cleaning.

Table 6. Dataset Observations Cleaning

	Stimuli 1	**Stimuli 2**	**Stimuli 3**	**Stimuli 4**	**Stimuli 5**	**Stimuli 6**	**TOTAL**
Initial Observations (with stimulus)	**41**	**32**	**33**	**34**	**43**	**32**	**215**
Unfinished survey	0	0	2	0	1	0	3
Failed manipulations	0	0	0	0	0	0	0
Failed attention check	0	0	0	0	0	0	0
Repeated IPs	5	2	3	0	4	2	16
Outliers	0	0	0	0	1	1	0
Removed after manipulation checks			28	34			
Final Observations	**38**	**30**	**0**	**0**	**36**	**29**	**133**

11.2. Measurement Creation and Reliability

11.2.1. Purchase Intention

Variable name: Comp_PI

Purchase intention was measured using a five-item semantic differential scale assessed on seven-point response formats. Higher values indicated greater purchase intention. The scale demonstrated excellent internal consistency (Cronbach's $\alpha = .911$). A composite score was computed by averaging the five items.

11.2.2. Willingness to Pay

Variable name: WTP

Willingness to pay was measured using a price sensitivity approach. Participants indicated the price at which the product was perceived as expensive but still worth buying. This price point was used as the primary indicator of willingness to pay in subsequent analyses, consistent with prior pricing research.

11.2.3. Sense of Belonging

Variable name: Comp_SoB

Sense of belonging was measured using an eight-item scale assessed on seven-point Likert scales (1 = strongly disagree, 7 = strongly agree). Negatively worded items were reverse-coded prior to analysis. The scale demonstrated acceptable internal consistency (Cronbach's α = .757). A composite score was created by averaging the eight items.

11.2.4. Product Fit Uncertainty

Variable name: Comp_PFU

Product fit uncertainty was measured using a five-item scale assessed on seven-point Likert scales (1 = strongly disagree, 7 = strongly agree). Certainty-related items were reverse-coded prior to analysis so that higher values reflected greater uncertainty. The scale demonstrated good internal consistency (Cronbach's α = .883). A composite score was computed by averaging the five items.

11.2.5. Weekly Social Media Usage

Variable name: WSMU_d

Weekly social media usage was measured as the number of hours spent on social media per week and was dummy-coded using a median split (median = 14 hours) to distinguish low versus high social media users for moderation analyses.

11.2.6. Platform Usage

Variable names: Tiktok; Insta; Facebook;X;NO_PLFM

Platform use variables were coded as dichotomous indicators (1 = uses the platform at least monthly, 0 = does not use the platform).

11.2.7. Age

Variable name: Age_R

Age was recoded into 3 groups to better reflect the composition of the sample.

11.2.8. Gender

Variable name: Gender

Gender was coded as a binary dummy variable, with 1 representing male and 2 representing female respondents.

11.2.9. Country

Variable name: Count_d

Country was recoded as a dummy variable, with 1 representing Portugal (dominant country of responses) and 2 representing all other answers.

11.2.10. Measurement Summary

Table 7. Measurement Summary

Variable	Description	Values	Measure
Comp_PI	Dependent variable representing purchase intention	1 to 7	Scale
WTP	Dependent variable representing willingness to pay	Continuous (€)	Scale
Comp_SoB	Mediator variable representing sense of belonging	1 to 7	Scale
Comp_PFU	Variable representing product fit uncertainty	1 to 7	Scale
WSMU_d	Moderator variable representing weekly social media usage	0= low usage; 1= high usage	Nominal
Tiktok; Insta; Facebook;X;NO_PLFM	Control variable representing platform usage	0= doesn't use the platform monthly; 1= uses the platform monthly	Nominal
Age	Demographic variable representing age	under 25=1; 25-34=2; 35+ = 3	Ordinal
Gender	Demographic variable representing gender	1=male; 2= female	Nominal
Count_d	Demographic variable representing country of residence	1= Portugal; 2=Other countries	Nominal

11.3. Descriptive Analysis

11.3.1. Sample Characteristics

After data cleaning, the final sample consisted of N=133 respondents. The following table shows the demographic profile of the participants, split by the different stimuli. The total number of participants was approximately evenly distributed across groups.

Table 8. Sample Characteristics

	Description	**No claim; No informational uncertainty**	**No claim; Informational Uncertainty**	**Social Media Social Proof; No informational uncertainty**	**Social Media Social Proof; informational Uncertainty**	**Total**
Age	Under 25	17,3%	15,8%	18,8%	14,3%	66,2%
	25-34	6,0%	1,5%	3%	3,8%	14,3%
	35+	5,3%	5,3%	5,3%	3,8%	19,5%
Gender	Male	10,5%	6,8%	8,3%	14,3%	39,8%
	Female	18,0%	15,8%	18,8%	7,5%	60,2%
Country	Portugal	18%	14,3%	18%	12,8%	63,2%
	Other countries	10,5%	8,3%	9%	9%	36,8%

11.3.2. Distribution of key variables

Descriptive statistics for the main constructs used in the analysis are presented in Table 9.

Table 9. Distribution of Key Variables

Variable	**Type**	**N**	**Min**	**Max**	**Mean**	**Std. Deviation**	**Cronbach alpha**
Comp_PI	DV	133	1	7	3.26	1.49	0.911
WTP	DV	133	1	25	9.20	4.79	*na*
Comp_SoB	Mediator	133	1.50	6.25	4.31	0.97	0.757
Comp_PFU	Moderator	133	1	7	4.31	1.41	0.883
WSMU_d	Moderator	133	*na* (dummy variable)				

11.4. Hypothesis Testing

11.4.1. Multicollinearity Assessment

Prior to hypothesis testing, multicollinearity was tested using VIF, eigenvalues, and condition indices. Following commonly accepted guidelines, VIF values below 2.5, eigenvalues above 0.01, and condition indices below 30 were considered indicative of the absence of multicollinearity.

Table 10. Variance Inflation Factors

Variable	VIF
SP	1.106
Unc	1.363
Comp_SoB	1.435
Comp_PFU	1.612
WSMU_d	1.041
Age_R	1.127
Gender	1.139
Count_d	1.058

Eigenvalues and condition indices were examined at the level of the predictor dimensions, as produced by SPSS collinearity diagnostics. All dimensions met recommended thresholds, indicating that none of the individual predictors contributed to problematic multicollinearity.

11.4.2. Hypothesis Testing

Prior to hypothesis testing, the assumptions underlying linear regression analyses were assessed for all models. Normality of residuals was evaluated using Shapiro–Wilk tests and Q–Q plots. For the analyses corresponding to H2b and H5, the Shapiro–Wilk test was significant; however, visual inspection indicated approximate normality, and these deviations were not considered problematic. Linearity was assessed through inspection of standardized residuals and predicted values, revealing no systematic patterns. Independence of observations was

ensured by the between-subjects design and supported by Durbin–Watson statistics within acceptable ranges. Homoscedasticity was evaluated using residual plots and Levene's tests, which were non-significant.

11.4.2.1. H1: The presence of traditional social proof increases purchase intention compared to no social proof.

Null Hypotheses: $H0_1$: There is no significant difference in purchase intention between the traditional social proof condition and the no social proof condition.

This hypothesis was not tested in the main analysis. Following manipulation effectiveness checks, traditional social proof stimuli were excluded from the analytic dataset due to insufficient manipulation effectiveness. As a result, comparisons involving traditional social proof were no longer meaningful, and H1 was not evaluated.

11.4.2.2. H2a: The presence of traditional social proof increases the sense of belonging compared to no social proof.

Null Hypotheses $H0_2$a: There is no significant difference in sense of belonging between the traditional social proof condition and the no social proof condition.

This hypothesis was not tested in the main analysis. Following manipulation effectiveness checks, traditional social proof stimuli were excluded from the analytic dataset due to insufficient manipulation effectiveness. As a result, comparisons involving traditional social proof were no longer meaningful, and H2a was not evaluated.

11.4.2.3. H2b: Weekly social media usage moderates the effect of social media-based social proof on sense of belonging.

Null Hypotheses $H0_2$b: Weekly social media usage does not moderate the effect of social media-based social proof on sense of belonging.

Test

The interaction between social media-based social proof and weekly social media usage was not significant ($b = -0.085$, $SE = 0.350$, $p = .809$, 95% CI $[-0.778, 0.608]$), indicating that weekly

social media usage does not moderate the effect of social media-based social proof on sense of belonging. Therefore, $H0_2b$ was not rejected and H2b was not supported.

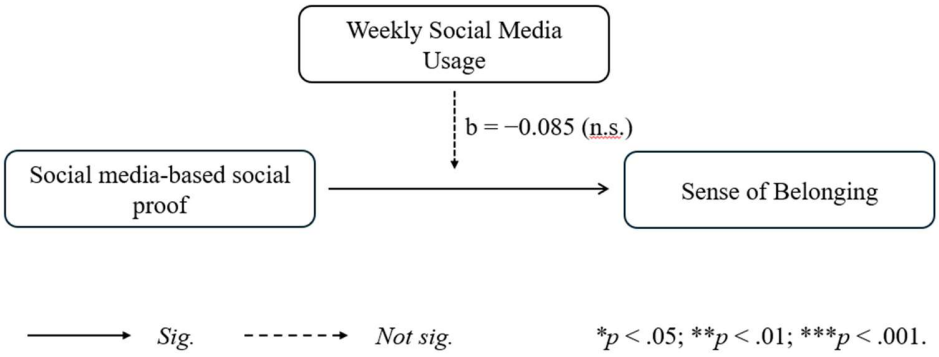


Figure 6. Summary of H2b Result

11.4.2.4. H3: A stronger sense of belonging increases purchase intention.

Null Hypotheses $H0_3$: Sense of belonging has no significant effect on purchase intention.

Test

A linear regression analysis was conducted to examine whether sense of belonging predicted purchase intention. The model was statistically significant, $F(1, 131) = 40.88$, $p < .001$, explaining 23.8% of the variance in purchase intention ($R^2 = .238$). Sense of belonging was a significant positive predictor of purchase intention ($b = 0.751$, $SE = 0.118$, $\beta = .488$, $t = 6.39$), indicating that a stronger sense of belonging was associated with higher purchase intention. Thus, the null hypothesis was rejected, providing support for H3.

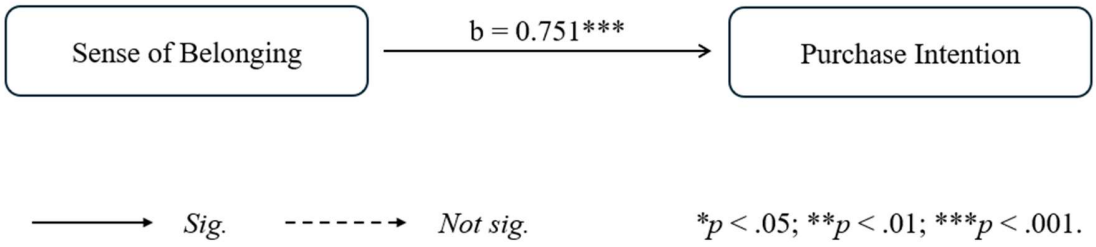


Figure 7. Summary of H3 result

11.4.2.5. H4a: Sense of belonging mediates the effect of traditional social proof on purchase intention.

$H0_4$a: Sense of belonging does not mediate the effect of traditional social proof on purchase intention.

This hypothesis was not tested in the main analysis. Following manipulation effectiveness checks, traditional social proof stimulus were excluded from the analytic dataset due to insufficient manipulation effectiveness. As a result, comparisons involving traditional social proof were no longer meaningful, and H2a was not evaluated.

11.4.2.6. H4b: Sense of belonging mediates the effect of social media social proof on purchase intention.

$H0_4b$: Sense of belonging does not mediate the effect of social media social proof on purchase intention.

Test

To test this hypothesis, a mediation analysis was conducted using PROCESS Model 4 (Hayes, 2022)with 5,000 bootstrap samples and heteroscedasticity-consistent standard errors (HC3).

Social media social proof significantly predicted sense of belonging ($b = -0.236$, $SE = 0.083$, $p = .005$, 95% CI [−0.400, −0.073]). In turn, sense of belonging significantly predicted purchase intention when controlling for social media social proof ($b = 0.740$, $SE = 0.126$, $p < .001$, 95% CI [0.491, 0.988]). The direct effect of social media social proof on purchase intention was not significant when sense of belonging was included in the model ($b = -0.046$, $SE = 0.116$, $p = .689$).

Most importantly, the indirect effect of social media social proof on purchase intention through sense of belonging was significant, as the 95% bootstrap confidence interval did not include zero ($b = -0.175$, BootSE = 0.065, 95% CI [−0.307, −0.052]). This indicates that sense of belonging mediates the relationship between social media social proof and purchase intention.

Therefore, the null hypothesis was rejected, providing support for H4b.

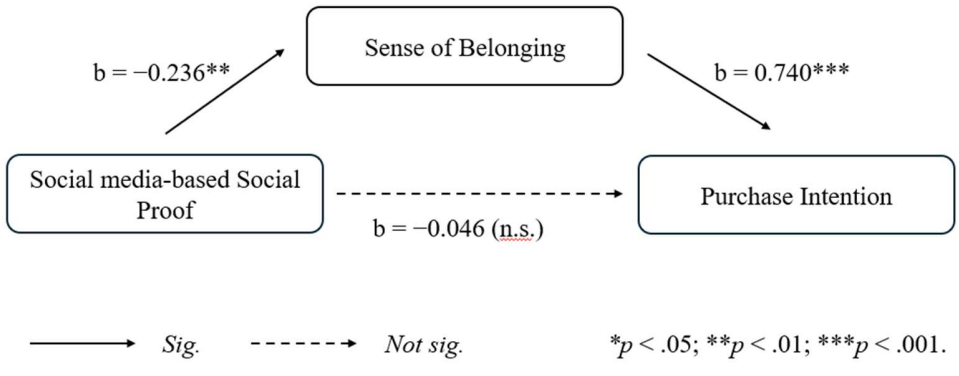


Figure 8. Summary of H4b result

11.4.2.7. **H5: Uncertainty moderates the effect of social proof on purchase intention, such that the effect is stronger under induced uncertainty.**

Null Hypotheses $H0_5$: Uncertainty about the purchase does not moderate the effect of social proof on purchase intention.

Test

To test this hypothesis, a moderation analysis was conducted using PROCESS Model 1 (Hayes, 2022) with heteroscedasticity-consistent standard errors (HC3). The overall model was not statistically significant, F(3, 129) = 2.65, p = .052, explaining 5.9% of the variance in purchase intention (R^2 = .059). The interaction between social media-based social proof and informational uncertainty was not statistically significant (b = −0.106, SE = 0.256, p = .678, 95% CI [−0.612, 0.399]). The change in explained variance due to the interaction term was also non-significant (ΔR^2 = .001). These results indicate that purchase uncertainty does not moderate the relationship between social media-based social proof and purchase intention. Therefore, H5 was not supported.

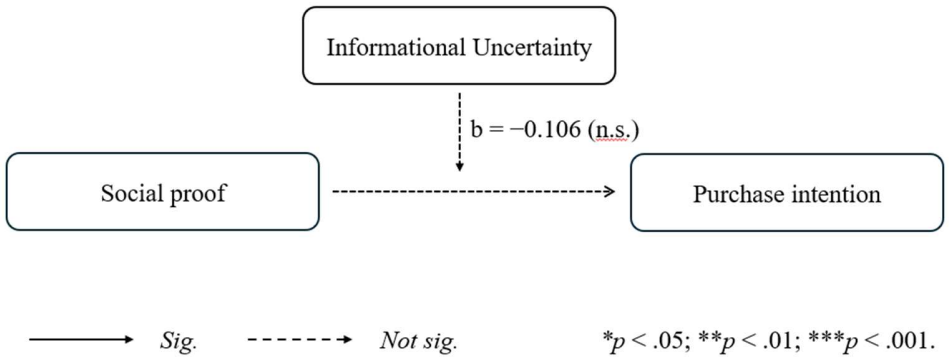


Figure 9. Summary for H5 Results

11.4.2.8. **Full Model**

Test

The mediator model predicting sense of belonging was statistically significant, R^2 = .15, F(5, 127) = 4.24, p = .001, indicating that the predictors collectively explained a meaningful

proportion of variance in sense of belonging. The outcome model predicting purchase intention was also statistically significant, $R^2 = .25$, $F(6, 126) = 6.69$, $p < .001$.

In the mediator model, social proof did not have a statistically significant direct effect on sense of belonging ($b = -0.32$, $p = .22$). Weekly social media usage was also not a significant predictor ($b = 0.20$, $p = .56$). Informational uncertainty, however, showed a significant negative association with sense of belonging ($b = -0.73$, $p = .039$), indicating that higher levels of informational uncertainty were associated with lower sense of belonging. Neither the interaction between social proof and weekly social media usage ($b = -0.10$, $p = .57$) nor the interaction between social proof and informational uncertainty ($b = 0.09$, $p = .59$) was statistically significant.

In the outcome model, sense of belonging emerged as a strong and statistically significant predictor of purchase intention ($b = 0.72$, $p < .001$. In contrast, social proof did not have a significant direct effect on purchase intention ($b = 0.17$, $p = .68$). Weekly social media usage ($b = -0.01$, $p = .98$) and informational uncertainty ($b = 0.16$, $p = .76$) were also not significant predictors of purchase intention. Furthermore, neither the interaction between social proof and weekly social media usage ($b = 0.05$, $p = .84$) nor the interaction between social proof and informational uncertainty ($b = -0.17$, $p = .47$) reached statistical significance.

Conditional direct effects of social proof on purchase intention were examined across all combinations of weekly social media usage and informational uncertainty. In all cases, the bootstrapped confidence intervals included zero, indicating that social proof did not exert a significant direct effect on purchase intention at any level of the moderators.

Conditional indirect effects of social proof on purchase intention through sense of belonging were estimated using bootstrapped confidence intervals. While the indirect effect was statistically significant at some levels of purchase uncertainty, these differences were not consistent across moderator levels. Importantly, the index of moderated mediation for weekly social media usage (index = −0.07, 95% CI [−0.30, 0.18]) and for purchase uncertainty (index = 0.06, 95% CI [−0.16, 0.31]) included zero. This indicates that the indirect effect of social proof on purchase intention through sense of belonging was not significantly moderated by either weekly social media usage or purchase uncertainty.

Overall, the findings support a mediation model in which sense of belonging plays a key role in explaining purchase intention. However, no evidence was found for moderated mediation, as neither weekly social media usage nor purchase uncertainty significantly altered the indirect or direct effects of social proof on purchase intention within the tested conditional process model.

Table 11. Summary of Hypothesis Testing Results

H	Test	H Result	Full Model Result
H1	Not tested (traditional social proof excluded after manipulation check)	—	—
H2a	Not tested (traditional social proof excluded after manipulation check)	—	—
H2b	PROCESS Model 1 (Moderation)	Rejected	Rejected
H3	Linear regression	Supported	Supported
H4a	Not tested (traditional social proof excluded after manipulation check)	—	—
H4b	PROCESS Model 4 (Mediation)	Supported	No moderated mediation
H5	PROCESS Model 1 (Moderation)	Rejected	Rejected
Full model	PROCESS Model 10	—	Mediation supported; no moderated mediation

11.5. Further analysis

This section explores a set of additional analyses aimed at further understanding of underlying mechanisms and conditions of the observed effects. These were not part of the main analysis but motivated by its findings.

11.5.1. Extension to Willingness to Pay

Although purchase intention provides insight into attitudinal preference, it does not constitute an economically meaningful pricing metric. Willingness to pay, defined as the

maximum price a consumer is prepared to accept, is therefore employed in subsequent analyses to ensure economic validity and reduce hypothetical bias (Breidert et al., 2006).

Assumptions underlying this analysis were assessed as described in Section 3.1 and were considered adequately met.

To examine whether the mediation effect identified in the main analyses extended beyond purchase intention, an additional mediation analysis was conducted with willingness to pay as the outcome variable. Hayes' PROCESS macro (Model 4) (Hayes, 2022) was used with 5,000 bootstrap samples and heteroscedasticity-consistent standard errors (HC3).

Sense of belonging did not significantly predict willingness to pay when controlling for social media–based social proof ($b = -0.159$, $SE = 0.511$, $p = .757$). The direct effect of social media–based social proof on willingness to pay was also not significant ($b = 0.276$, $SE = 0.441$, $p = .533$).

Importantly, the indirect effect of social media–based social proof on willingness to pay through sense of belonging was not significant, as the 95% bootstrap confidence interval included zero ($b = 0.038$, BootSE = 0.127, 95% CI [−0.190, 0.327]). These results indicate that, unlike purchase intention, willingness to pay is not influenced by social media–based social proof through sense of belonging.

To further examine the relationship between the two outcome variables, a Pearson correlation analysis was conducted between purchase intention and willingness to pay. The results indicated a weak and non-significant association between purchase intention and willingness to pay ($r = .09$, $p = .305$), suggesting that, in this context, purchase intention and willingness to pay capture distinct aspects of consumer response.

11.5.2. Product Fit Uncertainty as an Additional Mechanism

The main analyses identified sense of belonging as a key psychological mechanism linking social media–based social proof to purchase intention. However, the absence of effects on willingness to pay suggests that this mechanism may primarily influence consumers' motivational responses, rather than evaluative responses. To further explore alternative pathways through which social media–based social proof may shape purchase intention, product fit uncertainty was examined as an additional psychological mechanism.

Descriptive statistics indicated that product fit uncertainty was present at a moderate level in the sample (M = 4.31). This is consistent with prior research suggesting that hedonic products are inherently more difficult to evaluate prior to purchase due to their subjective and experiential nature, which often gives rise to uncertainty regarding personal fit and anticipated enjoyment. (Hong & Pavlou, 2014)

A parallel mediation analysis was conducted using Hayes' PROCESS Model 4 (Hayes, 2022) with sense of belonging and product fit uncertainty as simultaneous mediators (5,000 bootstrap samples, HC3).

The analysis revealed that social media–based social proof significantly predicted sense of belonging ($b = -0.236$, $SE = 0.083$, $p = .005$) but did not significantly predict product fit uncertainty ($b = 0.186$, $SE = 0.123$, $p = .132$).

When both mediators were included simultaneously in the model predicting purchase intention, sense of belonging emerged as a significant positive predictor of purchase intention ($b = 0.503$, $SE = 0.143$, $p = .001$), whereas product fit uncertainty was a significant negative predictor ($b = -0.351$, $SE = 0.097$, $p < .001$).

Bootstrap analyses indicated that the indirect effect of social media–based social proof on purchase intention through sense of belonging was significant, as the 95% confidence interval did not include zero ($b = -0.119$, BootSE = 0.049, 95% CI [−0.221, −0.033]). In contrast, the indirect effect through product fit uncertainty was not statistically significant ($b = -0.065$, BootSE = 0.046, 95% CI [−0.168, 0.019]). The total indirect effect of social media–based social proof on purchase intention was significant ($b = -0.184$, BootSE = 0.075, 95% CI [−0.337, −0.039]).

These results indicate that while sense of belonging and product fit uncertainty are independently associated with purchase intention, the indirect effect of social media–based social proof on purchase intention is primarily driven by changes in sense of belonging.

11.5.3. Moderation by Platform Usage

The social media–based social proof manipulation explicitly referred to TikTok virality as a signal of social media-based social proof. Therefore, it is plausible that its effect on sense of belonging depends on whether individuals actively use TikTok. To examine this possibility, an

additional moderation analysis was conducted to test whether TikTok usage moderates the relationship between social media–based social proof and sense of belonging.

The analysis was conducted using PROCESS Model 1 with sense of belonging as the outcome variable, social media–based social proof as the predictor, and TikTok usage as the moderator, using 5,000 bootstrap samples (HC3).

The overall model was statistically significant, $F(3, 129) = 4.20$, $p = .007$, explaining 8.6% of the variance in sense of belonging.

Social media–based social proof had a significant negative effect on sense of belonging ($b = -0.305$, $SE = 0.121$, $p = .013$). However, neither the main effect of TikTok usage ($b = -0.002$, $SE = 0.360$, $p = .996$) nor the interaction between social media–based social proof and TikTok usage ($b = 0.143$, $SE = 0.166$, $p = .392$) was statistically significant.

These results indicate that the effect of social media–based social proof on sense of belonging does not differ between TikTok users and non-users.

11.5.4. Robustness check: Weekly Social Media Usage as a continuous moderator

In the main analysis, weekly social media usage was operationalized using a median split. However, dichotomizing continuous variables can reduce statistical power and obscure meaningful variation. An additional analysis therefore treated usage as a continuous variable to re-examine its moderating role.

The interaction between social media–based social proof and weekly social media usage was not statistically significant ($b = -0.005$, $SE = 0.008$, $p = .496$), indicating that the effect of social media–based social proof on sense of belonging does not vary as a function of weekly social media usage. This finding suggests that the absence of moderation observed in the main analyses is robust to alternative operationalizations of social media usage.

11.6. Key Findings and Discussion

This study tested hypotheses to understand how a new form of social proof, social media-based social proof, influences purchase intention of hedonic goods. It investigated whether, if effective, this form of social proof acts through the psychological mechanism of sense of belonging, and

whether this effectiveness depends on informational uncertainty or the weekly social media usage of consumers.

Classic theories pose that social proof acts as an informational and normative guide which leads to behavioral changes, particularly under conditions of uncertainty (Argo, 2020; Cialdini, 2007; Deutsch & Gerard, 1955; Wood & Hayes, 2012). However, the presence of social media–based social proof did not directly increase purchase intention, suggesting that this new form of social proof might not operate through the same paths as traditional social proof.

In fact, a central premise of this study was that social media-based social proof might act in a different way from traditional social proof, by activating identity-based processes. Specifically, social media-based claims might signal in-groups and out-groups to which consumers wish to belong or disassociate from. Taking this into account, the study aimed to understand if social media-based claims could influence sense of belonging, which in turn could affect purchase intention.

The results support this premise, but in an unexpected direction. Instead of increasing sense of belonging, social media-based social proof was associated with lower levels of sense of belonging. Although claims such as "Viral on TikTok" refer to a more specific audience than generic popularity claims like "Best Seller," they may nonetheless signal popularity without a clear shared identity, or even an identity that consumers do not wish to associate with: even for those who actively use social media, social media-based social proof resulted in a reduction in sense of belonging.

Sense of belonging, however, was shown to be positively related to purchase intention. When consumers perceive a product as aligned with a social group they identify with, purchasing the product becomes an identity-consistent action rather than a purely transactional decision.

Consequently, the reduction in sense of belonging associated with social media–based social proof translated into a negative indirect effect on purchase intention.

These findings suggest that social media–based social proof can activate identity-based mechanisms in ways that undermine, rather than reinforce, consumers' sense of belonging, producing counterproductive effects in hedonic consumption contexts.

Traditional social proof claims did not produce significant effects on either purchase intention or sense of belonging. Following manipulation effectiveness checks, traditional social proof stimuli were excluded from the main analyses, as participants did not perceive these cues as meaningfully different from the no social proof condition. Although this limits direct conclusions about traditional social proof, the absence of effects is theoretically informative and aligns with evidence that generic popularity signals may be losing persuasiveness in contemporary consumption contexts (Friestad & Wright, 1994).

One explanation for this lack of effectiveness is that generic, majority-based signals may no longer function as persuasive signals in retail contexts for hedonic products. Broad popularity claims such as “Best Seller” may offer little diagnostic information about personal fit or symbolic meaning (Das et al., 2018). This explanation is consistent with the persuasion knowledge model (Friestad & Wright, 1994), which proposes that consumers learn to recognize these claims as common persuasion tactics rather than genuine informational signals. The widespread use of these claims over the years, ever since marketers started relying on social proof, might lead to their dilution, causing them to lose their effectiveness.

Another possible explanation for the null effects of traditional social proof relates to the role of uncertainty. Ghiassaleh et al. (2020), demonstrated that, for prevention-focused consumers motivated to avoid losses, popularity signs like "Best Seller" increase choice uncertainty instead of reducing it. These kinds of claims might generate cognitive dissonance in contexts where personal pleasure matters more than consensus, which is the case for hedonic goods. This explanation may be particularly relevant given the cultural composition of the sample, which includes a substantial proportion of Portuguese participants. Portugal has been consistently characterized in cross-cultural research as a high uncertainty-avoidance culture (Hofstede, 2011), indicating a stronger societal preference for risk reduction and avoidance of ambiguous situations.

Together, these explanations help interpret the null effect of traditional social proof as theoretically meaningful rather than inconclusive.

Moreover, no evidence was found that informational uncertainty moderated the effect of social media–based social proof on sense of belonging or purchase intention. The influence of social media-based social proof did not vary according to consumers’ level of informational uncertainty about the purchase. This finding suggests that the observed effects of social media-based social

proof are not contingent on uncertainty conditions associated with informational or normative influence (Argo, 2020; Deutsch & Gerard, 1955). Instead, these results reinforce the view that these effects operate through social and symbolic processes linked to identity and sense of belonging.

These findings indicate that social media–based social proof operates differently from traditional social proof in hedonic contexts. Instead of functioning as an informational or normative heuristic which acts as a decision shortcut, it acts as a symbolic social cue. When these cues fail to foster a sense of belonging or actively undermine it, they can produce counterproductive effects, indirectly reducing purchase intention. These results show the importance of considering not only whether a product is popular, but also what kind of social identity that popularity signals to consumers, and whether it makes them feel included or distanced from the implied audience.

12. Conclusion and Limitations

12.1. Main findings

12.1.1. RQ1: How does the type of social proof (none vs. traditional vs. social media-based) displayed on product packaging affect consumers' purchase intention?

Traditional social proof did not appear to influence purchase intention compared to the absence of social proof, indicating that generic popularity cues such as "Best Seller" may have limited persuasive power for hedonic products. Social media–based social proof also did not show a direct positive association with purchase intention. In line with the study's conceptual framework, its influence appeared to operate through consumers' sense of belonging; however, rather than strengthening sense of belonging, social media–based social proof was associated with lower sense of belonging, which was in turn related to lower purchase intention. Overall, these results suggest that social proof alone, in both tested forms, is unlikely to increase purchase intention in hedonic consumption settings.

12.1.2. RQ2: Does uncertainty about the purchase (induced uncertainty vs. no induced uncertainty) moderate the relationship between social proof and purchase intention?

Informational uncertainty did not moderate the relationship between social media–based social proof and purchase intention. This suggests that this form of social proof is unlikely to operate through uncertainty-related informational or normative heuristics.

12.1.3. RQ3: Does daily social media usage moderate the relationship between social media-based social proof and sense of belonging?

Daily social media usage did not change how social media–based social proof related to consumers' sense of belonging. The negative association between social media–based claims and sense of belonging was observed regardless of how much participants reported using social media

in their daily lives. This indicates that being a frequent social media user does not necessarily make consumers more comfortable with or more receptive to social media–based popularity claims.

12.2. Theoretical Implications

This study advances social influence research by reconsidering how social proof operates in contemporary digital consumption environments. More importantly, it examines whether the mechanism traditionally attributed to social proof remains valid when popularity signals originate from social media contexts. Traditional research describes social proof as a useful informational shortcut that helps decision making, especially in conditions of uncertainty (Cialdini, 2007). However, the emergence of social media-based social proof poses an important question: does it work in the same way and is it as effective? This study demonstrates that traditional and social media–based social proof are interpreted differently by consumers, indicating that they operate through distinct psychological mechanisms.

A central insight of this research concerns the role of sense of belonging in consumers' responses to social media–based social proof. Rather than functioning primarily as an informational heuristic, this study has found that social media–based social proof operates as a social signal conveying symbolic and identity-related meaning. This indicates that social proof in digital contexts operates through identity evaluation processes in addition to, or instead of, uncertainty reduction. However, this does not necessarily mean that this creates a feeling of affiliation among consumers. Instead, the findings show that such signals may weaken consumers' sense of belonging, thereby reducing purchase intention. This finding challenges the common assumption in social proof theory that popularity cues uniformly increase persuasion outcomes.

This identity-based mechanism helps explain why informational uncertainty is not crucial to the effectiveness of social media-based social proof as it is in traditional social proof, where uncertainty works as a trigger for relying on the informational and normative heuristics. Moreover, the absence of moderating effects of both informational uncertainty and weekly social media usage suggest that the effects observed are relatively stable across these conditions.

Finally, the results extend research on identity and hedonic consumption by demonstrating the central role of perceived social alignment in hedonic decision-making contexts. When social cues

undermine consumers' sense of belonging, purchase intention may decrease even when products are framed as popular.

In this way, the study positions belonging as a key mechanism linking social influence and consumer responses in hedonic consumption settings.

12.3. Managerial Implications

The findings of this study offer important implications for marketers and product managers operating in hedonic consumption contexts. First, they indicate that including social proof claims on product packaging does not automatically increase purchase intention. Instead, the effectiveness of social proof in hedonic consumption contexts depends less on whether a product is popular and more on how that popularity is socially interpreted by consumers.

While marketers increasingly rely on social media–based claims to signal relevance and trendiness, the findings indicate that such claims can produce unintended negative effects when they fail to convey a socially meaningful or identity-relevant signal. Popularity alone might be insufficient and even counterproductive if consumers do not associate a relevant meaning with the group implied in the claim, even when they belong to it.

The results show that even among heavy users of social media platforms, social media-based social proof decreases sense of belonging, which in turn decreases in purchase intention.

Marketers and product managers should thus be careful when using such claims. Even when social media usage is widespread within a target audience, the decision to employ this form of social proof may not be straightforward. Simply referencing social media popularity may not be sufficient; instead, managers need to consider whether these claims clearly communicate a social identity that consumers recognize, relate to, and want to feel included in.

Ultimately, this study contributes by demonstrating that the effectiveness of social proof in hedonic consumption depends less on how many others appear to choose a product and more on what that choice socially represents to consumers.

12.4. Further Research

Though this study provides insights into how social media-based social proof might operate in hedonic consumption contexts, several avenues remain open for future research.

First and foremost, future studies could explore in greater depth how consumers emotionally and socially interpret social media–based social proof claims such as “Viral on TikTok.” While the present research highlights a reduction in sense of belonging, qualitative approaches could help clarify the specific feelings and interpretations underlying this effect. Future work could also test whether making the implied audience more specific (e.g., “Trending in TikTok Portugal”) changes the belonging response.

In addition, the generalizability of the findings should be tested across a broader range of hedonic products. While the present study focused on a single product, a scented candle, future research could conduct robustness checks using other hedonic categories such as cosmetics, food, fashion, or entertainment. Examining whether the negative effects of social media–based social proof persist across products with different levels of symbolic value, price points, or usage situations would help determine whether the observed effects are product-specific or characteristic of hedonic consumption more broadly.

Another important advancement would be to compare results of social proof in offline packaging contexts versus in digital settings, in which social media-based social proof occurs more naturally. In these settings, which might be the brands’ feeds, influencer content, online product pages and many more, other interactions such as comments, likes, or other forms of engagement could help consumers interpret popularity and the social identity conveyed by a product that claims to be “Viral on TikTok”. If that is the case, these might have a different impact on sense of belonging and even purchase intention.

12.5. Limitations

This study has several limitations that should be considered when interpreting its findings.

First, the object of analysis was a single product, a scented candle. Although appropriate for studying hedonic consumption, this choice restricts the extent to which the findings can be generalized to other hedonic goods.

Moreover, all variables were measured through self-reported responses collected immediately after exposure to the stimulus. The findings therefore represent stated perceptions and intentions at one point in time rather than observed behavior or changes over time, with the propensity for response and social desirability bias.

In addition, the study relied on a convenience sample, resulting in a sample composition heavily weighted toward younger Portuguese consumers, which may not fully represent the broader consumer population and limits the external validity of the results.

Finally, the experimental manipulation was implemented through a questionnaire, rather than observed in a real consumption environment. As a result, participants' responses were formed under controlled and hypothetical conditions, which may differ from decision-making processes in real-life purchasing situations.

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14. Appendix

14.1. Appendix A: Stimuli Development

14.1.1. Pre-survey Questionnaire

Introduction: “Thank you for taking part in this survey. Your contribution will help in the development of a dissertation project at Católica Lisbon. You will see a few simple product packaging designs and answer brief questions. Your participation is voluntary and anonymous, and you may stop at any time. Do you consent to participate?”

○ Yes, I consent ○ No, I do not consent

Stimulus 1 (“Best Seller”): “You're seeing a product with a claim. Please answer the following questions according to your perceptions.”

Question 1: Please select a point for each statement.

This product is not popular at all ○ ○ ○ ○ ○ ○ ○ This product is very popular

This product is not believable ○ ○ ○ ○ ○ ○ ○ This product is believable

This product does not look realistic ○ ○ ○ ○ ○ ○ ○ This product looks realistic

Stimulus 2 (#1 in sales): “You're seeing a product with a claim. Please answer the following questions according to your perceptions.”

Question 2: Please select a point for each statement.

This product is not popular at all ○ ○ ○ ○ ○ ○ ○ This product is very popular

This product is not believable ○ ○ ○ ○ ○ ○ ○ This product is believable

This product does not look realistic ○ ○ ○ ○ ○ ○ ○ This product looks realistic

Stimulus 3 (“Viral on TikTok”): “You're seeing a product with a claim. Please answer the following questions according to your perceptions.”

Question 4: Please select a point for each statement.

This product is not popular at all ○ ○ ○ ○ ○ ○ ○ This product is very popular

This product is not believable ○ ○ ○ ○ ○ ○ ○ This product is believable

This product does not look realistic ○ ○ ○ ○ ○ ○ ○ This product looks realistic

Stimulus 4 ("Scented Candle"): "You're seeing a product with a claim. Please answer the following questions according to your perceptions."

Question 4: Please select a point for each statement.

This product is not popular at all ○ ○ ○ ○ ○ ○ ○ This product is very popular

This product is not believable ○ ○ ○ ○ ○ ○ ○ This product is believable

This product does not look realistic ○ ○ ○ ○ ○ ○ ○ This product looks realistic

Stimulus 5 ("Mysterious Scent"): "You're seeing a product with a claim. Please answer the following questions according to your perceptions."

Question 5: Please select a point for each statement.

I can't imagine what this candle smells like ○ ○ ○ ○ ○ ○ ○ I can imagine what this candle smells like

I feel uncertain about the scent of this candle ○ ○ ○ ○ ○ ○ ○ I feel certain about the scent of this candle

This product is not believable ○ ○ ○ ○ ○ ○ ○ This product is believable

This product does not look realistic ○ ○ ○ ○ ○ ○ ○ This product looks realistic

Question 6: Please rate your familiarity with the following scents.

Scale: Not familiar at all – Slightly familiar – Moderately familiar – Very familiar – Extremely familiar

Vanilla ○ ○ ○ ○ ○	Apple ○ ○ ○ ○ ○	Rose ○ ○ ○ ○ ○
Cinammon ○ ○ ○ ○ ○	Ocean Breeze ○ ○ ○ ○ ○	Berries ○ ○ ○ ○ ○
Sandalwood ○ ○ ○ ○ ○	Cotton ○ ○ ○ ○ ○	Lavender ○ ○ ○ ○ ○

14.1.2. Pre-survey Results

Table 12. Descriptive Statistics for Pre-survey-Question 1- Best Seller Claim

Please select a point for each statement.	N	Minimum	Maximum	Mean	Std. Deviation

This product is not popular at all.:This product is very popular.	45	2	7	5.64	1.334
This product is not believable.:This product is believable.	45	1	7	4.93	1.789
This product does not look realistic.:This product looks realistic.	45	1	7	4.69	1.952

Table 13. Descriptive Statistics for Pre-survey-Question 2- #1 in Sales Claim

Please select a point for each statement.	N	Minimum	Maximum	Mean	Std. Deviation
This product is not popular at all.:This product is very popular.	45	1	7	5.47	1.660
This product is not believable.-This product is believable.	45	2	7	5.18	1.600
This product does not look realistic.:This product looks realistic.	45	1	7	4.60	2.115

Table 14. Descriptive Statistics for Pre-survey-Question 3- Viral on TikTok Claim

Please select a point for each statement.	N	Minimum	Maximum	Mean	Std. Deviation
This product is not popular online at all.:This product is very popular online.	45	1	7	5.53	1.753
This product is not believable.:This product is believable.	45	1	7	4.51	1.842
This product does not look realistic.:This product looks realistic.	45	1	7	4.47	2.007

Table 15. Descriptive Statistics for Pre-survey-Question 4- Scented Candle Claim

Please select a point for each statement.	N	Minimum	Maximum	Mean	Std. Deviation
I can't imagine what this candle smells like.:I can imagine what this candle smells like.	45	1	7	3.89	1.824
I feel uncertain about the scent of this candle.:I feel certain about the scent of this candle.	45	1	7	3.20	1.700

This product is not believable.:This product is believable.	45	1	7	4.82	1.614
This product does not look realistic.:This product looks realistic.	45	1	7	4.67	1.745

Table 16. Descriptive Statistics for Pre-survey-Question 5- Mysterious Scent Claim

Please select a point for each statement.	N	Minimum	Maximum	Mean	Std. Deviation
I can't imagine what this candle smells like.:I can imagine what this candle smells like.	45	1	7	2.80	1.817
I feel uncertain about the scent of this candle.:I feel certain about the scent of this candle.	45	1	7	2.71	1.792
This product is not believable.:This product is believable.	45	1	7	4.44	1.841
This product does not look realistic.:This product looks realistic.	45	1	7	4.49	1.973

Table 17. Descriptive Statistics for Pre-survey-Question 6- Scent Familiarity

Please rate your familiarity with each of the following scents.	N	Minimum	Maximum	Mean	Std. Deviation
Vanilla	45	3	5	4.51	.626
Cinammon	45	1	5	4.02	1.138
Sandalwood	45	1	4	2.20	1.057
Apple	45	1	5	3.58	1.234
Ocean Breeze	45	1	5	2.69	1.184
Cotton	45	1	5	2.67	1.297
Rose	45	1	5	3.73	.986
Lavender	45	1	5	4.09	1.062
Berries	45	1	5	3.64	1.151

14.1.3. Pre-survey Conclusions

The best seller claim obtained a higher mean score for perceived popularity (M = 5.64) while still being regarded as believable and realistic, and was therefore selected over the #1 in sales claim, which showed a slightly lower popularity mean (M = 5.47). The viral on

TikTok claim yielded a mean popularity score of 5.53 and was thus validated as a strong indicator of popularity. Regarding scent uncertainty, the scented candle claim resulted in higher certainty ratings (M = 3.89 and M = 3.20) compared to the mysterious scent claim, which elicited lower certainty scores (M = 2.80 and M = 2.71), indicating greater uncertainty. Consequently, the mysterious scent condition was selected for the uncertainty manipulation. For the no-uncertainty condition, vanilla was chosen, as it demonstrated the highest familiarity among the tested scents (M = 4.51).

14.1.4. Qualitative Interviews Script

"Thanks for joining. I'm exploring how people perceive some products. I'll show you a few simple product images. There are no right or wrong answers. Can I ask you to record the conversation so I can go back to it and gather insights later? Your answers will remain anonymous. Can we proceed?"

Introduction

How often do you buy scented candles?

When you buy something like a candle, what makes you choose one over another?

Product Perception

What are your reasons for buying scented candles?

What kind of feelings or situations do you associate with lighting a scented candle?

Do candles say anything about a person's taste or style?

What scents of candles are usually liked by everyone?

Stimulus Testing: Control: Take a look at this candle packaging. What are your first impressions?

Stimulus Testing: Traditional Social Proof ("Best Seller")

What is your first reaction to this version?

What does the phrase “Best Seller” mean to you in this context?

Does that wording feel believable?

Does it change how much you’d want to try or buy it?

Is there better wording to sign popularity for you?

Stimulus Testing: Social Media-based Social Proof (“Viral on TikTok”)

What is your first reaction to this version?

What does “Viral on TikTok” make you think of?

Does this phrase suggest anything different from “Best Seller”?

Does that wording feel believable?

Does it change how much you’d want to try or buy it?

Is there better wording to sign social media popularity for you?

Stimulus Testing: Induced Informational Uncertainty (“Mysterious Scent”)

Do you feel you’re missing information to buy the candle?

How confident would you be that you’d like the scent before buying it?

If you could re-word it, what might sound more natural or believable?

Design and Realism

How realistic does this packaging look?

Is there anything that makes it feel unrealistic?

How easy is it to read?

Wrap-up: Is there anything else you'd like to add or change? Thank you so much for your time and feedback.

14.1.5. Qualitative Interviews: Results

Participants evaluated four different packaging stimuli, each designed to signal a specific type of information: a neutral control version, a traditional social proof cue, a social-media-based cue, and a cue introducing informational uncertainty. The control packaging was described as simple, realistic, and typical of candles sold in retail stores. Participants highlighted the earthy tones, clean layout, and wooden lid as familiar and believable features. The traditional social proof stimulus ("Best Seller") was interpreted as indicating strong sales and broad popularity. Participants found the wording believable and suitable for communicating consumer demand. Some suggested similar alternatives such as "Top Seller" or "#1 in Category," although the original phrasing was widely understood and accepted. The social-media-based stimulus ("Viral on TikTok") prompted associations with trendiness, youth culture, and rapidly spreading online content. Participants understood it as signaling popularity on TikTok or within social-media communities. A participant proposed broader alternatives such as "Popular on Social Media" to make the cue more inclusive. The informational-uncertainty stimulus ("Mysterious Scent") led participants to feel that essential information was missing, generating ambiguity about what the candle would smell like. Confidence in liking the scent without further detail was low. Across all four stimuli, the packaging was considered realistic, coherent, and easy to read.

14.1.6. Final Stimuli

Figure 11. Stimulus 1: No social proof x No induced uncertainty

Figure 12. Stimulus 4: Best seller x Induced uncertainty

Figure 13. Stimulus 2: No social proof x Induced uncertainty

Figure 14.Stimulus 5: Viral on TikTok x No induced uncertainty

Figure 15. Stimulus 3: Best seller x No induced uncertainty

Figure 16. Stimulus 6: Viral on TikTok x Induced uncertainty

14.2. Appendix B: Main Questionnaire

14.2.1. Questionnaire Design Logic Flow

Block: Introduction (1 Question)

Standard: Consumer Category Profiling (1 Question)

BlockRandomizer: 1 - Evenly Present Elements

Group: Block 1A

EmbeddedData

Social Proof = 0

Uncertainty = 0

Standard: Block 1A (2 Questions)

Group: Block 1B

EmbeddedData

Social Proof = 0

Uncertainty = 1

Standard: Block 1B (2 Questions)

Group: Block 1C

EmbeddedData

Social Proof = 1

Uncertainty = 0

Standard: Block 1C (2 Questions)

Group: Block 1D

EmbeddedData

Social Proof = 1

Uncertainty = 1

Standard: Block 1D (2 Questions)

Group: Block 1E

EmbeddedData

Social Proof = 2

Uncertainty = 0

Standard: Block 1E (2 Questions)

Group: Block 1F

EmbeddedData

Social Proof = 2

Uncertainty = 1

Standard: Block 1F (2 Questions)

Standard: MCs (2 Questions)

Branch: New Branch

If: If Social Proof Is Equal to 0

And Uncertainty Is Equal to 0

And Which claim did you see? I didn't see a claim Is Not Selected

ElseIf: If Social Proof Is Equal to 0

And Uncertainty Is Equal to 0

And Which scent was the candle? Vanilla Is Not Selected

EndSurvey: Advanced

Branch: New Branch

If: If Social Proof Is Equal to 0

And Uncertainty Is Equal to 1

And Which claim did you see? I didn't see a claim Is Not Selected

ElseIf: If Social Proof Is Equal to 0

And Uncertainty Is Equal to 1

And Which scent was the candle? Mysterious Scent Is Not Selected

And QID37 q://QID37/SelectableChoice/2 #

EndSurvey: Advanced

Branch: New Branch

If: If Social Proof Is Equal to 1

And Uncertainty Is Equal to 0

And Which claim did you see? Best Seller Is Not Selected

ElseIf: If Social Proof Is Equal to 1

And Uncertainty Is Equal to 0

And Which scent was the candle? Vanilla Is Not Selected

EndSurvey: Advanced

Branch: New Branch

If: If Social Proof Is Equal to 1

And Uncertainty Is Equal to 1

And Which claim did you see? Best Seller Is Not Selected

ElseIf: If Social Proof Is Equal to 1

And Uncertainty Is Equal to 1

And Which scent was the candle? Mysterious Scent Is Not Selected

EndSurvey: Advanced

Branch: New Branch

If: If Social Proof Is Equal to 2

And Uncertainty Is Equal to 0

And Which claim did you see? Viral on TikTok Is Not Selected

ElseIf: If Social Proof Is Equal to 2

And Uncertainty Is Equal to 0

And Which scent was the candle? Vanilla Is Not Selected

EndSurvey: Advanced

Branch: New Branch

If: If Social Proof Is Equal to 2

And Uncertainty Is Equal to 1

And Which claim did you see? Viral on TikTok Is Not Selected

ElseIf: If Social Proof Is Equal to 2

And Uncertainty Is Equal to 1

And Which scent was the candle? Mysterious Scent Is Not Selected

EndSurvey: Advanced

BlockRandomizer: 3 - Evenly Present Elements

Standard: Sense of Belonging (1 Question)

Standard: Product fit uncertainty (1 Question)

Standard: Social Media usage (2 Questions)

Standard: Attention Check (1 Question)

Branch: New Branch

If: If To show you're paying attention, please select Agree. Agree Is Not Selected

EndSurvey: Advanced

BlockRandomizer: 2 - Evenly Present Elements

Standard: Willingness to Pay (1 Question)

Standard: Purchase Intention (1 Question)

Standard: Demographics (3 Questions)

EndSurvey: Advanced

14.2.2. Main Survey Questionnaire

Start of Block: Introduction

Introduction: Dear participant, Thank you for taking part in this research study, which forms part of my Master's thesis at Católica Lisbon. By responding to this survey, you are contributing to academic research in the field of product management. Your responses are completely anonymous and aggregated data will be used only for academic purposes. The survey takes about 5 minutes to complete and your participation is completely voluntary. If you wish to withdraw from the survey, you may do so at any time. For any further details, please contact Leonor Rocha at s-leorocha@ucp.pt. To start, click on the ">>" button to give your consent and enter the survey. Thank you very much!

End of Block: Introduction; Start of Block: Consumer Category Profiling

Screening: Select a point for this statement.

	Never (1)	Less than once a year (2)	1-2 times per year (3)	Every 3-4 months (4)	Monthly (5)	2-3 times per month (6)	Weekly (7)
How often do you buy scented candles? (1)	ss	2	3	4	5	6	7

End of Block: Consumer Category Profiling; Start of Block: Block 1A

Intro to stimulus: Next, you will see a product. Imagine you're shopping for this product in a retail setting such as a store aisle. Please take a moment to look carefully at

the product and the information shown on the package, as if you were making a purchase decision.

No Social Proof x No Induced Uncertainty Stimulus

End of Block: Block 1A; Start of Block: Block 1B

Introduction to Stimulus: Next, you will see a product. Imagine you're shopping for this product in a retail setting such as a store aisle. Please take a moment to look carefully at the product and the information shown on the package, as if you were making a purchase decision.

No Social Proof x Induced Uncertainty Stimulus

End of Block: Block 1B; Start of Block: Block 1C

Introduction to stimulus: Next, you will see a product. Imagine you're shopping for this product in a retail setting such as a store aisle. Please take a moment to look carefully at the product and the information shown on the package, as if you were making a purchase decision.

Traditional Social Proof x No Induced Uncertainty Stimulus

End of Block: Block 1C; Start of Block: Block 1D

Introduction to stimulus: Next, you will see a product. Imagine you're shopping for this product in a retail setting such as a store aisle. Please take a moment to look carefully at the product and the information shown on the package, as if you were making a purchase decision.

Traditional Social Proof x Induced Uncertainty Stimulus

End of Block: Block 1D; Start of Block: Block 1E

Introduction to stimulus: Next, you will see a product. Imagine you're shopping for this product in a retail setting such as a store aisle. Please take a moment to look carefully at the product and the information shown on the package, as if you were making a purchase decision.

Social Media Social Proof x No Induced Uncertainty Stimulus

End of Block: Block 1E; Start of Block: Block 1F

Introduction to stimulus: Next, you will see a product. Imagine you're shopping for this product in a retail setting such as a store aisle. Please take a moment to look carefully at the product and the information shown on the package, as if you were making a purchase decision.

Social Media Social Proof x Induced Uncertainty Stimulus

End of Block: Block 1F; Start of Block: Manipulation Checks

MC Social Proof Which claim did you see?

Best Seller (1) // Viral on TikTok (2) // I didn't see a claim (3)

MC Uncertainty: Which scent was the candle?

Vanilla (1) // Mysterious Scent (2) // No scent was mentioned (3)

End of Block: MCs; Start of Block: Sense of Belonging

Sense of Belonging: Please indicate your agreement with the following statements.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I feel like I fit in with others who would use this product. (1)	1	2	3	4	5	6	7
I feel connected with others who would use this product. (2)	1	2	3	4	5	6	7
I feel like I didn't really fit in with others who would use this product. (3)	1	2	3	4	5	6	7
I feel distant from others who would use this product. (4)	1	2	3	4	5	6	7
I feel accepted by others who would use this product. (5)	1	2	3	4	5	6	7
I feel disregarded by people who would use this product. (6)	1	2	3	4	5	6	7
I feel valued by others who would use this product. (7)	1	2	3	4	5	6	7
I feel disconnected from others who would use this product. (8)	1	2	3	4	5	6	7

End of Block: Sense of Belonging; Start of Block: Product fit uncertainty

Product Fit uncertainty: Please rate your agreement with the following statements:

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I was not certain that this candle would match my preferences. (1)	1	2	3	4	5	6	7
I was certain that this candle would suit my taste. (2)	1	2	3	4	5	6	7
I was sure that this candle would fit what I like. (3)	1	2	3	4	5	6	7
I was not certain that a candle with these characteristics was what I was looking for. (4)	1	2	3	4	5	6	7
I feared that the candle's attributes (such as scent, color, or style) were not what I wanted. (5)	1	2	3	4	5	6	7

End of Block: Product fit uncertainty; Start of Block: Social Media usage

Social Media usage: Approximately how many hours per week do you spend visiting social media sites (such as TikTok)?

Hours per week spent visiting social media sites	

Platform use: Please select the platforms which you use at least once a month:

TikTok (1) // Instagram (2) // Facebook (3) // X (4) // I don't use any of these platforms (5)

End of Block: Social Media usage; Start of Block: Attention Check

Attention check: To show you're paying attention, please select Agree:

Strongly disagree (1) // Disagree (2) // Somewhat disagree (3) // Neither agree nor disagree (4) // Somewhat agree (5) // Agree (6) // Strongly agree (7)

End of Block: Attention Check; Start of Block: Willingness to Pay

Willingness to Pay: Please answer the following questions by moving the slider.

At what price would you consider the product so inexpensive (too cheap) that you would doubt its quality?	
At what price would you consider the product to be a bargain-great buy for the money?	
At what price would you consider the product to be getting expensive, but still worth buying?	
At what price would you consider the product too expensive to buy?	

End of Block: Willingness to Pay; Start of Block: Purchase Intention

Purchase Intention: Please select a point between the two statements.

	1	2	3	4	5	6	7	
I would never buy this product.	1	2	3	4	5	6	7	I would definitely buy this product.
I definitely do not intend to buy this product.	1	2	3	4	5	6	7	I definitely intend to buy this product.
My purchase interest in this product is very low.	1	2	3	4	5	6	7	My purchase interest in this product is very high.
I would definitely not buy this product.	1	2	3	4	5	6	7	I would definitely buy this product.

I would probably not buy this product.	1	2	3	4	5	6	7	I would probably buy this product.

End of Block: Purchase Intention; Start of Block: Demographics

Age: Please indicate your age.

Under 18 (1)	35 - 44 (4)	65 - 74 (7)
18 - 24 (2)	45 - 54 (5)	75 - 84 (8)
25 - 34 (3)	55 - 64 (6)	85 or older (9)

Gender: Please indicate your gender: Male (1) // Female (2) // Non-binary (3) // Prefer not to say (4)

Country: Please indicate your country of residence.

▼ Select your country of residence (1) ... (196)

End of Block: Demographics

14.3. Appendix C: Statistical Output

14.3.1. Manipulation checks

Table 18. Manipulation Check: One-way ANOVA for Social Proof with Purchase Intention as the DV

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.833	2	4.417	2.188	.115
Within Groups	421.835	209	2.018		
Total	430.668	211			

Table 19. Manipulation Check: Means of Purchase Intention for each condition of Social Proof

Social_Proof_num	Mean	N	Std. Deviation
1.00	3.5099	71	1.59671
2.00	3.3552	67	1.24843
3.00	3.0270	74	1.38735
Total	3.2925	212	1.42866

Table 20. Manipulation check: Means of Sense of Belonging for each condition of Social Proof

Social_Proof_num	Mean	N	Std. Deviation

1.00	4.5546	71	.89486
2.00	4.1903	67	.95900
3.00	4.0135	74	.99583
Total	4.2506	212	.97385

Table 21. Manipulation Check: One-Way ANOVA for Social Proof with Sense of Belonging as the DV

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.964	2	5.482	6.057	.003
Within Groups	189.146	209	.905		
Total	200.109	211			

Table 22. Manipulation Check: One-way ANOVA for Social Proof with Purchase Intention as the DV (without traditional social proof)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.447	1	8.447	3.787	.054
Within Groups	318.969	143	2.231		
Total	327.416	144			

Table 23. Manipulation check: One-way ANOVA for Uncertainty with Purhcase Intention as the DV (without traditional social proof)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.308	1	14.308	6.534	.012
Within Groups	313.109	143	2.190		
Total	327.416	144			

Table 24. Manipulation Check: Means of Purchase Intention for Uncertainty (without traditional social proof)

Uncertainty_num	Mean	N	Std. Deviation
1.00	3.5349	83	1.54481
2.00	2.9000	62	1.38741
Total	3.2634	145	1.50789

Table 25. Sample Characterization: Crosstabulation for Age

			Age_R			
			1.00	2.00	3.00	Total
Cond	NO SP, NO UNC	Count	23	8	7	38
		% of Total	17.3%	6.0%	5.3%	28.6%
	NO SP, UNC	Count	21	2	7	30
		% of Total	15.8%	1.5%	5.3%	22.6%
	SP, NO UNC	Count	25	4	7	36
		% of Total	18.8%	3.0%	5.3%	27.1%
	SP, UNC	Count	19	5	5	29
		% of Total	14.3%	3.8%	3.8%	21.8%
Total		Count	88	19	26	133
		% of Total	66.2%	14.3%	19.5%	100.0%

Table 26. Sample Characterization: Crosstabulation for Gender

			Male	Female	
Cond	NO SP, NO UNC	Count	14	24	38
		% of Total	10.5%	18.0%	28.6%
	NO SP, UNC	Count	9	21	30
		% of Total	6.8%	15.8%	22.6%
	SP, NO UNC	Count	11	25	36
		% of Total	8.3%	18.8%	27.1%
	SP, UNC	Count	19	10	29
		% of Total	14.3%	7.5%	21.8%
Total		Count	53	80	133
		% of Total	39.8%	60.2%	100.0%

Table 27. Sample Characterization: Crosstabulation for Country

			Count_d		
			1.00	2.00	Total
Cond	NO SP, NO UNC	Count	24	14	38
		% of Total	18.0%	10.5%	28.6%
	NO SP, UNC	Count	19	11	30
		% of Total	14.3%	8.3%	22.6%
	SP, NO UNC	Count	24	12	36
		% of Total	18.0%	9.0%	27.1%
	SP, UNC	Count	17	12	29
		% of Total	12.8%	9.0%	21.8%
Total		Count	84	49	133
		% of Total	63.2%	36.8%	100.0%

Table 28. Descriptive Statistics for Main Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Comp_PI	133	1.00	7.00	3.2632	1.49370
Comp_SoB	133	1.50	6.25	4.3186	.96952
WTP	133	1.00	25.00	9.2030	4.79229
Comp_PFU	133	1.00	7.00	4.3143	1.41492

14.3.2. Measurement Creation and Reliability

Table 29. Reliability Statistics for Sense of Belonging

Cronbach's Alpha	N of Items
.757	8

Table 30. Reliability Statistics for Product Fit Uncertainty

Cronbach's Alpha	N of Items
.883	5

Table 31. Reliability Statistics for Purchase Intention

Cronbach's Alpha	N of Items
.911	5

14.3.3. Hypothesis Testing

Collinearity Diagnostics

Table 32. Collinearity Diagnosis (VIF) for Hypothesis Testing

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2.261	1.085		2.084	.039		
	Social_Proof_num	-.018	.109	-.012	-.167	.868	.904	1.106
	Uncertainty_num	.271	.244	.089	1.111	.269	.734	1.363
	Comp_SoB	.457	.126	.298	3.610	<.001	.697	1.435
	Comp_PFU	-.405	.092	-.387	-4.429	<.001	.620	1.612
	WSMU	.001	.008	.007	.107	.915	.960	1.041
	Age_R	-.047	.139	-.025	-.335	.738	.887	1.127
	Please indicate your gender.	.342	.209	.120	1.633	.105	.878	1.139
	Count_d	-.045	.223	-.014	-.201	.841	.945	1.058

a. Dependent Variable: Comp_PI

Table 33. Collinearity Diagnosis (Eigenvalues and Condition Index) for Hypothesis Testing

Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Social_Proof_num	Uncertainty_num	Comp_SoB	Comp_PFU	WSMU	Age_R	Please indicate your gender.	Count_d
1	7.859	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.355	4.705	.00	.00	.00	.00	.00	.83	.06	.00	.00
3	.219	5.985	.00	.03	.00	.00	.01	.10	.64	.03	.03
4	.201	6.248	.00	.56	.00	.02	.01	.00	.00	.07	.02
5	.158	7.054	.00	.23	.17	.02	.10	.00	.01	.06	.00
6	.093	9.174	.00	.00	.02	.01	.02	.02	.02	.12	.86
7	.058	11.630	.00	.01	.17	.23	.15	.00	.07	.42	.03
8	.048	12.763	.01	.03	.59	.10	.46	.00	.03	.19	.00
9	.007	32.595	.99	.13	.04	.62	.25	.03	.18	.11	.06

Table 34. Tests of normality of regression residuals (H2b)

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.083	133	.024	.973	133	.010

a. Lilliefors Significance Correction

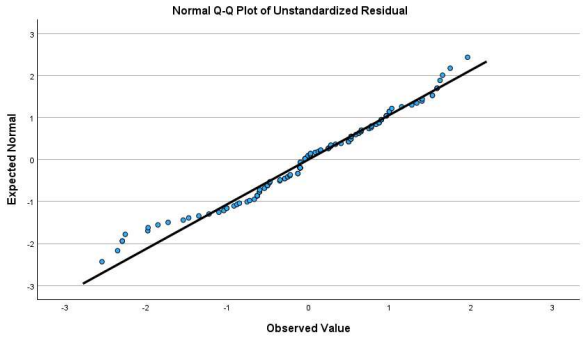


Figure 18. Normal Q–Q plot of regression residuals (H2b)

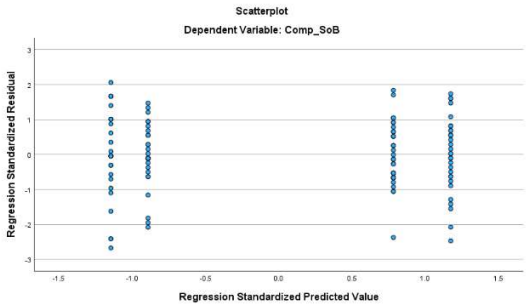


Figure 17. Scatterplot of standardized residuals versus standardized predicted values (H2b)

Table 35. Model summary and Durbin–Watson statistic (H2b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.248a	.062	.040	.95008	1.799

a. Predictors: (Constant), SPxWSMU, Social_Proof_num, WSMU_d
b. Dependent Variable: Comp_SoB

Table 36. Test of homogeneity of variances (Levene's test) (H2b)

		Levene Statistic	df1	df2	Sig.
Unstandardized Residual	Based on Mean	.053	1	131	.819
	Based on Median	.088	1	131	.767
	Based on Median and with adjusted df	.088	1	123.545	.767
	Based on trimmed mean	.028	1	131	.867

```
**************************************************************************
Model : 1
  Y : comp_SoB
  X : SP_H2b
  W : SM_use

Sample
Size: 127

**************************************************************************
OUTCOME VARIABLE:
 comp_SoB

Model Summary
      R    R-sq     MSE   F(HC3)     df1      df2        p
  .2677   .0717   .8900   3.1968  3.0000  123.0000   .0259

Model
            coeff   se(HC3)        t        p     LLCI     ULCI
constant   4.2879    .0850  50.4731   .0000   4.1197   4.4560
SP_H2b     -.5142    .1702  -3.0214   .0031   -.8510   -.1773
SM_use     -.0020    .1748   -.0113   .9910   -.3479    .3440
Int_1      -.0850    .3502   -.2426   .8087   -.7782    .6083

Product terms key:
 Int_1    :     SP_H2b  x     SM_use

Test(s) of highest order unconditional interaction(s):
      R2-chng     F(HC3)       df1       df2         p
X*W     .0005     .0589    1.0000   123.0000     .8087

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
 95.0000

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.

NOTE: The following variables were mean centered prior to analysis:
      SM_use   SP_H2b
```

Figure 19. Process Model 1 Results for H2b

Table 37. Tests of normality of regression residuals (H3)

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.047	133	.200*	.996	133	.956

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

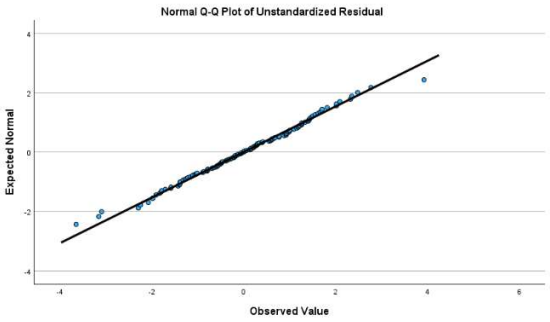


Figure 20. Normal Q–Q plot of regression residuals (H3)

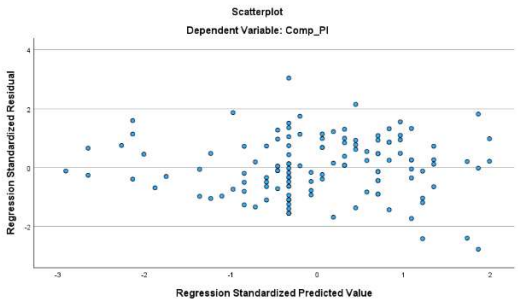


Figure 21. Scatterplot of standardized residuals versus standardized predicted values (H3)

Table 38. Model summary and Durbin–Watson statistic (H3)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.488a	.238	.232	1.30900	2.034

a. Predictors: (Constant), Comp_SoB
b. Dependent Variable: Comp_PI

Table 39. Model summary (H3)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.488a	.238	.232	1.30900

a. Predictors: (Constant), Comp_SoB
b. Dependent Variable: Comp_PI

Table 40. Linear regression coefficients (H3)

		B	Std. Error	Beta		
1	(Constant)	.018	.520		.035	.972
	Comp_SoB	.751	.118	.488	6.394	<.001

a. Dependent Variable: Comp_PI

Table 41. Tests of normality of regression residuals (H4b)

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.047	133	.200*	.996	133	.956

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

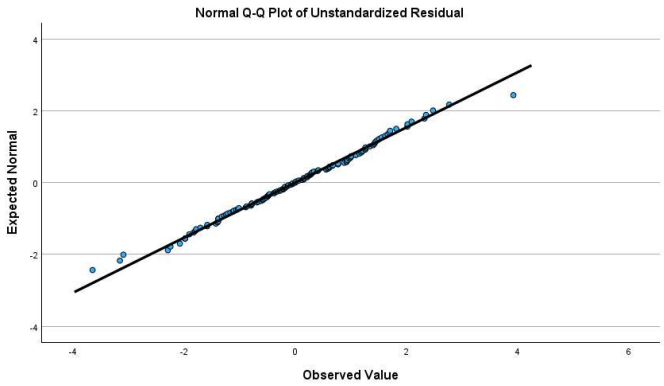


Figure 23. Normal Q–Q plot of regression residuals (H4b)

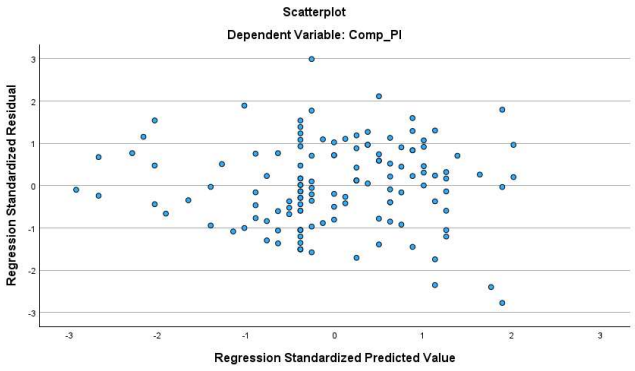


Figure 22. Scatterplot of standardized residuals versus standardized predicted values (H4b)

Table 42. Model summary and Durbin–Watson statistic (H4b)

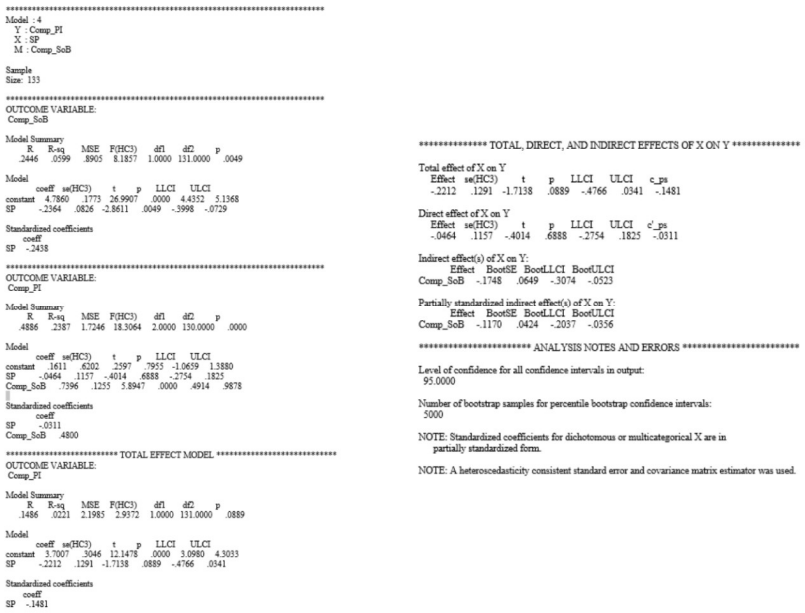
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.489a	.239	.227	1.31324	2.038

a. Predictors: (Constant), SP, Comp_SoB
b. Dependent Variable: Comp_PI

Table 43. Test of homogeneity of variances (Levene's test) (H4b)

		Levene Statistic	df1	df2	Sig.
Unstandardized Residual	Based on Mean	1.454	1	131	.230
	Based on Median	1.435	1	131	.233

	Based on Median and with adjusted df	1.435	1	125.015	.233
	Based on trimmed mean	1.457	1	131	.230



```
**************************************************************************
Model : 4
  Y : Comp_PI
  X : SP
  M : Comp_SoB

Sample
Size: 133

**************************************************************************
OUTCOME VARIABLE:
 Comp_SoB

Model Summary
      R    R-sq     MSE   F(HC3)     df1     df2       p
  .2446   .0599   .8905   8.1857  1.0000 131.0000   .0049

Model
          coeff   se(HC3)       t       p    LLCI    ULCI
constant  4.7860    .1773  26.9907   .0000  4.4352  5.1368
SP        -.2364    .0826  -2.8611   .0049  -.3998  -.0729

Standardized coefficients
          coeff
SP        -.2438

**************************************************************************
OUTCOME VARIABLE:
 Comp_PI

Model Summary
      R    R-sq     MSE   F(HC3)     df1     df2       p
  .4886   .2387  1.7246  18.3064  2.0000 130.0000   .0000

Model
          coeff   se(HC3)       t       p    LLCI    ULCI
constant  .1611    .6202   .2597   .7955  -1.0659  1.3880
SP        -.0464    .1157  -.4014   .6888  -.2754   .1825
Comp_SoB   .7396    .1255  5.8947   .0000   .4914   .9878

Standardized coefficients
          coeff
SP        -.0311
Comp_SoB   .4800

************************ TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Comp_PI

Model Summary
      R    R-sq     MSE   F(HC3)     df1     df2       p
  .1486   .0221  2.1985  2.9372  1.0000 131.0000   .0889

Model
          coeff   se(HC3)       t       p    LLCI    ULCI
constant  3.7007    .3046  12.1478   .0000  3.0980  4.3033
SP        -.2212    .1291  -1.7138   .0889  -.4766   .0341

Standardized coefficients
          coeff
SP        -.1481

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
   Effect   se(HC3)       t       p    LLCI    ULCI    c_ps
  -.2212    .1291  -1.7138   .0889  -.4766   .0341  -.1481

Direct effect of X on Y
   Effect   se(HC3)       t       p    LLCI    ULCI    c'_ps
  -.0464    .1157  -.4014   .6888  -.2754   .1825  -.0311

Indirect effect(s) of X on Y:
            Effect    BootSE  BootLLCI  BootULCI
Comp_SoB   -.1748    .0649   -.3074   -.0523

Partially standardized indirect effect(s) of X on Y:
            Effect    BootSE  BootLLCI  BootULCI
Comp_SoB   -.1170    .0424   -.2037   -.0356

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
 95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
 5000

NOTE: Standardized coefficients for dichotomous or multicategorical X are in
      partially standardized form.

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.
```

Figure 24. Process Model 4 Results for H4b

Table 44. Tests of normality of regression residuals (H5)

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.070	133	.200*	.977	133	.021

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

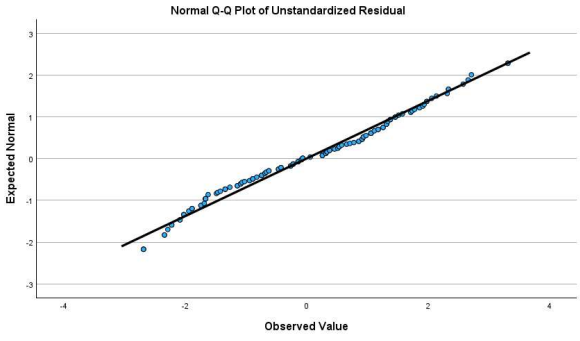


Figure 26. Normal Q-Q plot for regression residuals (H5)

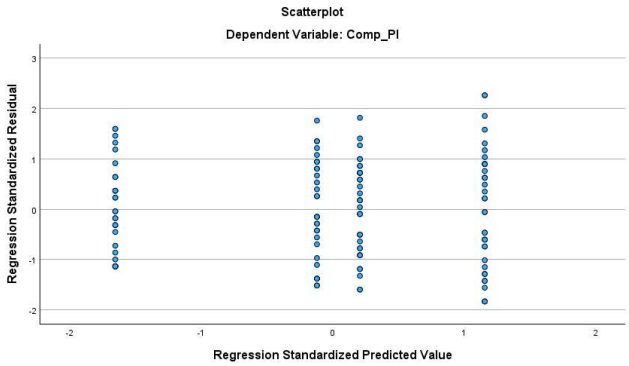


Figure 25. Scatterplot of standardized residuals versus standardized predicted values (H5)

Table 45. Model summary and Durbin–Watson statistic (H5)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.244a	.059	.037	1.46545	2.075

a. Predictors: (Constant), SPxUNC, UNC, SP

b. Dependent Variable: Comp_PI

Table 46. Test of homogeneity of variances (Levene's test) (H5)

		Levene Statistic	df1	df2	Sig.
Unstandardized Residual	Based on Mean	.407	3	129	.748
	Based on Median	.280	3	129	.840
	Based on Median and with adjusted df	.280	3	114.721	.840
	Based on trimmed mean	.391	3	129	.760

```
**************************************************************************
Model : 1
  Y : Comp_PI
  X : SP
  W : UNC

Sample
Size: 133

**************************************************************************
OUTCOME VARIABLE:
 Comp_PI

Model Summary
      R     R-sq      MSE    F(HC3)      df1      df2        p
  .2436    .0593   2.1475    2.6469   3.0000  129.0000    .0518

Model
          coeff   se(HC3)        t        p     LLCI     ULCI
constant   4.2148    .9675   4.3564    .0000   2.3006   6.1290
SP         -.0664    .4023   -.1650    .8692   -.8622    .7295
UNC        -.3579    .6029   -.5936    .5538  -1.5508    .8350
Int_1      -.1063    .2556   -.4159    .6782   -.6120    .3994

Product terms key:
 Int_1   :      SP     x      UNC

Test(s) of highest order unconditional interaction(s):
     R2-chng    F(HC3)       df1       df2         p
X*W    .0013    .1730    1.0000  129.0000    .6782

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
 95.0000

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.

NOTE: Standardized coefficients are not available for models with moderators.
```

Figure 27. Process Model 1 Results for H5

Table 47. Tests of normality of regression residuals for the full model

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.076	133	.059	.981	133	.059

a. Lilliefors Significance Correction

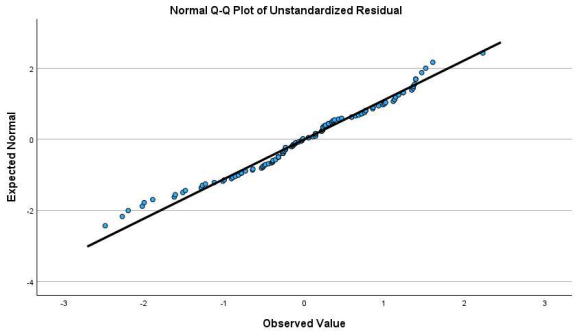


Figure 29. Normal Q-Q Plot of regression residuals

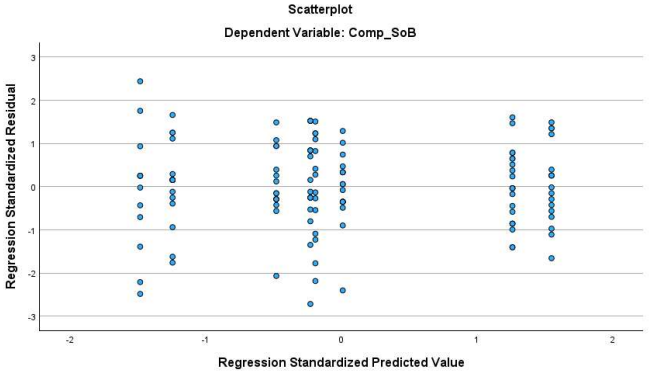


Figure 28. Scatterplot of standardized residuals versus standardized predicted values for sense of belonging (mediator model)

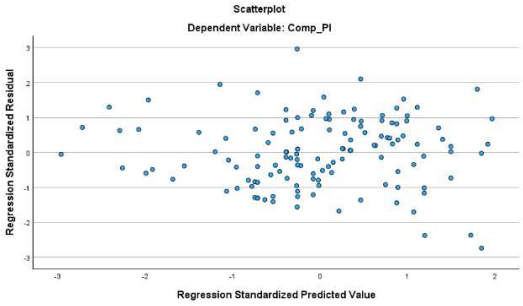


Figure 30. Scatterplot of standardized residuals versus standardized predicted values (full model)

Table 48. Durbin–Watson test for independence of residuals for the mediator model (sense of belonging)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.381a	.145	.111	.91397	1.994

a. Predictors: (Constant), WSMU_d, SP, UNC, SPxWSMU, SPxUNC
b. Dependent Variable: Comp_SoB

Table 49.Durbin–Watson test for independence of residuals for the full model (purchase intention)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.496a	.246	.210	1.32739	2.056

a. Predictors: (Constant), UNC, SP, WSMU_d, Comp_SoB, SPxWSMU, SPxUNC

Table 50. Levene's test for homogeneity of variance for the mediator model

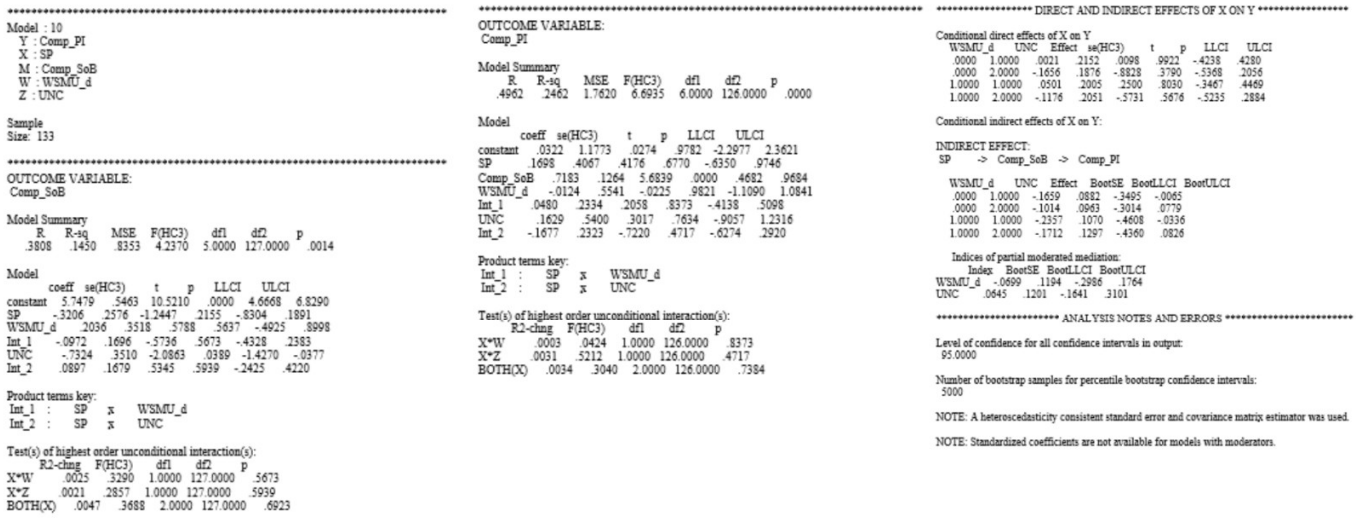
		Levene Statistic	df1	df2	Sig.
Unstandardized Residual	Based on Mean	.407	3	129	.748
	Based on Median	.280	3	129	.840
	Based on Median and with adjusted df	.280	3	114.721	.840
	Based on trimmed mean	.391	3	129	.760

Table 51. Levene's test for homogeneity of variance for the full model

		Levene Statistic	df1	df2	Sig.
Unstandardized Residual	Based on Mean	2.118	3	129	.101
	Based on Median	2.129	3	129	.100
	Based on Median and with adjusted df	2.129	3	113.864	.100
	Based on trimmed mean	2.115	3	129	.101

Table 52. Correlation between Purchase Intention and Willingness to Pay

	CompPI	WTP
Pearson Correlation	1	.090



```
Model : 10
  Y : Comp_PI
  X : SP
  M : Comp_SoB
  W : WSMU_d
  Z : UNC

Sample
Size: 133

OUTCOME VARIABLE:
 Comp_SoB

Model Summary
      R     R-sq      MSE    F(HC3)      df1      df2        p
 .3808    .1450    .8353    4.2370   5.0000 127.0000    .0014

Model
          coeff   se(HC3)        t        p     LLCI     ULCI
constant  5.7479    .5463  10.5210   .0000   4.6668   6.8290
SP        -.3206    .2576  -1.2447   .2155   -.8304    .1891
WSMU_d     .2036    .3518    .5788   .5637   -.4925    .8998
Int_1     -.0972    .1696   -.5736   .5673   -.4328    .2383
UNC       -.7324    .3510  -2.0863   .0389  -1.4270   -.0377
Int_2      .0897    .1679    .5345   .5939   -.2425    .4220

Product terms key:
 Int_1  :     SP     x     WSMU_d
 Int_2  :     SP     x     UNC

Test(s) of highest order unconditional interaction(s):
       R2-chng    F(HC3)      df1      df2        p
X*W      .0025    .3290   1.0000 127.0000    .5673
X*Z      .0021    .2857   1.0000 127.0000    .5939
BOTH(X)  .0047    .3688   2.0000 127.0000    .6923

OUTCOME VARIABLE:
 Comp_PI

Model Summary
      R     R-sq      MSE    F(HC3)      df1      df2        p
 .4962    .2462   1.7620   6.6935   6.0000 126.0000    .0000

Model
          coeff   se(HC3)        t        p     LLCI     ULCI
constant  .0322    1.1773    .0274    .9782  -2.2977   2.3621
SP        .1698    .4067    .4176    .6770   -.6350    .9746
Comp_SoB  .7183    .1264   5.6839    .0000    .4682    .9684
WSMU_d   -.0124    .5541   -.0225    .9821  -1.1090   1.0841
Int_1     .0480    .2334    .2058    .8373   -.4138    .5098
UNC       .1629    .5400    .3017    .7634   -.9057   1.2316
Int_2    -.1677    .2323   -.7220    .4717   -.6274    .2920

Product terms key:
 Int_1  :     SP     x     WSMU_d
 Int_2  :     SP     x     UNC

Test(s) of highest order unconditional interaction(s):
       R2-chng    F(HC3)      df1      df2        p
X*W      .0003    .0424   1.0000 126.0000    .8373
X*Z      .0031    .5212   1.0000 126.0000    .4717
BOTH(X)  .0034    .3040   2.0000 126.0000    .7384

************************ DIRECT AND INDIRECT EFFECTS OF X ON Y ************************

Conditional direct effects of X on Y
   WSMU_d     UNC    Effect   se(HC3)        t        p     LLCI     ULCI
   .0000  1.0000    .0021    .2152    .0098    .9922   -.4238    .4280
   .0000  2.0000   -.1656    .1876   -.8828    .3790   -.5368    .2056
  1.0000  1.0000    .0501    .2005    .2500    .8030   -.3467    .4469
  1.0000  2.0000   -.1176    .2051   -.5731    .5676   -.5235    .2884

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 SP       ->  Comp_SoB   ->  Comp_PI

   WSMU_d     UNC    Effect   BootSE  BootLLCI  BootULCI
   .0000  1.0000   -.1659    .0882   -.3495   -.0065
   .0000  2.0000   -.1014    .0963   -.3014    .0779
  1.0000  1.0000   -.2357    .1070   -.4608   -.0336
  1.0000  2.0000   -.1712    .1297   -.4360    .0826

  Indices of partial moderated mediation:
        Index   BootSE  BootLLCI  BootULCI
WSMU_d  -.0699    .1194   -.2986    .1764
UNC     -.0645    .1201   -.1641    .3101

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
 95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
 5000

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.

NOTE: Standardized coefficients are not available for models with moderators.
```

Figure 31. Process Model 10 Results for Full Model

Comp_PI	Sig. (2-tailed)		.305
	N	133	133
WTP	Pearson Correlation	.090	1
	Sig. (2-tailed)	.305	

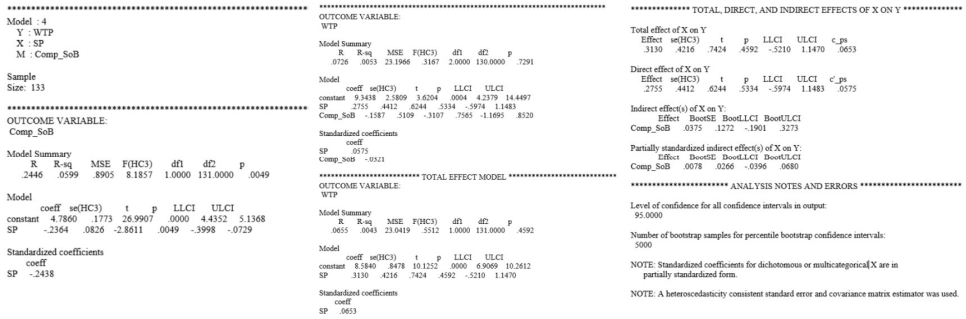


Figure 32. Process Model 4 Results: Extension to Willingness to Pay

Table 53. Descriptives for Product Fit Uncertainty

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Comp_PFU	133	1.00	7.00	4.3143	1.41492
Valid N (listwise)	133				

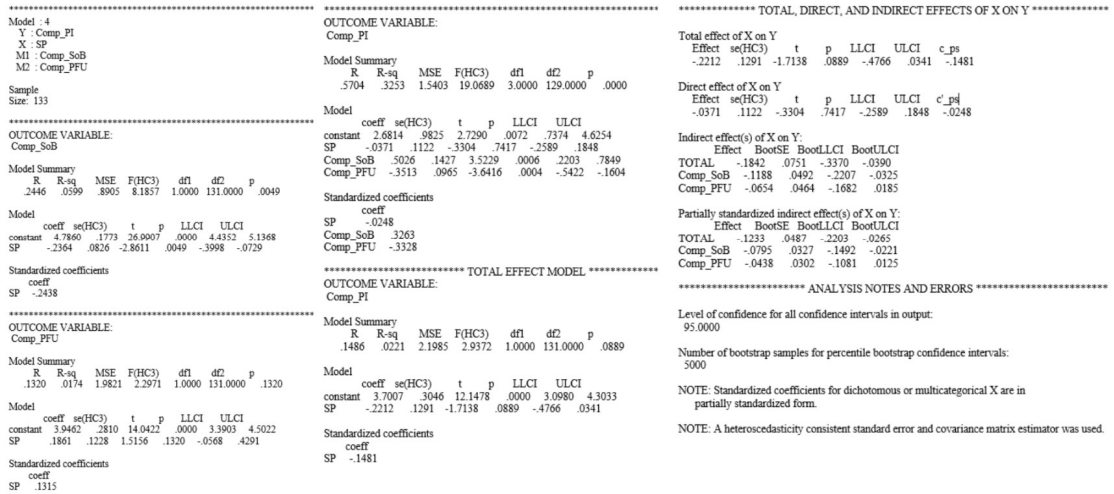


Figure 33. Process Model 4 Results: Product Fit Uncertainty as an additional mechanism

```
**************************************************************************
Model  : 1
  Y  : Comp_SoB
  X  : SP
  W  : Tiktok

Sample
Size:  133

**************************************************************************
OUTCOME VARIABLE:
 Comp_SoB

Model Summary
       R     R-sq      MSE    F(HC3)      df1      df2        p
   .2937    .0863    .8789    4.1998   3.0000  129.0000    .0072

Model
           coeff   se(HC3)        t        p     LLCI     ULCI
constant  4.7822    .2762  17.3151    .0000   4.2358   5.3286
SP        -.3049    .1209  -2.5231    .0128   -.5440   -.0658
Tiktok    -.0019    .3600   -.0053    .9958   -.7141    .7103
Int_1      .1425    .1659    .8590    .3919   -.1857    .4707

Product terms key:
 Int_1   :       SP      x       Tiktok

Test(s) of highest order unconditional interaction(s):
      R2-chng    F(HC3)       df1       df2         p
X*W    .0054    .7379    1.0000  129.0000    .3919
```

Figure 34. Process Model 1 Results: Moderation by platform (TikTok)

```
Model  : 1
  Y  : Comp_SoB
  X  : SP
  W  : WSMU

Sample
Size:  133

**************************************************************************
OUTCOME VARIABLE:
 Comp_SoB

Model Summary
       R     R-sq      MSE    F(HC3)      df1      df2        p
   .2598    .0675    .8969    3.0525   3.0000  129.0000    .0309

Model
           coeff   se(HC3)        t        p     LLCI     ULCI
constant  4.5219    .3132  14.4393    .0000   3.9023   5.1415
SP        -.1510    .1340  -1.1267    .2619   -.4162    .1142
WSMU       .0166    .0177   .9361    .3510   -.0184    .0515
Int_1     -.0053    .0078   -.6830    .4958   -.0208    .0101

Product terms key:
 Int_1   :       SP      x       WSMU

Test(s) of highest order unconditional interaction(s):
      R2-chng    F(HC3)       df1       df2         p
X*W    .0039    .4665    1.0000  129.0000    .4958
```

Figure 35. Results for Process Model 1: Weekly Social Media Usage as a continuous moderator