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On to the "wow" factor in nostalgia evoking products: Is the old newer?

Diogo Ferreira

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ABSTRACT

The desire or just pure longing for the past is often pointed out as the reason why consumers engage in nostalgic-related consumption. In this study, it is proposed that, rather than nostalgia alone, self-brand connections developed in one´s youth, an identity construction period, play a pivotal role and act as the mechanism for the transfer of affect to occur. Social Identity Theory is employed to argue that these connections are later perceived as deeply related to the social component of the self, and thus, consumers adopt an intergroup type behavior, identifying certain brands and products as representative of their generational identity.

A randomized 3 (nostalgic product: original, retro revived; vs. control) x 2 (self-brand connection: high vs. low) between-subjects design was assembled. Two products from a beverage brand of the 90s served as stimuli for nostalgia. Data was collected from consumers aged between 40 and 55 who recognized the brand.

Results show that when the level of self-brand connection is high (vs. low), nostalgic products are perceived to be equally or more innovative than a neutral one. There is also evidence that self-brand connection moderates the overall influence of products evoking nostalgia on purchase likelihood. Scenarios of moderated mediation are discussed, as they demonstrate a tendency for perceived innovativeness, contingent on the level of self-brand connection, to be reflected in the purchase likelihood.

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Author: Diogo Alexandre Vilaça Ferreira

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SUMÁRIO

O desejo ou apenas saudade de um passado distante são muitas vezes atribuídos como a razão pela qual as pessoas ingressam em consumo nostálgico. Neste estudo, é proposto que, além de apenas nostalgia, a *conexão pessoal com a marca* desenvolvida na juventude, um período de construção de identidade, tem um papel vital e funciona como mecanismo para a transferência de afeto ocorrer. A *Teoria de Identidade Social* foi utilizada para propor que este tipo de conexões são mais tarde percecionadas como extremamente representativas da componente social do "*eu*" e, por isso, os consumidores adotam um comportamento do tipo intergrupal, pois vêm em certas marcas ou produtos refletida a sua identidade geracional.

Um estudo randomizado com desenho entre sujeitos 3 (*produto nostálgico*: original; retro revivido vs. controlo) x 2 (*conexão pessoal com a marca*: alta vs. baixa) foi organizado. Dois produtos de uma marca de bebidas dos anos 90 funcionaram como o estímulo de nostalgia. Os dados foram obtidos de pessoas com idades entre os 40 a 55 anos, que reconheciam a marca.

Os resultados demonstram que quando o nível de conexão é alto (vs. baixo), produtos nostálgicos são percecionados com um grau igual ou superior de inovação do que um neutro. A *conexão pessoal com a marca* também modera a influência de produtos que evocam nostalgia na *probabilidade de compra*. Cenários de mediação moderada são discutidos, pois demonstram uma tendência para o nível de *inovação percecionada,* dependente da *conexão pessoal com a marca*, ser refletido na *probabilidade de compra*.

Título: O fator "wow" de produtos que evocam nostalgia: será o velho mais novo?"
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Palavras-Chave: Nostalgia, Conexão Pessoal com a Marca, Identidade Social, Inovação Percecionada, Conceito Pessoal, Probabilidade de Compra

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GLOSSARY

ELM Elaboration Likelihood Model

NOST Evoked Nostalgia Scale

PI Perceived Innovativeness

PL Purchase Likelihood

SBC Self-Brand Connection

SIT Social Identity Theory

CHAPTER 1: INTRODUCTION

1.1 Background and problem statement

The propensity for brands to relaunch products or sub-brands from the past has been growing. Even one may observe the comeback of brands that were once thought lost, commonly addressed as “retro brands” (Brown et al., 2003). This phenomenon has been categorized as a way to promote rekindling through nostalgia (Hartmann & Brunk, 2019), and often yields affective reactions from consumers. From Coca-Cola relaunching the Surge, Volkswagen with the Beetle, the buzzy Nokia, and even Sanjo in the Portuguese market, there are countless examples within the marketing scene. Nostalgia has the power to transport consumers to safer times (Brown, 2018), and these retro strategies make accessible early possessions that lay the foundations for one´s identity (Belk, 1988). Furthermore, the idea of recalling what is left behind is also described as a gateway for assuring identity continuity (F. Davis, 1979).

However, these attempts are at times ephemeral, as brands rely on just nostalgia, and the literature falls short in identifying leverageable relationships and guidelines. Research has shown that only possessions deeply connected to the self-concept become identitarian (Ferraro et al., 2011). Through psychology lens, the self evolves, with the formation of individual and social identity, between teenage years and early adulthood (Holmes & Conway, 1999), both periods on which consumers may already establish self-brand connections with increased depth (Chaplin & Roedder John, 2005). This time span is also known for provoking everlasting preferences (Schindler & Holbrook, 2003). Although these types of brand bonds are not unusual throughout life (Cheng et al., 2012), evidence suggests that the links formed with brands during this phase may be of added importance. If this is the case, research has yet to identify its importance in supporting the relaunch of retro brands or products.

In general, very little attention is attributed to the combined study of self-brand connections and nostalgia (Kessous et al., 2015; Kessous & Roux, 2010; Youn & Dodoo, 2021). And for isolated research on the consumption of nostalgic products, it becomes scarcer (Bi et al., 2023; Loveland et al., 2010). This study also detangles from the latter since, despite focusing on mediation through psychographic variables, it seeks to understand a fundamental and unanswered question. In the context of a relaunch, will consumers form distorted perceptions of innovativeness or be drawn independently of them? Thus, this is coupled with an analysis of

the influence of self-brand connections in hope of adding a different perspective and meaningful contribution to the literature.

1.2 Problem Statement

As briefly touched upon earlier, the purpose of this research relies on understanding the influence of different levels of self-brand connection on the attractiveness of a nostalgic product while ultimately contrasting the impact to a neutral one. Simultaneously, it is inspected if the emotional nature of nostalgia associated with the product is a strong enough driver by itself.

In the case of a release, what influence does a (high vs. low) self-brand connection and product type (nostalgic vs. not) has on perceptions of innovativeness and purchase likelihood?

RQ1: Is there any relationship between the level of self-brand connection and the degree of nostalgia evoked per the product?
RQ2*:* Depending on the type of product*,* what impact does the level of self-brand connection exert on variables such as perceived innovativeness or purchase likelihood?
RQ3: Do consumers express purchase probability based on perceptions dependent on their level of self-brand connection or disregard those?

1.3 Relevance

Beyond the obvious personal interest of the author in studying the hypothetical presence of this behavior by consumers, nostalgia marketing is a prominent and prospective subject that must not be overlooked. The wave of recent re-releases, transversal to the majority of product categories, raises interest and poses challenges. From online movements of activism (Deniz Ataman, 2023) or pure initiative from brands, receptivity is often immense. Across different generational cohorts, including the older ones, consumers are said to be open or searching for brand or product revivals that take them back to the early days (Joan Verdon, 2023).

From a research point of view, it is diligent to seek additional factors that may motivate audiences to engage in buzz or favor these products, apart from just nostalgia. By doing so, it may not only aid firms and marketeers to segment their target audience but also direct the content or tone of communication. Also, exploratory insights into theory could motivate research on consumer brand connections, at the self-concept level, in other contexts.

1.4 Research methods

In order to match the proposed objectives, resorting to both secondary and primary data was essential. Concerning secondary data, previous research on consumer behavior on nostalgia and self-brand connections was paired with important aspects of psychology literature, such as memory and perspectives of how the "self" functions cognition wise.

The main primary data was collected through an online survey, with a between subjects design. Besides a separate group of respondents being allocated to a product absent of nostalgia (control) and a nostalgic one in its original shape or design, one other group was also exposed to a more modern version of the latter. This was done to replicate two distinct approaches, or re-release strategies, that are often taken by brands in actual practice. Upon contact with the stimuli, and being inquired to what extent the brand, nostalgic or not, was reflective of themselves, the level of perceived innovativeness and probability of purchase were queried.

1.5 Dissertation outline

Initially, and with access to the literature, several sources are identified to support the theoretical discussion that further contributes to the development of the hypothesis proposed. In the subsequent chapter, a step by step description of the methodology is presented, as well as the structure of the survey and scales elected to represent the constructs. Such is followed by the data analysis section, where comments are mostly restrained to statistical results and inference of possible relationships. Afterward, the results are contextualized within the objectives of the research, with suggestions of both managerial and academic implications. The dissertation ends with the acknowledgment of limitations respective to procedures and overall research design, combined with recommendations for further research.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

The following chapter presents a comprehensive approach to key conceptualizations and existing relationships between them, drawn from substance and empirical findings of widely recognized academic journals. The theoretical reasoning is supported by an initial approach to diverse nostalgia constructs and the link that entitles products as evokers of such sentiment. It is further complemented with central themes for the research such as established self-brand connections, perceived innovativeness, and purchase likelihood, concluding with an applicability of both Social Identity Theory (SIT) and Elaboration Likelihood Model (ELM) to deliver the hypothesis.

2.1 Nostalgia

Nostalgia was first introduced in the literature to characterize a state of homesickness (F. Davis, 1979). Since its appearance in the late seventeenth century, this notion has rapidly evolved, and its foundations have been transferred and conceptualized into an extent of scientific fields. Viewed in its simple state per (F. Davis, 1979) as a "yearning for yesterday", Holbrook & Schindler (1991) later classified it as "*a preference (general liking, positive attitude or favorable affect) towards objects (people, places, or things) that were more common (popular, fashionable, or widely circulated) when one was younger (in early adulthood, adolescence, in childhood, or even before birth)*". This marketing conceptualization led to subsequent context-specific interpretations of noticeable importance. In particular, Stern (1992) proposed a distinction between personal and historical nostalgia, which post-research acknowledged as valid and an integral part of nostalgic reflection (Holak & Havlena, 1992). One accounts for events or objects of the consumers´ past, whereas the other is not limited to direct experience and may recall events out of this spectrum. Correspondingly, these intrinsic idealized notions contrast a "personally remembered past" with an "imaginatively recreated" one (Stern, 1992) and have, notably, objects and events as key stimuli (Holak & Havlena, 1992).

2.2 The affective nature of Nostalgia and Autobiographical Retrievals

The memory system is a complex and intriguing subject. Beyond all its specificities, there are two main categorizations of paramount significance for the scope of this research. Within the framework of conscious declarative memory, psychology assumes the existence of two distinct types of memories – episodic memories and autobiographical ones (Conway, 2009). While both entitle the aptitude to recall specific previous events, autobiographical memories transcend

singularity and incorporate the self as part of related experiences that will further contribute to an individualized history (Fivush, 2011). These encompass, amongst others, organized knowledge pertaining to specific lifetime periods (Conway & Pleydell-Pearce, 2000).

One can argue that such autobiographical memories are integral to nostalgic reflection, specifically to the personal typology. Thus, personal nostalgia is frequently recalled as "real" or "true" nostalgia (Stern, 1992). It is factually bound to experiences of one`s life. Often, both positive autobiographical memories and nostalgia constructs are used interchangeably in the literature, but although similar in the presence of a past event, what distinguishes the latter is, in concrete terms, the relevance for the present state and its psychological proximity (Stephan et al., 2012). It is undeniable that, in recent years, the marketing landscape has seen brands cuing and leveraging the retrieval of positive autobiographical memories regarding "objects (people, places or things)" (Holbrook & Schindler, 1991), on the basis that these are a vehicle of affect. A strong theoretical foundation sustaining it resides in the affect transfer mechanism. Exploratory research, resorting to three experiments, initially found that such a process reduces information processing and may have prior product usage as source (Baumgartner et al., 1992). Related following research emphasized that weak product features may well be disregarded within such setting (Sujan et al., 1993). These findings were later strengthened, as affect was found to be a determinant mediational process on attitude formation, and even coexistent amongst the belief-based system as the number of exposures to a visual stimulus increases (J. Kim et al., 1996, 1998). Hence, affect is validated as a powerful and leverageable emotion at brands` disposal, capable of withstanding judgments` rationality.

However, when addressing nostalgia, the unique link between the past and current state entitled to it is subjected to its ambivalent and bittersweet nature (Batcho, 1995). Although stimulating nostalgia usually results in predominantly positive feelings, previous empirical experiments have reported, along with other effects, outcomes such as a simultaneous increment in both positive and negative affect (Stephan et al., 2012; Wildschut et al., 2006). This dissonance is characteristic of human nature and, intermittently, affective memories may lead to current introspection and sadness. Whilst acknowledging this dual facet, this research follows the view of those who restrain nostalgia`s content to more positive than negative affect (Wildschut et al., 2006).

Recalling the previous reasoning, Sujan et al. (1993) claim that only a, forged, direct link mediating "nostalgic experience" and "brand" will be effective in evaluations. I argue that no tie is greater than the development of a strong bond to the brand when one is young. To support the latter, empirical data indicates that autobiographical retrieval speed is enhanced when cued by personal history and further improved when constrained to a particular past period (Conway & Bekerian, 1987). As these memories uniquely convey emotion (Holland & Kensinger, 2010), a faster retrieval is beneficial for shaping judgments at an early stage. Hence, I further investigate to what extent "a past that is no more" (R. D. Davis, 1980) is transferable to perceptions and attitudes towards a product that, in advance, are presumed to be favorable.

2.3 The Preference for Nostalgic Products

There is no single definition for a nostalgic product. Whilst some of the literature uses the sentimental version of nostalgia to hypothesize its impact and psychological benefits (Lasaleta et al., 2014; Sedikides et al., 2010; Van Tilburg et al., 2019), Schindler & Holbrook (2003) frame it in the perspective of the formation of enduring preferences. Particularly, they identified through a set of product categories, such as music and movies, the existence of a sensitive period when this imprinting is likely to occur (Holbrook & Schindler, 1989, 1994, 1996). Fluctuating between the first and second decade of life (youth), the age factor is determinant to understand to which spatial time consumers are likely to mentally drift, when nostalgia is evoked. For such preferences to be formed, affective and emotionally relevant consumption is a necessary condition (Schindler & Holbrook, 2003). Belk et al. (1989) are also notorious for providing the notion of sacralized consumption, in which consumers engage to forge their identity, solidifying feelings of belonging and acquiring stability within the social frame. Acknowledging the latter, nostalgia evoked by a product may not necessarily limit its spectrum to direct experience with it due to individual differences. As an example, one may have autobiographical memory primed by vicarious consumption (i.e., observing family or friends) or be just alluded by retro aesthetics. This view is followed by Holak & Havlena (1998), whose work detaches from preferences and focuses instead on the response to a nostalgic stimulus. As a result, a set of diverse associations may be triggered, naturally differing from person to person (Holak & Havlena, 1998).

2.4 Self-Brand Connection

Self-brand connections define how relatable the consumer self-concept is to the brand, with a high degree resulting in incorporation and the creation of a meaningful relationship (Escalas, 1996; Escalas & Bettman, 2000, 2003). This conceptualization derives from the strategic consumer-brand relationship framework, which shifted from the immense interest in brand loyalty and proposed the notion of brands as "partners", an essentially interpersonal relationship (S. Fournier, 1998; S. M. Fournier, 1994).

Research on self-concepts is rather extensive. Long ago, prior to the critical review of Sirgy (1982), the self-concept was seen as the sum of the "actual-self", "ideal-self" and "social self" (Burns, 1979; Rosenberg, 1979). These are mostly, statistical in time, considerations. Instead, I attribute particular focus to the psychological distribution of the self through the temporal horizon (i.e. past self, actual self, and future self). Research on this topic is keen on the existence of an identity (self) continuity, which is fostered by nostalgia (Sedikides et al., 2010). Identity continuity is also one topic implicitly highlighted by Kleine et al. (1995), as consumers demonstrate greater attachment to possessions that narrate, at the collective or individual level, their life stories. In a similar manner, Belk (1988) also notes that possessions, beyond helping one establish its identity in the initial stages of life, contribute to the general "sense of self".

Despite the observable links cited above, only recently have researchers pursued the avenue of identifying possible links between self-brand connections and nostalgia. Results from an empirical study showcase that brands perceived as nostalgic scored higher on self-brand connections and attachment, with product category moderating the relationship (Kessous et al., 2015). The stimulus concerned long lasting and prominent brands, whilst to my knowledge, there is no assessment of such relationship in the literature for the case of failed ones, especially those which lingered in the past. When a strong self-brand connection exists, any sort of brand failure is seen as a threat to consumers self-view, resulting in a defensive posture reflected by positive evaluations (Cheng et al., 2012).

Thus, I consider that there are salient parallels between the mechanism that leads to determined products evoking nostalgia, referred to earlier, and the creation of self-brand connections. Most specifically, for highly nostalgic situations, in which consumers obtain a clear view of the past, it is expected for the brand to be representative of that period in life. To support the latter,

Chaplin & Roedder John (2005) indicate that self-brand connections too are initiated at an early age and, besides the necessary congruity between one´s personality and image, they are grounded on the need for social fulfillment. This is in line with the perspective that one is likely to form such by the influence of reference groups (Escalas & Bettman, 2003), with increased propensity for those who match one´s self concept (Escalas & Bettman, 2005). Perhaps most importantly, it is the idea that these types of connections are eternal, independently of the temporally situated selves (S. Fournier, 1998; Kleine et al., 1995).

Hence, there is the possibility that both, the strength of nostalgia evoked and the degree of self-brand connection, could be associated. Whilst these connections may not be readily available to consumers, they are blended in autobiographical memory and might be recalled when prompted.

H1: Despite brand failure, products that evoke high levels of nostalgia will be accompanied by a strong self-brand connection.

Outcome wise, self-brand connections have also been linked to a series of behavioral benefits, that range from favorable brand attitudes (Eelen et al., 2017; Escalas & Bettman, 2003) to the intention of performing a purchase (Ren et al., 2012). But how would they react to the return of a brand? Failure is addressed in this research as the loss of most of the market relevance, and not just any intermittent damage of equity. Some guidelines for brands to attempt a rebirth emerge from Brown et al. (2003) work, which highlights, amongst others, two key notions of significant importance for this retro branding theme: "*Aura*" and "*Anitomy*". The first relates to effectively managing brands` authenticity and essence through this process, and, perhaps most importantly, *Anitomy* represents the predestined paradox between tradition and modernity (Brown et al., 2003).

2.5 Perceived Innovativeness

Previous studies have tackled nostalgia as a predictor for innovativeness, clarifying that older consumers prefer, indeed, older brands and that such parameter decreases throughout one´s life (Lambert-Pandraud & Laurent, 2010). Instead, specific emphasis is attributed to the concept of perceived innovativeness, a relatively new construct that aims to classify, from a consumer standpoint to which extent they believe a product holds attributes such as newness and

uniqueness (Watchravesringkan et al., 2010). Fundamentally, one can argue that it is an evaluative measure of the perceived degree of novelty. Although similarly termed, it substantially differs from the diffusion related concept of innovation which dictates the degree to which an individual is early in adoption (Rogers & Shoemaker, 1971). Scholars often use this construct within the framework of the Theory of Planned Behavior (Ajzen, 1991), as part of the subjective section of values or beliefs that will further contribute to attitude formation and, consequently, behavioral intentions (Hwang et al., 2019) . Empirical findings returned by Hwang et al. (2019) demonstrate a positive influence on word of mouth and intention to use, although in a service setting. Related work is also keen on its important role in developing and establishing an attitude (Boisvert & Ashill, 2011), as stated earlier. Other authors have attempted to study and conceptualize it at the brand level, as they consider it a prominent subject for future research (Shams et al., 2015). Thus, the possibility of it having an impact on purchase likelihood is assembled.

Still, there is no pre-established or unified definitive meaning in the literature, as it can take form at various levels. A similar approach to the one of Kaplan (2009) is followed in this research, which circumscribes the evaluation to the product itself. One likely difference is that stored knowledge is expected to come into play, harnessing prior judgements and feelings (Higgins, 1996). To do so, the notion of compatibility and implicit congruity, which disregards profound meaning or visual changes (Rogers & Shoemaker, 1971), is of major importance.

2.6 Purchase Likelihood

Explicit links between nostalgia and money have been studied before. Lasaleta et al. (2014) found that nostalgia about people or previous social experiences reduces both attachment to money and, consequently, price sensitivity. Nonetheless, caution was advised regarding product induced nostalgia since it may yield opposite effects. Conversely, Sierra & McQuitty (2007) used both cognitive, attitude towards the past, and emotional, yearning towards the past to elaborate the only model that empirically demonstrates drivers of this type of purchase. Although only indirectly related to the likelihood of a purchase, other studies revolving around psychological variables found that powerless consumers prefer a nostalgic product as opposed to a non-nostalgic one to cope with a feeling of uncertainty of times to come (Bi et al., 2023). As such, there is a relevant gap in the literature concerning the actual intention or probability

of making a purchase, as comparative models manipulating nostalgia are mainly addressed for advertising purposes (Marchegiani & Phau, 2012; Muehling & Pascal, 2011; Su et al., 2024).

2.7 Social Identity Theory (SIT) and Elaboration Likelihood Model (ELM)

Earlier, a comprehensive narrative was established based not only on nostalgic reflection, but also on brands as part of one´s identity, as a determinant for evaluations. One of the main arguments, that will further sustain the delivery of the hypothesis, is that the positive affect present in nostalgia will only have its impact on judgements and behavioral intentions through existing self-brand connections. This aligns with (1) the necessary connection, "closely linked to the self", identified by Sujan et al. (1993) for affect to be transferred within a nostalgic setting and (2) the role of affect in attitude formation (J. Kim et al., 1998). It should be observed that the latter was performed with conditioning principles. In the context of product nostalgia, it is expectable for affect to be present and readily transferable within the product itself, with no additional need to communicate affectively charged elements. Although not dissociative, the view here represented is, indeed, more resembling of the introductory point.

Yet would the effect of self-brand connections differ if formed during the sensitive time frame of the nostalgic imprint? This question remains unanswered in the literature.

To do so, the SIT (Tajfel et al., 1979) was employed. Frequently used in "self" related literature (Chan et al., 2012; Ward & Broniarczyk, 2011; White et al., 2012), its framework has been applied in the context of nostalgia driven purchases (Sierra & McQuitty, 2007).

One remarkable aspect of the SIT is the proposal that one´s self concept is based on both self-identity and social identity (Sierra & McQuitty, 2007; Tajfel, 1974). This notion detached from unidimensionality aligns with an overview of different fields, which Reed II et al. (2012) state as having an identical principle. While self-identity relates to the broad beliefs one holds about himself, social identity comprises the groups perceived to belong and consequential emotional relevance (Tajfel, 1974). Notwithstanding contemporary perceptions of inclusion or association, greater importance is attributed to the historical perspective of membership that conveys a collective sense of identity (Tajfel et al., 1979; Wohl et al., 2023). Hence, it is plausible that self-brand connections developed within a past, nostalgic, period may now amplify the social identity element of the self, increasing its salience. A favorable perspective

is also provided by psychology literature, as Holmes & Conway (1999) findings demonstrate that a social or generational identity is mainly constructed between the first and second decade of life. In fact, both concepts are intertwined and perceived to operate in equal form (Van Rossem, 2019). When social identity is evoked and prominent over the self, consumers tend to adopt an intergroup type of behavior (Hornsey, 2008). An illustrative example is that one may view their generation implicitly represented in a brand or product. This leads to in-group favoritism, resulting in increased evaluations, as a mechanism to foster, both at collective and individual levels, self-esteem and self-view (Tajfel et al., 1979). Also, when there is no perceivable threat and commitment is high (i.e., strong self-brand connection), research suggests that consumers will likely engage in the expression of their social identity (Ellemers & Haslam, 2012). Alternatively, a dissociative scenario may occur when there is no connection to the past, as group or social identity may not be as easily accessible or defined. As an example, research by Chan et al. (2012) demonstrated that consumers may opt to self-categorize, pursuing a balance between differentiation and expression of their social identities. Therefore, it is believed that the "self" aspect of the connection to a brand in a nostalgic setting, and when existing, to be more reflective of a social identity, rather than a personal one.

To complement the SIT, which was used to signal a possible moderation effect of self-brand connection, the ELM was utilized (Petty et al., 1986). A dual processing system in nature, it suggests the existence of two routes to persuasion – central and peripherical (Petty et al., 1986). Despite being traditionally used in a message context, research has shown that consumers also use pictures or visual stimuli, in a similar manner, to form inferences (Smith, 1991). Based on both motivation and ability, the elaboration likelihood is set to render differently. Despite the postulates from Petty et al. (1986), it becomes difficult to predict the route that consumers are likely to follow in a real consumption scenario. Although one can argue that a nostalgia inducing product may increase the motivation to process (i.e., personal meaning), it may also negatively influence the ability if affect is transferred (Mackie & Worth, 1989).

Furthermore, empirical findings support that positive affect works at both high and low levels of elaboration (Petty et al., 1993). On high levels, positive affect is said to favor ambiguous arguments (Lien, 2001; Petty et al., 1993), which may manifest in greater evaluations of perceived innovativeness. Conversely, it can also act as a peripheral cue by the means of evoking merely positive associations (Lien, 2001), disregarding the content of evaluations for the likelihood of performing a purchase. However, per model guidelines, high elaboration is

more predictive of behavior (Petty et al., 1986), increasing the potential for perceived innovativeness to act as a mediator. Thus, an integrated model of purchase likelihood with a moderated direct and indirect path was assembled.

This combined argument also led to the development of the following hypothesis:

H2: Self-brand connection moderates the relationship between nostalgia evoking products and perceived innovativeness.

H3: Self-brand connection moderates the relationship between nostalgia evoking products and purchase likelihood.

H4: Moderated Mediation will occur for nostalgia evoking products

2.8 Conceptual Framework

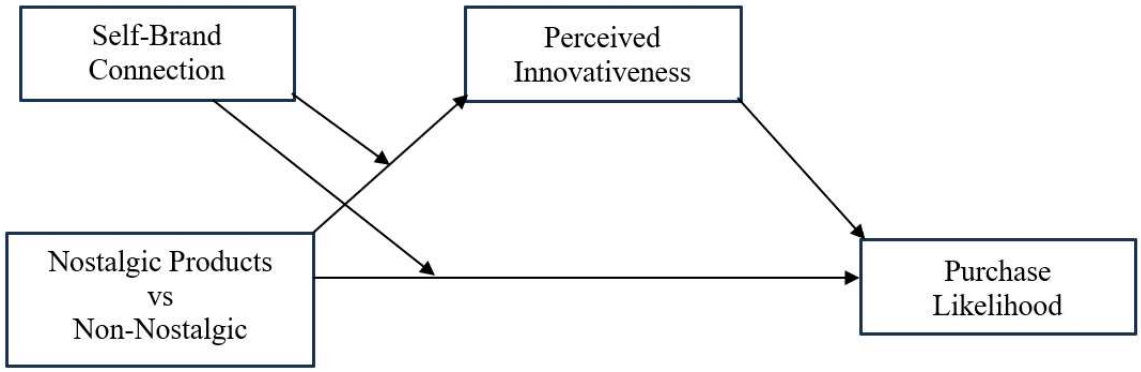

Figure 1: Conceptual Framework

CHAPTER 3: METHODOLOGY

This chapter presents an in-depth outline of the methodology to address the research questions and hypothesis, whilst properly describing underlying reasons that support procedures and techniques choice.

3.1 Research Approach

To select a suitable approach, objective evidence from previous research laid the groundwork. Theoretically, this work may be regarded as prominently exploratory, as it aims to shed light on potential links and follows a growing body of research that interprets nostalgia and self-brand connections as powerful and leverageable marketing tools. Acknowledging such premise, a framework representing potential relationships, with constructs from different fields, was designed to promote hypothesis testing, targeting more specifically product evoked nostalgia. Although one may commonly see its role being referenced and emphasized in existing literature, it lacks statistical support, and is typically built on qualitative inferences. Thus, a mixed methods typology (Creswell, 2009) was adopted, with the sequential use of both qualitative and quantitative procedures.

3.2 Data Sources

Although not substantial, secondary data was obtained through the access of online newspapers with themes pertaining to the nostalgia spectrum. Such retrieval assisted in establishing and framing a comprehensive approach to the methodology, in a preliminary phase. Afterward, primary data, qualitative and quantitative, was collected to satisfy research endeavors and properly test the hypothesis formulated earlier.

3.3 Data Collection

Based on the broader spectrum of this research, all individuals that are contacted with the product, in its lifecycle, are representative of the population of interest. Although the latter is true, the present investigation, grounded on affective consumption and joint development of a self-brand connection on one´s youth, aims to examine a specific sub-group of the population.

To test the connections formulated earlier, the *timed-dated stimuli* method (Holbrook & Schindler, 1996) served as a strong foundation. Instead of selecting products limited to a narrow time frame, secondary data was assessed to identify decades recognized for eliciting an abundance of nostalgia, while marking the decline of some brands and their offers. The 80´s

and 90´s are commonly seen as prominently associated with it (Joana Marques, 2017; Marta Vicente, 2018; Rita Coelho, 2018) , emerging, thus, as an appropriate option. Furthermore, such temporal distance posed a stronger test to consumer-brand connections, serving best the proposal of this research and the questions formulated earlier.

In initial qualitative data collection, a purposive homogeneous sample was used, conventionally applicable to the nature of such method (Etikan et al., 2016). Although this study is not directly related to the "age preference" peak research of Holbrook & Schindler (1989, 1994, 1996), the insights provided highlighting youth and adolescence, assisted in defining an age criterion for the choice of participants and subsequent use in other procedures. Weighting concerns regarding availability and pre-disposal, qualitative information was collected from individuals between 40 and 55 years old. This age interval was maintained for all remaining quantitative techniques to ensure reliability. Although moderately subjective, it was based on the following rationale. By selecting 1995, for example, the upper boundary of the sample was 27, and the lower boundary was 12. Yet, in 1990, this age cohort ranged from 7 to 22. As the stimuli were not of a narrow life cycle (i.e., opposed to movie releases), it was difficult to pinpoint possible periods of increased relevance, making this variability essential.

Notwithstanding the key role of probability sampling techniques for generalization and drawing population inferences on quantitative methods, they required the allocation of more resources, which was prohibitive. Still, for this scenario, researchers argue that greater demographic homogeneity in convenience samples and, per consequence, a narrower sampling frame yields "clearer generalization" and reduced bias when contrasted to totally heterogeneous ones (Jager et al., 2017).

3.4 Stimuli Development

Several procedures were implemented to develop and validate the stimuli to be presented in the main study. Initially, a focus group (see Appendix 1) was developed to identify common products as nostalgic and infer a consensual, unbiased, category. Although prior research has unveiled, based on the aggregation of individual interviews, a list of tangible product categories (i.e., clothes, books, jewelry) that lie within this spectrum (Holak & Havlena, 1992), there may be differences depending on cultural context and values which one experiences. Participants (N=6), in an informal setting, were encouraged to recall and speak about a nostalgic moment.

As the conversation progressed, and building upon items addressed in their narratives, they were proposed to discuss over salient branded products of their youth. They were intentionally guided towards brands that declined or disappeared from the market, to isolate the development of self-brand connections to a past period. The latter resulted in the selection of the beverages category, and a list of products was gathered for subsequent use - *Green Sands*, *KAS Laranja*, *Rical*, and *Frutol*.

Following this selection, an online survey was designed to select the product representing the nostalgia stimuli, ensuring breadth from a larger sample (see Appendix 2). With access to randomization, respondents were assigned to one of the products and were presented, post-observation, with the Evoked Nostalgia Scale – NOST (Pascal et al., 2002). The NOST structure aligned with research objectives by targeting the nostalgic feelings evoked, whilst presenting significant unidimensionality and reliability (α between .90 and .96). Each of the ten items was measured on a 7-point Likert scale – from (1) strongly disagree to (7) strongly agree. To prevent inability errors, respondents unfamiliar with the product exhibited were advised to mark neutral in each of the items. As a consequence, data from 65 respondents (*M*= 46.93, M= 17, F= 48) was deemed valid, as the remaining were excluded for missing completion, not recognizing the product, or failing the age screening.

Data collected was treated as Likert scale data, since the objective was to compare the composite scores (Boone Jr & Boone, 2012) and proceed with the one that evoked, overall, the most nostalgia. Frutol was ultimately chosen, and the results can be seen in Table 1.

	N	Minimum	Maximum	Mean	Std. Deviation
Kas	12	3.10	6.20	5.3750	.93140
Green Sands	15	1.00	5.70	3.8867	1.45498
Rical	22	1.00	6.80	4.7455	1.77730
Frutol	16	3.20	7.00	5.5500	1.03021

Table 1: Evoked Nostalgia Means of Pre-Survey

The third stage consisted of developing a contemporary version of Frutol´s product. Such was done to provide, beyond theoretical contributions, possible recommendations for practitioners. An AI image generator by Canva® was prompted with keywords. The image was later modified with Adobe Photoshop ®, to allow identification and limit differential attributes. For the control

group, a private label brand was chosen to act as non-nostalgic, since many existing beverage brands were also prominent in the past. The outcome is presented in Figure 2.

Retro Revival **Symbolic Relaunch** **Control**

Figure 2: Stimuli and Control

Finally, a set of individual interviews was conducted to serve as confirmation. After being incentivized to comment on the images, it was verified the existence of a tendency for both original and updated Frutol products to trigger nostalgic narratives, as opposed to Continente.

3.5 Measurements and Procedures

Participants in the online survey (see Appendix 3) were subjected to the following procedure. Immediately after being randomly assigned to one of the stimuli or control, respondents were proposed to rate their self-brand connection on a 7-item, 7-point Likert scale. Although it was reasonable to measure it beforehand by presenting the brand`s logo, the products itself were considered to serve as a stronger prompt for autobiographical retrieval and essential for disclosing the self-brand connection. Also, concerns that the brand may not be as salient in memory, due to temporal distance, influenced the decision. All SBC (Escalas, 1996) items (i.e., "Brand X reflects who I am", "Brand X suits me well") were anchored on (1) Not at All and (7) Extremely Well. The scale is similar to the extended-self one (Sivadas & Machleit, 1994), presenting a high correlation (Escalas, 2004), supporting, thus, the line of discussion presented earlier in the literature review. After indicating their level of compliance with the previous statements, participants were tasked with assessing the perceived innovativeness of the product they visualized. For the effect, the construct was measured with three items from J. J. Kim et al. (2021), which resulted in an adjustment from (Fu & Elliott, 2013) and (Watchravesringkan et al., 2010). The statements "X seems unique", "X seems new" and "X seems creative",

evaluated on a 7-point Likert scale from (1) strongly disagree to (7) strongly agree, were judged as comprehensible for the subjects and reflective of the desired approach to the construct. Afterward, Juster's (1966) purchase likelihood construct measurement was displayed, which is suggested to have higher predictive capability than purchase intention scales (Seymour et al., 1994).

Prior to the manipulation question and end of the questionnaire, participants of the main study also reported the degree of nostalgia that the product evoked. The NOST was purposely placed at the end for a set of reasons. Firstly, it enabled dismissing individuals for whom the stimuli were unknown, while confirming that the control would not trigger significant levels of nostalgia. Secondly, it allowed us to verify if a high self-brand connection is related to increased product-evoked nostalgia. Lastly, it aimed to replicate a tangible instance in which subjects are explicitly unaware that nostalgia is being induced. The survey ended with a multiple-choice question regarding the brand subjects saw, ensuring that responses were accordingly.

All Cronbach α values of the scales utilized may be visualized in Table 2.

Framework	Measure	Items	Scale	Reference	Cronbach α
I.V	Nostalgia	Stimuli	*na*	*na*	*na*
Moderator	Self-Brand Connection	7	7-point Likert Scale	Escalas (1996)	0.95
Mediator	Perceived Innovativeness	3	7-point Likert Scale	Kim J. J., Kim I., Hwang J. (2021)	0.935
D.V	Purchase Likelihood	1	7-point Likert Scale	Juster (1966)	*na*
-	Evoked Nostalgia	10	7-point Likert Scale	Pascal, V. J., Sprott, D. E., Muehling, D. D. (2002)	0.90

Table 2: Operational Model

3.6 Data Analysis

Regarding the data analysis, all quantitative data was analyzed using SPSS v.28.0.0. For mediation and moderation purposes, Hayes Process Macro extension was the statistical program elected, as it applies conditional processing for simultaneous analysis and uses bootstrapping techniques to provide robust confidence intervals (Hayes, 2013).

The full model represents a plausible scenario of moderated mediation, with moderator influence on both direct and indirect paths. It is commonly referenced as model 8, and its statistical diagram may be seen in Figure 5.

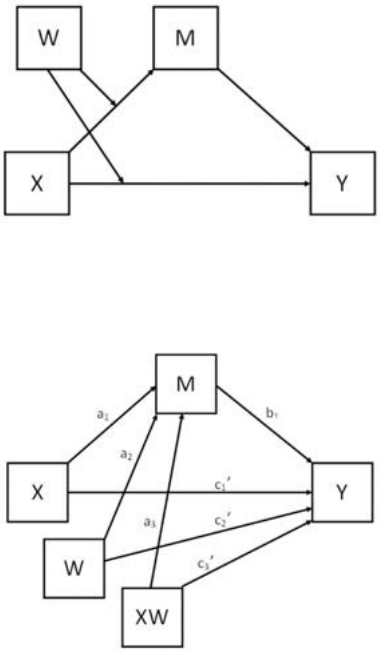

Figure 3: Hayes´ PROCESS Macro Model 8

CHAPTER 4: RESULTS AND DISCUSSION

The present chapter includes all relevant analysis of the quantitative data collected. It commences with the characterization of the sample and is followed by essential verifications such as scale reliability and multicollinearity. Afterward, the hypotheses are tested, and additional research of interest is conducted.

4.1. Sample Characterization

Prior to any type of handling, 234 total responses were obtained. As stated previously in the methodology, besides removing any respondents who did not conclude the questionnaire or failed the manipulation question, individuals unfamiliar with the brands presented were also removed from the sample. The latter resulted in the removal of 28 cases, which added to 81 incomplete responses and 17 entries that did not comply with the previously delineated age criteria. If unfamiliarity may be related to external factors such as geography, non-conclusion is plausibly explained by the necessary survey length to retrieve the data.

Between compliance with other necessary criteria, 93 responses were deemed valid and included for the analysis. Furthermore, no demographics besides age and gender were considered relevant for the study, resulting in a straightforward characterization of the sample (see Table 3). This aligns with the nature of the research and previous work pertaining to nostalgia, which tends to classify both factors as the most influential ones (Schindler & Holbrook, 2003).

		Retro Revival	Symbolic Relaunch	Non-Nostalgic	Total
Respondents	Per Stimulus	30	31	32	93
Gender	Male	30,0%	48,4%	37,5%	38,7%
	Female	70,0%	51,6%	62,5%	61,3%

Table 3: Sample Characterization

4.2 Scale Reliability

Although there were previous indicators from the literature emphasizing reliability, it was still pivotal to test the internal consistency of the scales, as one should not rely on previous estimates (Tavakol & Dennick, 2011).

Mistakenly, one item of the SBC (Escalas, 1996) was omitted in the group that was not subjected to experimental treatment, resulting in a non-response condition. Whilst acknowledging the existence of multiple imputation techniques that presumably counter its effects, there are still conflicting positions in the literature. Thus, it was opted to conserve only data that was complete thorough all observations, taking into consideration the maintenance of high reliability values and low sensitivity to the omission of the item (see Table 4).

Contextualizing within the traditional classification, Cronbach's α are categorized as "good" if > 0.8 and "excellent" if > 0.9 (George & Mallery, 1999). For most executed tests, values surpassed the referred thresholds, a sign that they were successfully measuring the same concept. Also, it is worth noting that there were no items reverse coded or "negative" statements requiring the use of additional procedures. The constructs were then created by attributing equal weight to each item using the mean function.

		Number of items	Cronbach α
Retro Revival	SBC	6	[a]0.974
	Perceived Innovativeness	3	0.922
	NOST	10	0.966
Symbolic Relaunch	SBC	6	[b]0.930
	Perceived Innovativeness	3	0.790
	NOST	10	0.969
Non-Nostalgic	SBC	6	0.893
	Perceived Innovativeness	3	0.838
	NOST	10	0.957

[a] The 7-item Cronbach α was 0.975. [b] Analogously, the Cronbach α was 0.94

Table 4: Cronbach Alpha Values

4.3 Outlier and Multicollinearity Analysis

To verify if there were significant multivariate outliers in the data set that could have influenced the outcome of results, a Mahalanobis distance was initially calculated for each group of observations. Subsequently, a probability variable was computed, with the same degrees of freedom for the chi-square distribution as the number of predictors (3) introduced first. The values were analyzed for $p < .01$, resulting in no detection of outliers. For multicollinearity, a

linear regression was run for purchase likelihood as the outcome variable, resulting in all predictors with tolerance values above one and VIF below ten.

4.4 Manipulation Check

To assess the manipulation, a dummy variable representing the control group was created, resulting in the subsequent aggregation of all nostalgia levels of those exposed to the stimulus.

In order to evaluate its success, a Welch´s t-test was performed. This was mainly due to the null hypothesis of equal variances for the independent samples t-test being rejected (p = 0,043, 95% CI), representing a violation of the required assumptions. Indeed, the results of this robust test indicate that those exposed to the nostalgic stimuli display a higher level of evoked nostalgia (M = 4.48, SD =1.67) in comparison to the control group (M =3.55, SD = 1.27), t (79.07) = 2.99, p = .004. As such, it is possible to assume that the manipulation was implemented effectively.

4.5 Coding Scheme and Moderator Dichotomization

For the majority of hypothesis testing, a dummy variable "NP" (X) was created, with a level grouping both nostalgic stimuli (=1), having the control setting as baseline (=0).

Still, to achieve a deeper understanding of the relationships, a multicategorical I.V named "ProductD" was formed (see Table 5), allowing for individual comparisons between the stimuli and control group.

	X1	X2
Non-Nostalgic (0)	0	0
Symbolic Relaunch (1)	1.00	0.00
Retro Revival (2)	0.00	1.00

Table 5: Coding Scheme for Multicategorical IV

Regarding the moderator, a decision between maintaining the integrity of continuous data or collapsing it into two levels for regression analysis was required. After thoughtful consideration, it was decided to dichotomize it, and the variable "SBC_HL" (0=Low; 1 = High) was formed. Beyond interpretability purposes, such was done to counteract the skewness displayed in the lower tail of the variable distribution, while acknowledging the literature`s

evidence of the potential existence of high (i.e., those who incorporated the brand in the self) and low settings of the relationship. This argument is within the frame of those provided by MacCallum et al. (2002).

Thus, a mean split was performed for SBC (M = 2.6971). The sample was divided into those who do not have any type of self-brand connection or display extremely low levels of it (Mean_SBC <= 2.6971) and those who exhibit a greater degree or have incorporated the brand into their self-concept (Mean_SBC > 2.6971).

4.6 Hypothesis Testing

4.6.1 Hypothesis 1

H1: Despite brand failure, products that evoke high levels of nostalgia will be accompanied by a strong self-brand connection.

In essence, it was pretended to verify if there was a linear relationship between the level of nostalgia evoked and the degree of self-brand connection, whilst identifying its magnitude. To do so, the Pearson correlation test is often the standard test to be employed. However, although SBC and Evoked Nostalgia were measured at the interval ratio and approximate normality could have been claimed per the central limit theorem, there was a univariate outlier to which the test is known to be sensible (Schober et al., 2018).

Thus, the Kendall´s Tau, a more conservative measure, was utilized. The results indicate that, for both nostalgic conditions, there is a similar, significant and positive relationship – $\tau = .499$, $p < 0.001$ and $\tau = .447$; $p < 0.01$, respectively. A regression analysis was also run to support the latter, which indicates that the level of nostalgia evoked per the product is significant in predicting the level of self-brand connection. Results indicate that a one unit increase in nostalgia results in a .610 significant (p <.001) increase in the outcome variable.

However, although there is a moderate correlation strength (Dancey & Reidy, 2007) and evoked nostalgia is a significant predictor, a visual inspection of the scatter plots (see Appendix 3 and 4) dismiss complete validation of the hypothesis. Despite the existence of a statistical pattern, it was intermittently noted that subjects with high nostalgia did not express any degree of self-brand connection. Furthermore, the R-Square statistic also offers the perspective that other factors come into play, as the level of nostalgia only explains 34.7% of the variance in self-

brand connection. This scenario likely reflects individualized differences in experiences with the brand in the past, as it is not possible to assume total dependency.

Hence, H1 is not totally supported.

4.6.2 Hypothesis 2

H2: *Self-brand connection moderates the relationship between nostalgia evoking products and perceived innovativeness.*

To determine the validity of H2, Hayes Process Macro Model 1, was employed. First, an output was produced for the nostalgic stimulus aggregated, and thus, the variable "NP" was used (see Appendix 5). The model obtained is significant (p <.001) and explains 21.15% (R-Square) of the variance in perceived innovativeness.

On to the predictors, one may see that there is no significant difference between being a nostalgia evoking product and the opposite ($a1$= -.0999, p > .05), indicating that nostalgia is not a sufficient condition for increased evaluations. Furthermore, solely exhibiting a high self-brand connection appears also to not be predictive of perceived innovativeness, as the p-value is beyond the .05 range ($a2$= .6649). Regarding the interaction term ($a3$= 1.1163), it is nearing the boundary of significance, although it is not possible to claim the existence of moderation. By analyzing the conditional effects provided, one may see that in a low SBC setting (SBC=0), despite the negative value of .0999, this mean difference is not significant (p >.05). On the contrary, when SBC is high for both stimuli and control, there is a significant mean increase over the latter of 1.0165 (p < .05, 95% CI [1.1127, 1.9203]). Overall, in this condition, the mean PI is 4.6092 when nostalgia is evoked and 3.5928 when it is absent.

As a consequence, a possible moderation effect was further analyzed using the multicategorical variable. This time, the model (see Appendix 6) accounts for an increased 43,08% of the variance in the mediator (p < .001). Noticeably, there are significant relationships worth emphasizing for X1. Opposed to X2, it may be observed that this product is intrinsically perceived as less innovative ($a1$ = -1,4993, p < .01, 95% CI [-2.4570, -5416]) when the level of SBC is low (=0). However, when interacting with self-brand connection, it obtains a 2.0930 increase in evaluations when compared to the non-nostalgic condition. Such suggests a plausible defensive behavior of those with a high self-brand connection, as one would naturally disregard the possibility of the original product being associated with novelty (Mean_PI =

4.1865, SBC = 1). Moreover, at this level, there is a positive conditional effect of .5937. However, contrarily to the updated product (X2 = 1.8150, $p < .001$), it is not possible to assume significance since the p-value surpasses the .05 threshold.

This moderation effect may be visualized in Figure 4, and the visual representation of coefficients for the output in Figure 5.

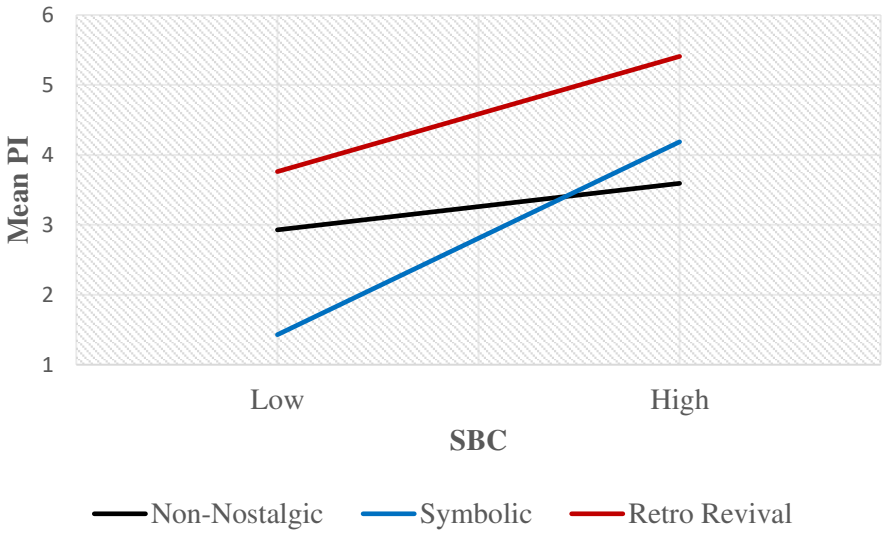

Figure 4: Multiple Line Chart of SBC Impact on Mean PI

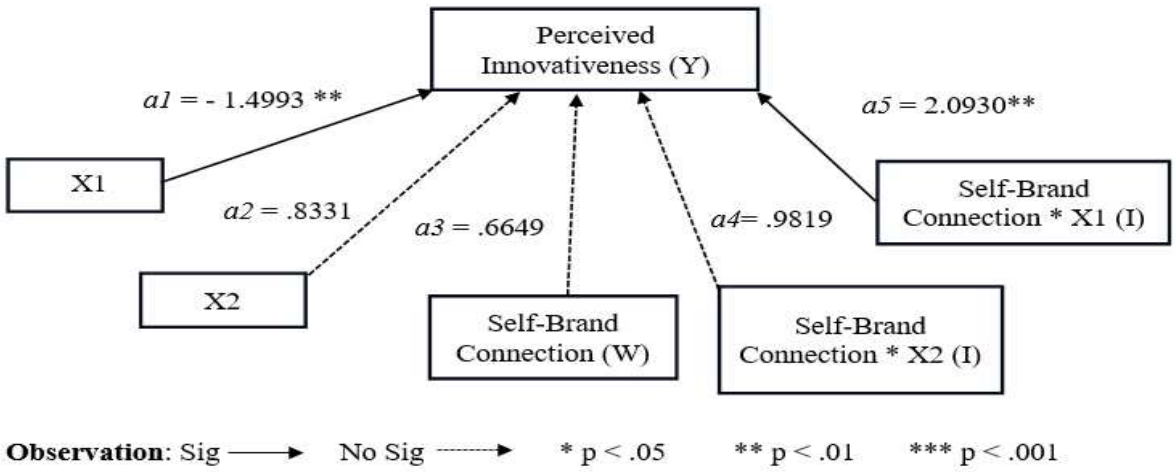

Figure 5: Moderation Analysis X -> PI

Hence, H2 is partially supported.

4.6.3 Hypothesis 3

H3: Self-Brand Connection moderates the relationship between Nostalgic Products and Purchase Likelihood

The same methodology was employed to test H3, commencing, thus, with the analysis of the nostalgic levels jointly (see Appendix 7). Overall, the model is statistically significant in predicting purchase likelihood (R-square = 32,54%, $p < .001$).

Regarding purchase likelihood, one may see that nostalgia evoking products are associated with a negative .5571 variation. However, this difference is not significant as indicated by the p-value of .2239. In line with the previous model, a high self-brand connection, by itself, does not predict a greater likelihood of purchase, as the coefficient associated (*a2* = .7302) is not significant. Despite that, there is now evidence for the moderation effect of self-brand connection on purchase likelihood for nostalgic products. This is reflected by the significant interaction term of 1.6512 ($p < .05$, 95% CI [.3922, 2.9101]), which indicates a positive variation over the control group when switching from a low to high self-brand connection setting. The conditional effect provided for high SBC demonstrates a significant mean difference in purchase likelihood of 1.0940 ($p < .05$, 95% CI [.2176, 1.9704], at this level. Hence, the mean purchase likelihood is slightly above the "likely to buy" range (Mean_PL = 5.0385), in a nostalgic context, compared to "undecided" (Mean_PL= 3.9444) for the control.

A summary of the relationships may be visualized in Figure 8.

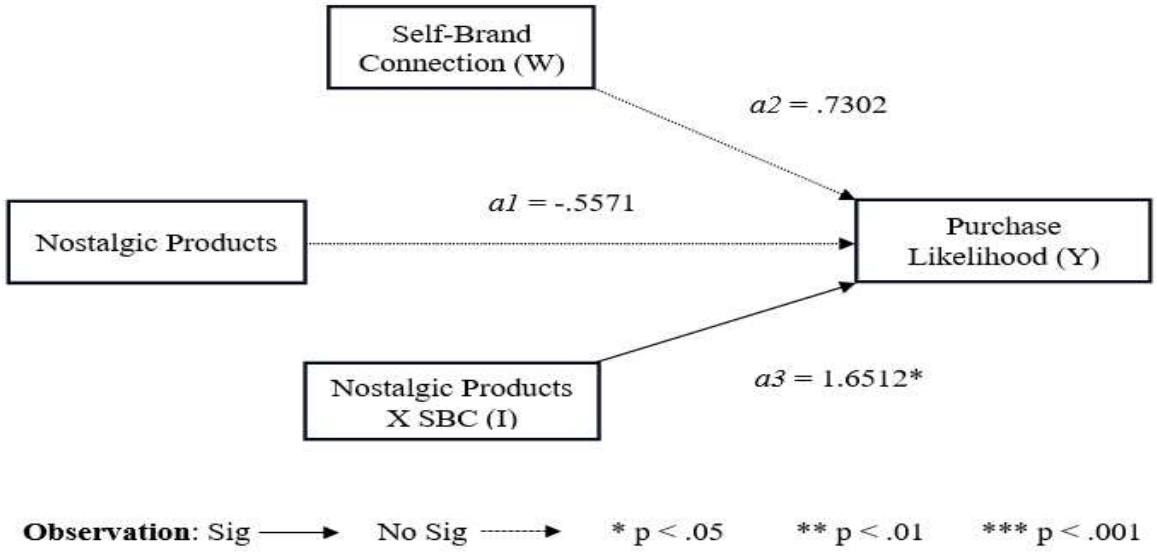

Figure 6: Moderation Analysis X -> PL

When separately analyzing the relationships, a significant model with similar predictive capabilities (R-Squared = 33.92%) was attained (See Appendix 8).

Consistent with the inferred earlier, both stimuli have a decreased likelihood of purchase when a self-brand connection is nonexistent or low (X1= -.5000, X2= -.5952). Still, this difference is not significant as shown by the test of equality of conditional means – F (2,87) = .7669, p = .4676. For X2, this shows, that despite being naturally perceived with higher novelty in this situation, its appeal is not reflected in the PL. However, the moderation effect demonstrates a highly significant 2.2063 increment (p < .01, 95% CI [.6765, 3.7362]) in the likelihood of purchase, with respect to the baseline level. Notwithstanding the previous evidence that allows the general claim of moderation for nostalgia evoking products, the p-value for the interaction term of X1 is slightly above the .05 threshold (p = .0741). Still, there is an evident trend in the data, illustrated by the slopes presented in Figure 7. By further analyzing the conditional means at high SBC levels, the test posits that they are, indeed, different – F (2,87) = 3.9573, p = .0227. This highlights the mean PL for the updated product (Mean_PL = 5.5556), which falls within the "likely" to "very likely" to buy interval.

Post hoc tests, specifically pairwise comparisons, conducted afterward confirmed that only mean PL for X2 is different from control (p = .007), as X1 is slightly above the significance range (p = .096). Still, there is no difference between means of the nostalgic levels (p = .186).

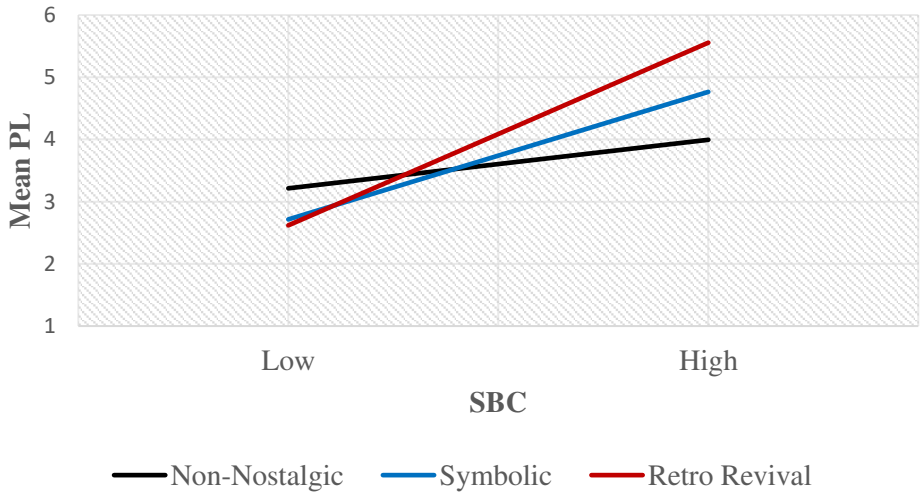

Figure 7: Multiple Line Chart of SBC Impact on Mean PL

H3 is, thus, validated.

4.6.4 Hypothesis 4

H4: Moderated Mediation will occur for Nostalgia Evoking Products.

On the last hypothesis, it was assumed that the indirect path, through the influence of affect in evaluations, would prevail. To analyze this possibility, the full model (8) was tested (See Appendix 9). The multi-categorical variable was used, as it was earlier verified that there is no moderation effect for the combined influence of nostalgic products on perceived innovativeness. Furthermore, as the model reporting this impact was already discussed in H2, reporting is reserved for the PL model, now comprising the impact of the mediator. This model ($p < .001$) now has an R-Square of 43.05%.

By analyzing the output, one may see that, holding everything else constant, a one unit increase in PI yields a positive .4198 variation in the PL ($p < .001$, 95% CI [.1950, 6446]). For X2, it is still observed moderation of the direct path, due to the significant value of 1.7942 ($p < .05$, 95% CI [.3485, 3.2399]). This is reflected by a significant decrease of .9499 in PL when SBC is low ($p < .05$, 95% CI [-1.8860, -.0039]) and an increase of .8492 at high levels, despite non-significant ($p > .05$) . These are both over the control, represented only by the conditional direct effects. Worth emphasizing, is the fact that the disparity in PL reported, when SBC is high, is accounted per a substantial transfer of .7619 (95% CI [.2714, 1.3419]) through PI when compared to the non-nostalgic product. Regarding moderated mediation for this stimulus, it is not possible to assume such, as the bootstrapping interval includes 0 and the index value is not significant (.4122). However, for the original product (X1), the premise of moderated mediation was verified, as reported per the difference in conditional indirect effects of .8786 and bootstrapping interval (95% CI [.3347, 1.5425]). When the level of SBC is low, a significant -.6294 is transferred through the mediator to purchase likelihood (95% CI [-1.0568, -2.2735]). When it is high, the effect is positive (.2492) when compared to the control, although not significant.

The relative effects are summarized in Table 6, and a visual representation may be seen in Figure 8.

Predictor	SBC_HL	CDE	CIE	TE	Index
X1	Low	.1294	**-.6294***	- .5	**.8786**
	High	.5710	.2492	.8202	
X2	Low	**- .9499***	.3497	-.6002	.4122
	High	.8492	**.7619***	1.6111	

Observation: * p < .05 ** p < .01 *** p < .001

Table 6: Relative Effects on PL and Index of Moderated Mediation

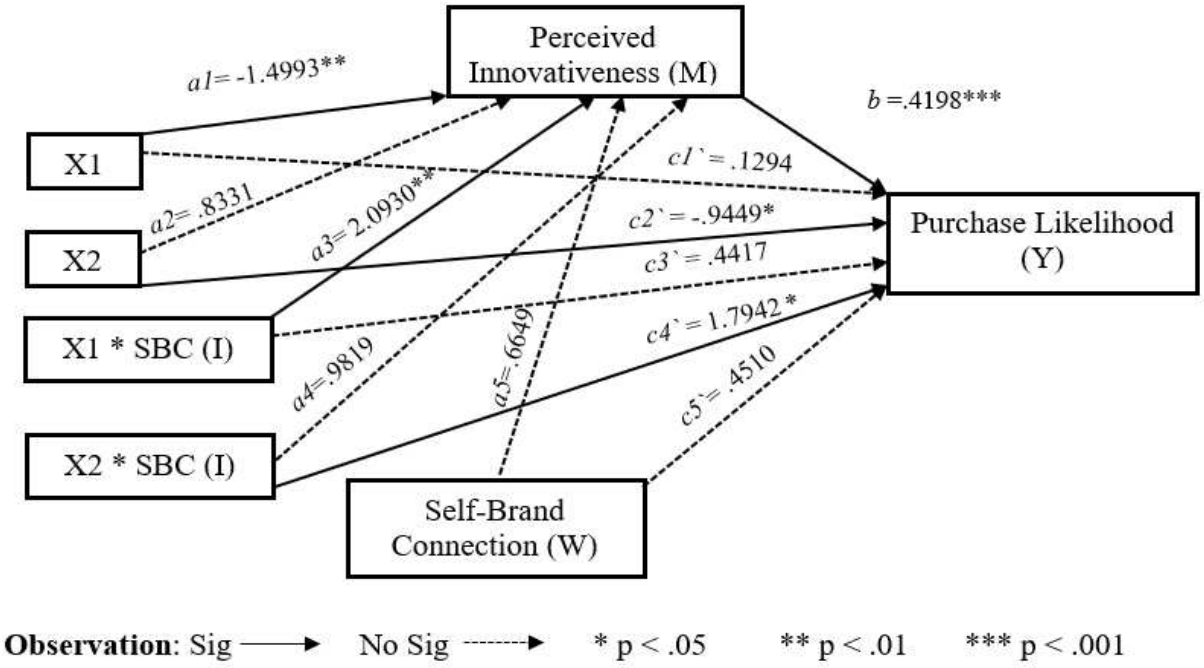

Figure 8: Full Model Test

As moderated mediation occurs only for one of the stimuli, H4 is partially accepted.

4.7 Further Research

In this section, the aim was to complement the analysis by exploring possible gender differences, while providing a model with higher explanatory power. The framework employed, process model 12, is distinguishable by the presence of conditional moderated mediation (See Appendix 10). In this sense, gender was included as a possible variable influencing the moderation of SBC for both direct and indirect paths.

The results obtained suggest that females, unlike males, exhibit a consistent attitudinal pattern when addressing nostalgia evoking products. For the PI model (R-Square = 52.55%, $p < .001$), the conditional interaction test between gender and SBC is highly significant for females ($F(2,81) = 4.9707$, $p = .0000$), which is not the case for males. This is also highlighted by the two-way interaction terms of SBC and Gender (β= -2.3889, $p < .05$, 95% CI [-4.3185, -.4592]), X1, SBC and Gender (β= 4.1092, $p < .01$, 95% CI [1.4797, 6.7383]) and the latter for X2 (β= 2.8468, $p < .05$, 95% CI [.0490, 5.64459]). As for the conditional effects, one could only claim that, for males, perceived innovativeness is different from the control when SBC is low. Contrarily, for females, all effects are significant ($p < .001$), except the latter. Thus, the moderation of SBC is particularly influenced by females.

Regarding the model for PL (R-Square = 46.79%, $p < .001$), it is now observed that PI is the only significant predictor (β = .4540, $p < .001$, 95% CI [.2070, .7010]). Such indicates that the effect on PL is only significantly channeled through PI, with no conditional moderation of the direct path or direct effects worth mentioning. Additionally, it is possible to add depth to the previous finding of moderated mediation for X1. In the case of females, there are significant indirect effects both when SBC is low and high. For the first scenario, lower evaluations lead to a transfer of -.8480 (95% CI [-1.4629, -.3927]) in comparison to the control. Oppositely, a high SBC leads to a bias of novelty evaluations for the original product, resulting in a transfer of an increased .9452 (95% CI [.2679, 1.8573]) to PL. Consequently, a substantial index of moderated moderated mediation of 1.7932 (95% CI [.8150, 3.1665]) is verified for females. As for X2, the updated product, which did not contemplate moderated mediation earlier, a similar scenario emerges. Although less substantial, the index of .8956 (95% CI [.1409, 1.9388]) corroborates the existence of conditional moderated mediation for females. While there is no significant conditional indirect effect in a low SBC setting, a transfer of 1.1002 (95% CI [.4147, .20839]) to PL occurs when SBC is high.

CHAPTER 5: CONCLUSIONS AND LIMITATIONS

5.1 Main Findings & Conclusions

The major objectives of this thesis were to shed light on the role of self-brand connections developed in one´s past while establishing possible boundaries for the isolated influence of nostalgia on behavior and attitudes. The affect derived from the latter was also posited as a key transferable element that would help explain the common phenomena of consumer enchantment for products representative of their youth.

With RQ1, the aim was to start examining the existence of a possible relationship between the existing levels of self-brand connection and the degree of nostalgia evoked. The results confirm, first, the notion that this type of bond is likely to persist through time (S. Fournier, 1998; Kleine et al., 1995) due to its relevance in self-construction (Reed II & Forehand, 2019), and second, that they may be elicited when primed visually. As the level of nostalgia evoked increases, a simultaneous, significant increment in the level of self-brand connection is expected. Despite that, it appears this is not a two-way relationship and neither mutually exclusive. While high self-brand connections were expected to be associated with highly nostalgic conditions, the sample had subjects that scored high on the latter and did not report the slightest link to the brand. Thus, a logical and cautious conclusion resides in admitting that, regardless of the tendency, product evoked nostalgia is not always associated with a self-brand connection, including the upper levels. To retain, it is important to note that some consumers still admit a reflection of their selves, regardless of the lengthy timespan that has gone by and the decrease in equity.

The following research question, RQ2, intended to determine whether the nostalgic nature of the product was sufficient to enhance evaluations and purchase likelihood, while exploring the direct impact of low and high self-brand connections. The findings are generally supportive of the importance of brands as partners in a self-defining period, especially when a strong bond is carved. When addressing novelty, consumers do not score higher products evoking nostalgia. Rather, they evaluate the original product significantly lower, likely seeing it as dated, and the updated version, despite the efforts for it to have greater appeal, is not perceived differently from a neutral one. However, when the brand is seen as moderately or totally intrinsic to the self-concept, evaluations become substantially higher. This transition is especially valid for the original product, leading to a moderating effect and paradoxical circumstance. Concerning the

likelihood of performing a purchase, it is possible to assume that the degree of self-brand connection moderates the general influence of products associated with nostalgia. Such occurs in a way that no significant difference is observed when the level is low, as opposed to a high setting. Hence, both pure nostalgic reflection and longing for the past may well not be enough to positively affect attitudes and behavior, substantiating the premise that affect would only be transferred when the self is deeply involved (Sujan et al., 1993). Most importantly, there is preliminary evidence to support the differential nature of high self-brand connections discussed earlier. That is to say, those formed when one was young (when the self is being framed) vs. those formed later in life.

The ultimate research question (RQ3) pursued a theoretical explanation for uncovering the mechanism through consumers feel compelled by the products` nostalgic nature. The initial results, considering the whole sample, provided miscellaneous evidence. When the level of self-brand connection is low, the likelihood of purchase is negatively influenced through different mechanisms. The contemporary version, despite similar evaluations to a non-nostalgic product, exhibits a significant and negative direct effect, a likely indicator of consumers` perception that the brand´s time has passed. Alternatively, lower appraisals for the original product are effectively channeled to the odds of performing a purchase, as verified per the indirect effect. This scenario shifts when the connection becomes deeper. While increased views of novelty are relevant to a superior likelihood of purchase for the altered relaunch, no significant effect (although both positive) was found relating to the original product. Despite that, the presence of moderated mediation suggests that consumers deeply connected to the brand defend it by favoring and biasing evaluations, as seen per the difference of effect transferred. Additionally, women appear to emphasize the disparity of transitioning between low and high connections on evaluations, while acting according to Petty et al. (1986) framework for both nostalgic levels. This entails forming a greater perception of innovativeness for nostalgic products, and having this attitude mediating the likelihood of purchase.

5.2 Academic / Managerial Implications

The present research offers valuable insights into academia. To the best of my knowledge, it is the first to propose that self-brand connections are more impactful when developed under the self-construction period, bridging social identity theory (Tajfel, 1974; Tajfel et al., 1979) and psychology literature. Most specifically, based on the salience of the social dimension and transfer of affect, it empirically demonstrates that consumers tend to favor or defend products

that remind them of their youth, but only when the connection is strong enough. Subtly, a contribution is also made to an emerging categorization of self-brand connections. The findings meet Escalas et al. (2019) recent acknowledgement of an experiential nature of some connections, as opposed to symbolic, and emphasize its theorized importance of being linked to past moments, which in turn are integral to our identity.

For firms and marketeers, this research suggests the possibility of investing in old brands, as there are audiences who still have the brand deeply ingrained in their self-concept. It may well be hard to directly target those who grew close to it. Thus, advertising should not only contemplate a nostalgic aura, but, when possible, include a message tailored to emphasize both the feeling of belonging to a particular generation and brand partnership within that transforming period. These self-referencing appeals will likely relate to a set of consumers but may also heighten the identification of those who did not establish such a strong bond. A concrete strategy to achieve the latter could reside in communicating in the form of a narrative, as prior research has demonstrated that stories resonating with consumers´ lives increase the chances of the brand being perceived closer to the self (Escalas, 2004). Simultaneously, attention is raised to the importance of brands to establish an active presence during consumers´ youth. This way, they will later benefit from nostalgic status and, above all, a leverageable lifelong connection.

5.3 Limitations and Further Research

Due to the nature of the research, there are several limitations that must be acknowledged and discussed. To limit the development of self-brand connections to a past period, the span of eligible brands was limited. In turn, it is arguable that there would be brands and products evoking a greater degree of nostalgia. This is also true for the category selected. For example, fashion and apparel were dismissed to limit confounding variables and possible barriers to behavior, ensuring internal validity. This conjecture led to a reduced sample size, as people who did not recall the brand were excluded, and it was difficult to present stimuli with nostalgic appeal to the entire sample. As such, it is highly recommended for this study to be replicated with an increased sample size to verify the robustness of findings.

Consistently, the need for subjects to present a high self-brand connection also added another layer of complexity. Data from the moderator was skewed towards the left, a plausible indicator that the psychological distance between points on the scale was interpreted as large for the

brands or beverage category itself. This is one of the concerns with using 7-point scales, which despite presenting higher reliability, exhibit a tendency of response towards the negative side and deviate more (Wakita et al., 2012). A mean split was performed to relax this constraint, electing a distinction between low and high conditions according to the characteristics of the sample, acknowledging that such may be suboptimal. Indeed, it may be easier for consumers to admit reflection of their self-concepts or desired selves on current status or aspirational brands in a symbolic manner (Escalas et al., 2019). However, this research focused on the elementary question "Who am I?", in brand terminology. Memories from the past are said to play a role in how one views its self-concept (Charlesworth et al., 2016). Perhaps there is greater salience in the formation of the self for brands that best fit the concept of possessions introduced by Belk (1988). Thus, further research may benefit from addressing categories of durable goods to avoid this limitation and verify if relationships hold.

Additionally, data for the main survey was collected from a convenience sample, which may compromise the external validity of the study. Despite greater age homogeneity and its benefits for generalization (Jager et al., 2017), only a probability-based selection of subjects would be truly representative of this subgroup of the population. Hence, findings should only be interpreted within this age cohort, and it is not advisable to draw conclusions solely from these preliminary insights.

Lastly, it would be worthwhile investigating the impact of self-discontinuity. This research assumed the overall maintenance of a stable identity, with a critical point for its development. Of course, transitioning moments or totally disruptive ones may persuade consumers to permanently disengage from their previous self or social persona, in order to manage their identities (Forehand et al., 2021). Nostalgic reflection is said to be restorative in such moments (Sedikides et al., 2015), but if strong enough, it may hurt the connection previously formed between the brand and self, as well as the consequent appeal of these kind of products. Retrospective longitudinal studies on this interaction or introduction of the variable in a similar model would, thus, provide a more nuanced view of relationships.

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APPENDICES

Appendix 1: Focus Group Script

Focus Group
Nostalgia and Products

Duration: 1h – 1:30
Number of Participants: 6

1. *Introduction of participants and communication of ground rules for discussion*
   (Introdução dos participantes e das regras de debate) – **5 min**

   - Active Listening
   - One at a time
   - Attaining consent for registering important information
   - Not diverging from each of the topics proposed

2. *What are pleasant moments that you recall from your childhood or youth?*
   (Que momentos felizes vêm à cabeça da infância ou juventude?) – **15 min**

   Icebreaker

3. *Which are the ones that you feel nostalgic about? Do you associate positive memories with them? How does it make you feel by thinking about it now?* – **15 min**
   (Quais fazem vos sentir nostálgicos? Associam memórias positivas com estes momentos? Como vos fazem sentir neste momento agora que pensam nelas?)

4. *Regarding the moments you have shared, what items or type of products come to mind? What are products that were always with you in that era or that you were constantly seeing in others?* – **30 min**
   (Tendo em consideração os momentos que partilharam, que objetos ou produtos vêm à cabeça? Quais eram produtos que estavam sempre com vocês nesse tempo ou que se lembram de ver em outras pessoas constantemente?)

5. *Do you have additional products that you can remind yourself of? Anything that you may want to add to the discussion?* – **10 min**
   (Alguns produtos adicionais dos quais se consigam lembrar? Pretendem adicionar alguma última ideia à discussão?)

   Post-Session Debrief: Cross-referencing information to elect a product category

Appendix 2: Pre-Survey

Qual a sua idade?

→

Observe o seguinte produto durante o tempo que considerar necessário. De seguida, avance.

One of the four products below was randomly presented to respondents

Q1: Measuring Evoked Nostalgia

De acordo com o que observou anteriormente, classifique cada uma das afirmações. Se não conhecer, selecione "Nem concordo nem discordo" para todas as afirmações.

	Discordo totalmente	Discordo	Discordo parcialmente	Nem concordo nem discordo	Concordo parcialmente	Concordo	Concordo totalmente
Lembra-me do passado	0	0	0	0	0	0	0
Ajuda-me a recordar memórias agradáveis	0	0	0	0	0	0	0
Faz-me sentir nostálgico	0	0	0	0	0	0	0
Faz-me recordar tempos anteriores	0	0	0	0	0	0	0
Faz-me pensar de quando eu era mais jovem	0	0	0	0	0	0	0
Suscita memórias profundas	0	0	0	0	0	0	0
É uma recordação agradável do passado	0	0	0	0	0	0	0
Traz de volta memórias de bons tempos do passado	0	0	0	0	0	0	0
Recorda-me dos bons velhos dias	0	0	0	0	0	0	0
Recorda-me de bons tempos do passado	0	0	0	0	0	0	0

Appendix 3: Main Survey

Qual a sua idade?

→

Observe, atentamente, a seguinte imagem de um refrigerante.

One of the three products below was randomly presented to respondents

Q1: Measuring Self-Brand Connection

Brand name on statements was substituted to "Continente" in the control setting

Classifique cada uma das seguintes afirmações

	(-3) Não de todo	(-2)	(-1)	(0) Neutro	(1)	(2)	(3) Extremamente Bem
A marca Frutol reflete quem eu sou	O	O	O	O	O	O	O
Consigo-me identificar com a marca Frutol	O	O	O	O	O	O	O
Sinto uma conexão pessoal com a marca Frutol	O	O	O	O	O	O	O
Eu uso ou poderia usar a marca Frutol para comunicar quem eu sou às outras pessoas	O	O	O	O	O	O	O
Eu acredito que a marca Frutol ajuda (ou poderia ajudar) a me tornar a pessoa que eu quero ser	O	O	O	O	O	O	O
Eu considero a marca Frutol como "parte de mim" (reflete o que eu considero ser ou a forma como gostaria de me apresentar a outros)	O	O	O	O	O	O	O
A marca Frutol assenta-me bem	O	O	O	O	O	O	O

Q2: Measuring Perceived Innovativeness

Classifique as seguintes afirmações

	Discordo totalmente	Discordo	Discordo parcialmente	Nem concordo nem discordo	Concordo parcialmente	Concordo	Concordo totalmente
O produto parece único	○	○	○	○	○	○	○
O produto parece novo	○	○	○	○	○	○	○
O produto parece creativo	○	○	○	○	○	○	○

Q3: Measuring Purchase Likelihood

No caso de estar disponível, quão provável seria você comprar este produto?

- ○ Definitivamente não comprarei
- ○ Muito improvável que compre
- ○ Provavelmente não comprarei
- ○ Neutro ou Indeciso
- ○ Provavelmente comprarei
- ○ Muito provável que compre
- ○ Definitivamente comprarei

Q4: Measuring Evoked Nostalgia (Manipulation)

De acordo com o que observou anteriormente, classifique cada uma das afirmações. Se não conhecer, selecione "Nem concordo nem discordo" para todas as afirmações.

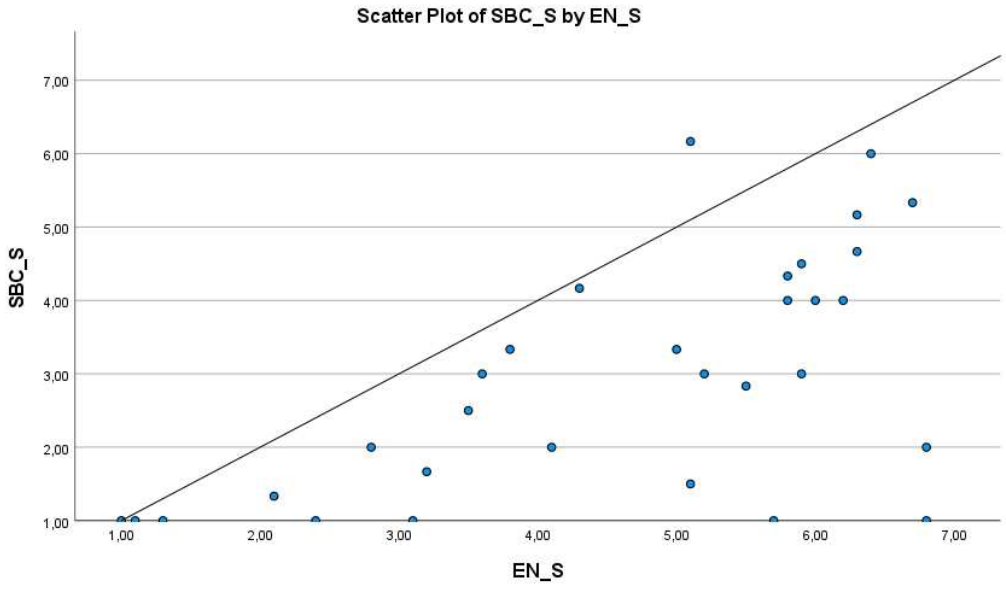
	Discordo totalmente	Discordo	Discordo parcialmente	Nem concordo nem discordo	Concordo parcialmente	Concordo	Concordo totalmente
Lembra-me do passado	○	○	○	○	○	○	○
Ajuda-me a recordar memórias agradáveis	○	○	○	○	○	○	○
Faz-me sentir nostálgico	○	○	○	○	○	○	○
Faz-me recordar tempos anteriores	○	○	○	○	○	○	○
Faz-me pensar de quando eu era mais jovem	○	○	○	○	○	○	○
Suscita memórias profundas	○	○	○	○	○	○	○
É uma recordação agradável do passado	○	○	○	○	○	○	○
Traz de volta memórias de bons tempos do passado	○	○	○	○	○	○	○
Recorda-me dos bons velhos dias	○	○	○	○	○	○	○
Recorda-me de bons tempos do passado	○	○	○	○	○	○	○

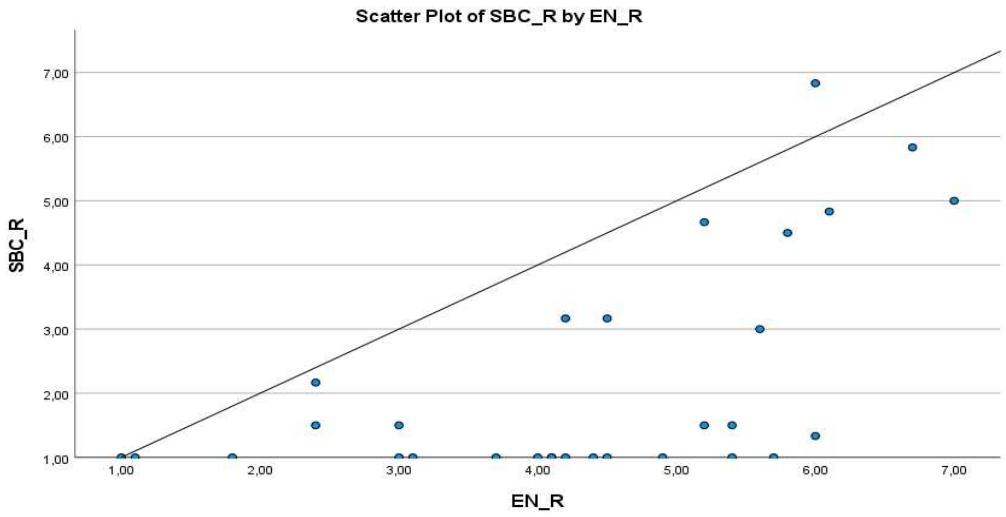
Q5: Manipulation

Qual foi a marca que viu?

- ○ Frutol
- ○ Continente
- ○ Outra

Appendix 4: Scatter Plots of Nostalgia Stimuli





Appendix 5: Moderation PROCESS Output for H2 and "NP"

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : PI
    X  : NP
    W  : SBC_HL

Sample
Size:  93

**************************************************************************
OUTCOME VARIABLE:
 PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,4598      ,2115     2,2006     7,9556     3,0000    89,0000      ,0001

Model
              coeff         se          t          p       LLCI       ULCI
constant     2,9279      ,3965     7,3848      ,0000     2,1401     3,7156
NP           -,0999      ,4691     -,2129      ,8319    -1,0320      ,8323
SBC_HL        ,6649      ,5286     1,2578      ,2117     -,3854     1,7153
Int_1        1,1163      ,6534     1,7084      ,0910     -,1820     2,4146

Product terms key:
 Int_1    :        NP       x        SBC_HL

Covariance matrix of regression parameter estimates:
           constant         NP     SBC_HL      Int_1
constant      ,1572     -,1572     -,1572      ,1572
NP           -,1572      ,2201      ,1572     -,2201
SBC_HL       -,1572      ,1572      ,2794     -,2794
Int_1         ,1572     -,2201     -,2794      ,4270

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      ,0259     2,9187     1,0000    89,0000      ,0910
----------
    Focal predict: NP       (X)
          Mod var: SBC_HL   (W)

Conditional effects of the focal predictor at values of the moderator(s):

     SBC_HL     Effect         se          t          p       LLCI       ULCI
      ,0000     -,0999      ,4691     -,2129      ,8319    -1,0320      ,8323
     1,0000     1,0165      ,4549     2,2347      ,0279      ,1127     1,9203

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   NP         SBC_HL     PI         .
BEGIN DATA.
      ,0000      ,0000     2,9279
     1,0000      ,0000     2,8280
      ,0000     1,0000     3,5928
     1,0000     1,0000     4,6092
END DATA.
```

```
GRAPH/SCATTERPLOT=
 NP       WITH     PI       BY       SBC_HL   .

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

Level of confidence for all confidence intervals in output:
  95,0000

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

------ END MATRIX -----
```

Appendix 6: Moderation PROCESS Output for H2 and "ProductD"

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : PI
    X  : ProductD
    W  : SBC_HL

Sample
Size:  93

Coding of categorical X variable for analysis:
 ProductD       X1       X2
     ,000     ,000     ,000
    1,000    1,000     ,000
    2,000     ,000    1,000

**************************************************************************
OUTCOME VARIABLE:
 PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,6563      ,4308     1,6251    13,1680     5,0000    87,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2,9279      ,3407     8,5936      ,0000     2,2507     3,6050
X1          -1,4993      ,4818    -3,1117      ,0025    -2,4570     -,5416
X2            ,8331      ,4398     1,8941      ,0615     -,0411     1,7073
SBC_HL        ,6649      ,4543     1,4637      ,1469     -,2380     1,5678
Int_1        2,0930      ,6466     3,2371      ,0017      ,8079     3,3781
Int_2         ,9819      ,6814     1,4410      ,1532     -,3725     2,3363

Product terms key:
 Int_1    :        X1       x        SBC_HL
 Int_2    :        X2       x        SBC_HL

Covariance matrix of regression parameter estimates:
           constant         X1         X2     SBC_HL      Int_1      Int_2
constant      ,1161     -,1161     -,1161     -,1161      ,1161      ,1161
X1           -,1161      ,2322      ,1161      ,1161     -,2322     -,1161
X2           -,1161      ,1161      ,1935      ,1161     -,1161     -,1935
SBC_HL       -,1161      ,1161      ,1161      ,2064     -,2064     -,2064
Int_1         ,1161     -,2322     -,1161     -,2064      ,4180      ,2064
Int_2         ,1161     -,1161     -,1935     -,2064      ,2064      ,4643
```

```
Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      ,0686     5,2431     2,0000    87,0000      ,0071
----------
    Focal predict: ProductD (X)
          Mod var: SBC_HL   (W)

Conditional effects of the focal predictor at values of the moderator(s):

Moderator value(s):
SBC_HL      ,0000

       Effect         se          t          p       LLCI       ULCI
X1    -1,4993      ,4818    -3,1117      ,0025    -2,4570     -,5416
X2      ,8331      ,4398     1,8941      ,0615     -,0411     1,7073

Test of equality of conditional means
          F        df1        df2          p
    14,0902     2,0000    87,0000      ,0000

Estimated conditional means being compared:
   ProductD         PI
      ,0000     2,9279
     1,0000     1,4286
     2,0000     3,7610
----------
Moderator value(s):
SBC_HL     1,0000

       Effect         se          t          p       LLCI       ULCI
X1      ,5937      ,4311     1,3771      ,1720     -,2632     1,4506
X2     1,8150      ,5204     3,4875      ,0008      ,7806     2,8494

Test of equality of conditional means
          F        df1        df2          p
     6,0817     2,0000    87,0000      ,0034

Estimated conditional means being compared:
   ProductD         PI
      ,0000     3,5928
     1,0000     4,1865
     2,0000     5,4078

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   ProductD   SBC_HL     PI         .
BEGIN DATA.
      ,0000      ,0000     2,9279
     1,0000      ,0000     1,4286
     2,0000      ,0000     3,7610
      ,0000     1,0000     3,5928
     1,0000     1,0000     4,1865
     2,0000     1,0000     5,4078
END DATA.
GRAPH/SCATTERPLOT=
 ProductD WITH     PI       BY       SBC_HL   .

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

Level of confidence for all confidence intervals in output:
  95,0000

NOTE: The contrast option is not available with a multicategorical X.

------ END MATRIX -----
```

Appendix 7: Moderation PROCESS Output for H3 and "NP"

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : PL
    X  : NP
    W  : SBC_HL

Sample
Size:  93

**************************************************************************
OUTCOME VARIABLE:
 PL

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,5705      ,3254     2,0691    14,3123     3,0000    89,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     3,2143      ,3844     8,3610      ,0000     2,4504     3,9782
NP           -,5571      ,4549    -1,2248      ,2239    -1,4610      ,3467
SBC_HL        ,7302      ,5126     1,4245      ,1578     -,2883     1,7487
Int_1        1,6512      ,6336     2,6060      ,0107      ,3922     2,9101

Product terms key:
 Int_1    :        NP       x        SBC_HL

Covariance matrix of regression parameter estimates:
           constant         NP     SBC_HL      Int_1
constant      ,1478     -,1478     -,1478      ,1478
NP           -,1478      ,2069      ,1478     -,2069
SBC_HL       -,1478      ,1478      ,2627     -,2627
Int_1         ,1478     -,2069     -,2627      ,4014

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      ,0515     6,7914     1,0000    89,0000      ,0107
----------
    Focal predict: NP       (X)
          Mod var: SBC_HL   (W)

Conditional effects of the focal predictor at values of the moderator(s):

     SBC_HL     Effect         se          t          p       LLCI       ULCI
      ,0000     -,5571      ,4549    -1,2248      ,2239    -1,4610      ,3467
     1,0000     1,0940      ,4411     2,4805      ,0150      ,2176     1,9704

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   NP         SBC_HL     PL         .
BEGIN DATA.
      ,0000      ,0000     3,2143
     1,0000      ,0000     2,6571
      ,0000     1,0000     3,9444
     1,0000     1,0000     5,0385
END DATA.
```

```
GRAPH/SCATTERPLOT=
 NP       WITH     PL       BY       SBC_HL   .

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

Level of confidence for all confidence intervals in output:
  95,0000

------ END MATRIX -----
```

Appendix 8: Moderation PROCESS Output for H3 and "ProductD"

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : PL
    X  : ProductD
    W  : SBC_HL

Sample
Size:  93

Coding of categorical X variable for analysis:
 ProductD       X1       X2
     ,000     ,000     ,000
    1,000    1,000     ,000
    2,000     ,000    1,000

**************************************************************************
OUTCOME VARIABLE:
 PL

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,5824      ,3392     2,0735     8,9316     5,0000    87,0000      ,0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     3,2143      ,3848     8,3522      ,0000     2,4494     3,9792
X1           -,5000      ,5443     -,9187      ,3608    -1,5818      ,5818
X2           -,5952      ,4968    -1,1981      ,2341    -1,5827      ,3923
SBC_HL        ,7302      ,5131     1,4230      ,1583     -,2897     1,7501
Int_1        1,3203      ,7303     1,8078      ,0741     -,1313     2,7719
Int_2        2,2063      ,7697     2,8665      ,0052      ,6765     3,7362

Product terms key:
 Int_1    :        X1       x        SBC_HL
 Int_2    :        X2       x        SBC_HL

Covariance matrix of regression parameter estimates:
           constant         X1          X2     SBC_HL      Int_1      Int_2
constant      ,1481     -,1481      -,1481     -,1481      ,1481      ,1481
X1           -,1481      ,2962       ,1481      ,1481     -,2962     -,1481
X2           -,1481      ,1481       ,2468      ,1481     -,1481     -,2468
SBC_HL       -,1481      ,1481       ,1481      ,2633     -,2633     -,2633
Int_1         ,1481     -,2962      -,1481     -,2633      ,5334      ,2633
Int_2         ,1481     -,1481      -,2468     -,2633      ,2633      ,5924

Test(s) of highest order unconditional interaction(s):
```

```
       R2-chng          F        df1        df2          p
X*W      ,0645     4,2471     2,0000    87,0000      ,0174
----------
    Focal predict: ProductD (X)
          Mod var: SBC_HL   (W)

Conditional effects of the focal predictor at values of the moderator(s):

Moderator value(s):
SBC_HL      ,0000

       Effect         se          t          p       LLCI       ULCI
X1     -,5000      ,5443     -,9187      ,3608    -1,5818      ,5818
X2     -,5952      ,4968    -1,1981      ,2341    -1,5827      ,3923

Test of equality of conditional means
          F        df1        df2          p
      ,7669     2,0000    87,0000      ,4676

Estimated conditional means being compared:
   ProductD         PL
      ,0000     3,2143
     1,0000     2,7143
     2,0000     2,6190
----------
Moderator value(s):
SBC_HL     1,0000

       Effect         se          t          p       LLCI       ULCI
X1      ,8203      ,4870     1,6843      ,0957     -,1477     1,7882
X2     1,6111      ,5879     2,7406      ,0074      ,4427     2,7795

Test of equality of conditional means
          F        df1        df2          p
     3,9573     2,0000    87,0000      ,0227

Estimated conditional means being compared:
   ProductD         PL
      ,0000     3,9444
     1,0000     4,7647
     2,0000     5,5556

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   ProductD   SBC_HL     PL         .
BEGIN DATA.
      ,0000      ,0000     3,2143
     1,0000      ,0000     2,7143
     2,0000      ,0000     2,6190
      ,0000     1,0000     3,9444
     1,0000     1,0000     4,7647
     2,0000     1,0000     5,5556
END DATA.
GRAPH/SCATTERPLOT=
 ProductD WITH     PL       BY       SBC_HL   .

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

Level of confidence for all confidence intervals in output:
  95,0000

NOTE: The contrast option is not available with a multicategorical X.

------ END MATRIX -----
```

Appendix 9: Moderated Mediation PROCESS Output for H4 and "ProductD"

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 8
    Y  : PL
    X  : ProductD
    M  : PI
    W  : SBC_HL

Sample
Size:  93

Coding of categorical X variable for analysis:
 ProductD       X1       X2
     ,000     ,000     ,000
    1,000    1,000     ,000
    2,000     ,000    1,000

**************************************************************************
OUTCOME VARIABLE:
 PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,6563      ,4308     1,6251    13,1680     5,0000    87,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2,9279      ,3407     8,5936      ,0000     2,2507     3,6050
X1          -1,4993      ,4818    -3,1117      ,0025    -2,4570     -,5416
X2            ,8331      ,4398     1,8941      ,0615     -,0411     1,7073
SBC_HL        ,6649      ,4543     1,4637      ,1469     -,2380     1,5678
Int_1        2,0930      ,6466     3,2371      ,0017      ,8079     3,3781
Int_2         ,9819      ,6814     1,4410      ,1532     -,3725     2,3363

Product terms key:
 Int_1    :        X1       x        SBC_HL
 Int_2    :        X2       x        SBC_HL

Covariance matrix of regression parameter estimates:
          constant         X1         X2     SBC_HL      Int_1      Int_2
constant      ,1161     -,1161     -,1161     -,1161      ,1161      ,1161
X1           -,1161      ,2322      ,1161      ,1161     -,2322     -,1161
X2           -,1161      ,1161      ,1935      ,1161     -,1161     -,1935
SBC_HL       -,1161      ,1161      ,1161      ,2064     -,2064     -,2064
Int_1         ,1161     -,2322     -,1161     -,2064      ,4180      ,2064
Int_2         ,1161     -,1161     -,1935     -,2064      ,2064      ,4643

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      ,0686     5,2431     2,0000    87,0000      ,0071
----------
    Focal predict: ProductD (X)
          Mod var: SBC_HL   (W)

Conditional effects of the focal predictor at values of the moderator(s):

Moderator value(s):
SBC_HL      ,0000
```

```
       Effect         se          t          p       LLCI       ULCI
X1    -1,4993      ,4818    -3,1117      ,0025    -2,4570     -,5416
X2      ,8331      ,4398     1,8941      ,0615     -,0411     1,7073

Test of equality of conditional means
          F        df1        df2          p
    14,0902     2,0000    87,0000      ,0000

Estimated conditional means being compared:
   ProductD         PI
      ,0000     2,9279
     1,0000     1,4286
     2,0000     3,7610
----------
Moderator value(s):
SBC_HL     1,0000

       Effect         se          t          p       LLCI       ULCI
X1      ,5937      ,4311     1,3771      ,1720     -,2632     1,4506
X2     1,8150      ,5204     3,4875      ,0008      ,7806     2,8494

Test of equality of conditional means
          F        df1        df2          p
     6,0817     2,0000    87,0000      ,0034

Estimated conditional means being compared:
   ProductD         PI
      ,0000     3,5928
     1,0000     4,1865
     2,0000     5,4078

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   ProductD   SBC_HL     PI         .
BEGIN DATA.
      ,0000      ,0000     2,9279
     1,0000      ,0000     1,4286
     2,0000      ,0000     3,7610
      ,0000     1,0000     3,5928
     1,0000     1,0000     4,1865
     2,0000     1,0000     5,4078
END DATA.
GRAPH/SCATTERPLOT=
 ProductD WITH     PI       BY       SBC_HL   .

************************************************************************
OUTCOME VARIABLE:
 PL

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,6561      ,4305     1,8079    10,8330     6,0000    86,0000      ,0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     1,9853      ,4886     4,0630      ,0001     1,0139     2,9566
X1            ,1294      ,5357      ,2415      ,8098     -,9357     1,1944
X2           -,9449      ,4734    -1,9961      ,0491    -1,8860     -,0039
PI            ,4198      ,1131     3,7121      ,0004      ,1950      ,6446
SBC_HL        ,4510      ,4850      ,9300      ,3550     -,5131     1,4152
Int_1         ,4417      ,7219      ,6119      ,5422     -,9933     1,8767
Int_2        1,7942      ,7272     2,4671      ,0156      ,3485     3,2399

Product terms key:
 Int_1    :        X1       x        SBC_HL
 Int_2    :        X2       x        SBC_HL
```

```
Covariance matrix of regression parameter estimates:
          constant         X1         X2         PI     SBC_HL      Int_1
Int_2
constant      ,2388     -,1853     -,0979     -,0374     -,1042      ,2075
,1659
X1           -,1853      ,2870      ,1132      ,0192      ,1164     -,2984     -
,1480
X2           -,0979      ,1132      ,2241     -,0107      ,1362     -,1068     -
,2048
PI           -,0374      ,0192     -,0107      ,0128     -,0085     -,0268     -
,0126
SBC_HL       -,1042      ,1164      ,1362     -,0085      ,2352     -,2118     -
,2212
Int_1         ,2075     -,2984     -,1068     -,0268     -,2118      ,5211
,2559
Int_2         ,1659     -,1480     -,2048     -,0126     -,2212      ,2559
,5289

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      ,0433     3,2720     2,0000    86,0000      ,0427
----------
    Focal predict: ProductD (X)
          Mod var: SBC_HL   (W)

Conditional effects of the focal predictor at values of the moderator(s):
(These are also the relative conditional direct effects of X on Y)

Moderator value(s):
SBC_HL      ,0000

       Effect         se          t          p       LLCI       ULCI
X1      ,1294      ,5357      ,2415      ,8098     -,9357     1,1944
X2     -,9449      ,4734    -1,9961      ,0491    -1,8860     -,0039

Test of equality of conditional means
          F        df1        df2          p
     2,7924     2,0000    86,0000      ,0668

Estimated conditional means being compared:
   ProductD         PL
      ,0000     3,4499
     1,0000     3,5792
     2,0000     2,5049
----------
Moderator value(s):
SBC_HL     1,0000

       Effect         se          t          p       LLCI       ULCI
X1      ,5710      ,4597     1,2423      ,2175     -,3427     1,4848
X2      ,8492      ,5860     1,4491      ,1509     -,3158     2,0142

Test of equality of conditional means
          F        df1        df2          p
     1,2903     2,0000    86,0000      ,2805

Estimated conditional means being compared:
   ProductD         PL
      ,0000     3,9009
     1,0000     4,4719
     2,0000     4,7501

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   ProductD   SBC_HL     PL         .
```

```
BEGIN DATA.
      ,0000      ,0000     3,4499
     1,0000      ,0000     3,5792
     2,0000      ,0000     2,5049
      ,0000     1,0000     3,9009
     1,0000     1,0000     4,4719
     2,0000     1,0000     4,7501
END DATA.
GRAPH/SCATTERPLOT=
 ProductD WITH     PL       BY       SBC_HL   .

****************** CORRELATIONS BETWEEN MODEL RESIDUALS ******************

           PI         PL
PI     1,0000      ,0000
PL      ,0000     1,0000


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

Relative conditional direct effects of X on Y
       SBC_HL     Effect         se          t          p       LLCI       ULCI
X1      ,0000      ,1294      ,5357      ,2415      ,8098     -,9357     1,1944
X1     1,0000      ,5710      ,4597     1,2423      ,2175     -,3427     1,4848
X2      ,0000     -,9449      ,4734    -1,9961      ,0491    -1,8860     -,0039
X2     1,0000      ,8492      ,5860     1,4491      ,1509     -,3158     2,0142

Relative conditional indirect effects of X on Y:

INDIRECT EFFECT:
 ProductD    ->    PI          ->    PL

       SBC_HL     Effect     BootSE   BootLLCI   BootULCI
X1      ,0000     -,6294      ,1982    -1,0568     -,2735
X1     1,0000      ,2492      ,2118     -,1441      ,6957

Index of moderated mediation (difference between conditional indirect effects):
            Index     BootSE   BootLLCI   BootULCI
SBC_HL      ,8786      ,3116      ,3337     1,5425

       SBC_HL     Effect     BootSE   BootLLCI   BootULCI
X2      ,0000      ,3497      ,2013     -,0180      ,7914
X2     1,0000      ,7619      ,2724      ,2714     1,3419

Index of moderated mediation (difference between conditional indirect effects):
            Index     BootSE   BootLLCI   BootULCI
SBC_HL      ,4122      ,3037     -,1442     1,0857

********************** 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: The contrast option is not available with a multicategorical X.

------ END MATRIX -----
```

Appendix 10: Conditional Moderated Mediation PROCESS Output

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 12
    Y  : PL
    X  : ProductD
    M  : PI
    W  : SBC_HL
    Z  : Gender

Sample
Size:  93

Coding of categorical X variable for analysis:
 ProductD       X1       X2
     ,000     ,000     ,000
    1,000    1,000     ,000
    2,000     ,000    1,000

**************************************************************************
OUTCOME VARIABLE:
 PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,7249      ,5255     1,4549     8,1561    11,0000    81,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1,5767     1,4395     1,0953      ,2766    -1,2875     4,4408
X1            ,8011     1,8433      ,4346      ,6650    -2,8665     4,4687
X2           3,8147     1,8240     2,0914      ,0396      ,1855     7,4439
SBC_HL       4,4644     1,6972     2,6305      ,0102     1,0876     7,8413
Int_1       -4,2688     2,2351    -1,9099      ,0597    -8,7160      ,1784
Int_2       -3,7208     2,4251    -1,5343      ,1289    -8,5461     1,1044
Gender        ,7567      ,7856      ,9631      ,3384     -,8065     2,3199
Int_3       -1,3344     1,0343    -1,2901      ,2007    -3,3925      ,7236
Int_4       -1,6820      ,9996    -1,6828      ,0963    -3,6709      ,3068
Int_5       -2,3889      ,9698    -2,4632      ,0159    -4,3185     -,4592
Int_6        4,1092     1,3216     3,1094      ,0026     1,4797     6,7387
Int_7        2,8468     1,4061     2,0246      ,0462      ,0490     5,6445

Product terms key:
 Int_1    :        X1       x        SBC_HL
 Int_2    :        X2       x        SBC_HL
 Int_3    :        X1       x        Gender
 Int_4    :        X2       x        Gender
 Int_5    :        SBC_HL   x        Gender
 Int_6    :        X1       x        SBC_HL   x        Gender
 Int_7    :        X2       x        SBC_HL   x        Gender

Covariance matrix of regression parameter estimates:
           constant         X1         X2     SBC_HL      Int_1      Int_2
Gender      Int_3      Int_4      Int_5      Int_6      Int_7
constant     2,0721    -2,0721    -2,0721    -2,0721     2,0721     2,0721    -
1,1022     1,1022     1,1022     1,1022    -1,1022    -1,1022
X1          -2,0721     3,3977     2,0721     2,0721    -3,3977    -2,0721
1,1022    -1,8458    -1,1022    -1,1022     1,8458     1,1022
X2          -2,0721     2,0721     3,3270     2,0721    -2,0721    -3,3270
1,1022    -1,1022    -1,7751    -1,1022     1,1022     1,7751
```

```
SBC_HL      -2,0721     2,0721     2,0721     2,8804    -2,8804    -2,8804
1,1022    -1,1022    -1,1022    -1,5872     1,5872     1,5872
Int_1         2,0721    -3,3977    -2,0721    -2,8804     4,9958     2,8804    -
1,1022     1,8458     1,1022     1,5872    -2,8296    -1,5872
Int_2         2,0721    -2,0721    -3,3270    -2,8804     2,8804     5,8812    -
1,1022     1,1022     1,7751     1,5872    -1,5872    -3,2785
Gender       -1,1022     1,1022     1,1022     1,1022    -1,1022    -1,1022
,6172     -,6172     -,6172     -,6172      ,6172      ,6172
Int_3         1,1022    -1,8458    -1,1022    -1,1022     1,8458     1,1022     -
,6172     1,0699      ,6172      ,6172    -1,0699     -,6172
Int_4         1,1022    -1,1022    -1,7751    -1,1022     1,1022     1,7751     -
,6172      ,6172      ,9992      ,6172     -,6172     -,9992
Int_5         1,1022    -1,1022    -1,1022    -1,5872     1,5872     1,5872     -
,6172      ,6172      ,6172      ,9405     -,9405     -,9405
Int_6        -1,1022     1,8458     1,1022     1,5872    -2,8296    -1,5872
,6172    -1,0699     -,6172     -,9405     1,7465      ,9405
Int_7        -1,1022     1,1022     1,7751     1,5872    -1,5872    -3,2785
,6172     -,6172     -,9992     -,9405      ,9405     1,9772

Test(s) of highest order unconditional interaction(s):
         R2-chng          F        df1        df2          p
X*W*Z      ,0582     4,9707     2,0000    81,0000      ,0092
----------
    Focal predict: ProductD (X)
          Mod var: SBC_HL   (W)
          Mod var: Gender   (Z)

Test of conditional X*W interaction at value(s) of Z:
     Gender          F        df1        df2          p
     1,0000      ,3431     2,0000    81,0000      ,7106
     2,0000    11,8027     2,0000    81,0000      ,0000

Conditional effects of the focal predictor at values of the moderator(s):

Moderator value(s):
SBC_HL      ,0000
Gender     1,0000

       Effect         se          t          p       LLCI       ULCI
X1     -,5333      ,8809     -,6055      ,5466    -2,2860     1,2194
X2     2,1327      ,8809     2,4211      ,0177      ,3800     3,8854

Test of equality of conditional means
          F        df1        df2          p
     6,6137     2,0000    81,0000      ,0022

Estimated conditional means being compared:
   ProductD         PI
      ,0000     2,3333
     1,0000     1,8000
     2,0000     4,4660
----------
Moderator value(s):
SBC_HL      ,0000
Gender     2,0000

       Effect         se          t          p       LLCI       ULCI
X1    -1,8678      ,5421    -3,4452      ,0009    -2,9465     -,7891
X2      ,4506      ,4724      ,9538      ,3430     -,4894     1,3906

Test of equality of conditional means
          F        df1        df2          p
    11,0269     2,0000    81,0000      ,0001

Estimated conditional means being compared:
   ProductD         PI
      ,0000     3,0900
     1,0000     1,2222
```

```
     2,0000     3,5406
----------
Moderator value(s):
SBC_HL     1,0000
Gender     1,0000

       Effect         se          t          p       LLCI       ULCI
X1     -,6929      ,5542    -1,2502      ,2148    -1,7956      ,4098
X2     1,2586      ,7248     1,7364      ,0863     -,1836     2,7008

Test of equality of conditional means
          F        df1        df2          p
     3,7739     2,0000    81,0000      ,0271

Estimated conditional means being compared:
   ProductD         PI
      ,0000     4,4089
     1,0000     3,7160
     2,0000     5,6675
----------
Moderator value(s):
SBC_HL     1,0000
Gender     2,0000

       Effect         se          t          p       LLCI       ULCI
X1     2,0819      ,6079     3,4249      ,0010      ,8724     3,2914
X2     2,4233      ,6728     3,6019      ,0005     1,0847     3,7620

Test of equality of conditional means
          F        df1        df2          p
     8,8601     2,0000    81,0000      ,0003

Estimated conditional means being compared:
   ProductD         PI
      ,0000     2,7767
     1,0000     4,8586
     2,0000     5,2000

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   ProductD   SBC_HL     Gender     PI         .
BEGIN DATA.
      ,0000      ,0000     1,0000     2,3333
     1,0000      ,0000     1,0000     1,8000
     2,0000      ,0000     1,0000     4,4660
      ,0000      ,0000     2,0000     3,0900
     1,0000      ,0000     2,0000     1,2222
     2,0000      ,0000     2,0000     3,5406
      ,0000     1,0000     1,0000     4,4089
     1,0000     1,0000     1,0000     3,7160
     2,0000     1,0000     1,0000     5,6675
      ,0000     1,0000     2,0000     2,7767
     1,0000     1,0000     2,0000     4,8586
     2,0000     1,0000     2,0000     5,2000
END DATA.
GRAPH/SCATTERPLOT=
 ProductD WITH     PI       BY       SBC_HL   /PANEL   ROWVAR=  Gender    .

************************************************************************
OUTCOME VARIABLE:
 PL

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,6841      ,4679     1,8156     5,8632    12,0000    80,0000      ,0000
```

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,0115	1,6199	1,2417	,2180	-1,2123	5,2352
X1	1,8868	2,0615	,9152	,3628	-2,2158	5,9894
X2	-2,8092	2,0919	-1,3429	,1831	-6,9722	1,3538
PI	,4540	,1241	3,6577	,0005	,2070	,7010
SBC_HL	,3570	1,9752	,1807	,8570	-3,5739	4,2878
Int_1	-,5378	2,5525	-,2107	,8336	-5,6174	4,5417
Int_2	2,3554	2,7482	,8571	,3940	-3,1136	7,8245
Gender	-,0708	,8826	-,0802	,9363	-1,8273	1,6857
Int_3	-1,0447	1,1673	-,8950	,3735	-3,3676	1,2783
Int_4	1,0409	1,1360	,9163	,3622	-1,2197	3,3016
Int_5	,0341	1,1232	,0303	,9759	-2,2012	2,2694
Int_6	,4769	1,5619	,3054	,7609	-2,6314	3,5853
Int_7	-,2419	1,6100	-,1503	,8809	-3,4460	2,9621

Product terms key:

Int_1	:	X1	x	SBC_HL		
Int_2	:	X2	x	SBC_HL		
Int_3	:	X1	x	Gender		
Int_4	:	X2	x	Gender		
Int_5	:	SBC_HL	x	Gender		
Int_6	:	X1	x	SBC_HL	x	Gender
Int_7	:	X2	x	SBC_HL	x	Gender

Covariance matrix of regression parameter estimates:

	constant	X1	X2	PI	SBC_HL	Int_1	Int_2	Gender	Int_3	Int_4	Int_5	Int_6	Int_7
constant	2,6241	-2,5664	-2,4932	-,0243	-2,4774	2,4821	2,4955	-1,3571	1,3430	1,3346	1,3174	-1,2756	-1,3063
X1	-2,5664	4,2499	2,6329	-,0123	2,6409	-4,2927	-2,6318	1,3848	-2,3199	-1,3962	-1,4049	2,3541	1,4106
X2	-2,4932	2,6329	4,3760	-,0588	2,8482	-2,8367	-4,3705	1,4199	-1,4539	-2,3140	-1,5158	1,6169	2,3825
PI	-,0243	-,0123	-,0588	,0154	-,0688	,0658	,0573	-,0117	,0206	,0259	,0368	-,0633	-,0439
SBC_HL	-2,4774	2,6409	2,8482	-,0688	3,9016	-3,8881	-3,8504	1,4275	-1,4672	-1,4911	-2,1450	2,2633	2,1764
Int_1	2,4821	-4,2927	-2,8367	,0658	-3,8881	6,5151	3,8392	-1,4252	2,3912	1,4861	2,1378	-3,8013	-2,1679
Int_2	2,4955	-2,6318	-4,3705	,0573	-3,8504	3,8392	7,5524	-1,4188	1,4519	2,3116	2,1176	-2,2162	-4,2545
Gender	-1,3571	1,3848	1,4199	-,0117	1,4275	-1,4252	-1,4188	,7791	-,7858	-,7899	-,7981	,8182	,8034
Int_3	1,3430	-2,3199	-1,4539	,0206	-1,4672	2,3912	1,4519	-,7858	1,3625	,8048	,8194	-1,4196	-,8288
Int_4	1,3346	-1,3962	-2,3140	,0259	-1,4911	1,4861	2,3116	-,7899	,8048	1,2904	,8322	-,8767	-1,3206
Int_5	1,3174	-1,4049	-1,5158	,0368	-2,1450	2,1378	2,1176	-,7981	,8194	,8322	1,2616	-1,3249	-1,2785
Int_6	-1,2756	2,3541	1,6169	-,0633	2,2633	-3,8013	-2,2162	,8182	-1,4196	-,8767	-1,3249	2,4396	1,3539
Int_7	-1,3063	1,4106	2,3825	-,0439	2,1764	-2,1679	-4,2545	,8034	-,8288	-1,3206	-1,2785	1,3539	2,5922

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W*Z	,0015	,1163	2,0000	80,0000	,8903

Focal predict: ProductD (X)
Mod var: SBC_HL (W)
Mod var: Gender (Z)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/
   ProductD   SBC_HL     Gender     PL         .
```

```
BEGIN DATA.
      ,0000      ,0000     1,0000     3,5247
     1,0000      ,0000     1,0000     4,3668
     2,0000      ,0000     1,0000     1,7565
      ,0000      ,0000     2,0000     3,4539
     1,0000      ,0000     2,0000     3,2514
     2,0000      ,0000     2,0000     2,7266
      ,0000     1,0000     1,0000     3,9157
     1,0000     1,0000     1,0000     4,6970
     2,0000     1,0000     1,0000     4,2610
      ,0000     1,0000     2,0000     3,8790
     1,0000     1,0000     2,0000     4,0925
     2,0000     1,0000     2,0000     5,0232
END DATA.
GRAPH/SCATTERPLOT=
 ProductD WITH     PL       BY       SBC_HL   /PANEL   ROWVAR=  Gender   .

****************** CORRELATIONS BETWEEN MODEL RESIDUALS ******************

           PI         PL
PI     1,0000      ,0000
PL      ,0000     1,0000


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

Relative conditional direct effects of X on Y
       SBC_HL     Gender     Effect         se          t          p       LLCI
ULCI
X1      ,0000     1,0000      ,8421      ,9863      ,8539      ,3957    -1,1206
2,8049
X1      ,0000     2,0000     -,2025      ,6485     -,3123      ,7556    -1,4931
1,0880
X1     1,0000     1,0000      ,7812      ,6251     1,2499      ,2150     -,4627
2,0251
X1     1,0000     2,0000      ,2135      ,7266      ,2939      ,7696    -1,2324
1,6594
X2      ,0000     1,0000    -1,7682     1,0190    -1,7353      ,0865    -3,7961
,2597
X2      ,0000     2,0000     -,7273      ,5307    -1,3704      ,1744    -1,7835
,3288
X2     1,0000     1,0000      ,3452      ,8246      ,4187      ,6766    -1,2958
1,9863
X2     1,0000     2,0000     1,1442      ,8095     1,4135      ,1614     -,4668
2,7552

Relative conditional indirect effects of X on Y:

INDIRECT EFFECT:
 ProductD    ->    PI          ->    PL

       SBC_HL     Gender     Effect     BootSE   BootLLCI   BootULCI
X1      ,0000     1,0000     -,2421      ,2672     -,8731      ,1681
X1      ,0000     2,0000     -,8480      ,2738    -1,4629     -,3927
X1     1,0000     1,0000     -,3146      ,2887     -,9057      ,2514
X1     1,0000     2,0000      ,9452      ,4226      ,2609     1,8987

      Index of moderated moderated mediation
      Index     BootSE   BootLLCI   BootULCI
     1,8656      ,7278      ,6531     3,5019

      Indices of conditional moderated mediation by W
     Gender      Index     BootSE   BootLLCI   BootULCI
     1,0000     -,0724      ,3793     -,7716      ,7292
     2,0000     1,7932      ,6085      ,8150     3,1635

       SBC_HL     Gender     Effect     BootSE   BootLLCI   BootULCI
X2      ,0000     1,0000      ,9682      ,6149     -,0369     2,3334
```

```
X2      ,0000     2,0000      ,2046      ,2278     -,2326      ,7022
X2     1,0000     1,0000      ,5714      ,3622     -,0437     1,3516
X2     1,0000     2,0000     1,1002      ,4302      ,4147     2,0839

      Index of moderated moderated mediation
      Index     BootSE   BootLLCI   BootULCI
     1,2924      ,8679     -,1303     3,2688

      Indices of conditional moderated mediation by W
     Gender      Index     BootSE   BootLLCI   BootULCI
     1,0000     -,3968      ,6419    -1,7757      ,7966
     2,0000      ,8956      ,4652      ,1409     1,9388

*********************** 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: The contrast option is not available with a multicategorical X.

NOTE: Due to estimation problems, some bootstrap samples had to be replaced.
      The number of times this happened was:
      424

------ END MATRIX -----
```