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Coming to your senses: exploring the role of touch in physical and digitally immersive consumption experiences

Joy Shields

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COMING TO YOUR SENSES: EXPLORING THE ROLE OF TOUCH
IN PHYSICAL AND DIGITALLY IMMERSIVE
CONSUMPTION EXPERIENCES

A dissertation submitted in partial fulfillment
of the requirements for the degree of
DOCTOR OF BUSINESS ADMINISTRATION

by

Joy Shields

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This dissertation, written by

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under the guidance of a Dissertation Committee and approved by its members, has been submitted to and accepted by the Pepperdine Graziadio Business School in partial fulfillment of the requirements for the degree of

DOCTOR OF BUSINESS ADMINISTRATION

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DEDICATION

This dissertation is dedicated to Sierra Shields, Christopher Lynn Shields, and Earline Fishburne. You will be forever missed. Your legacies continue to shine bright and are a guiding light in all I do.

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VITA

Joy Shields is an award-winning writer, editor, and marketing subject matter expert with extensive experience planning, executing, and delivering world-class marketing initiatives and results for international brands with specialized expertise in consumer packaged goods.

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ABSTRACT

This dissertation consists of two empirical papers in which I examine the Need for Touch (NFT) in two settings where the ability to touch is disrupted, exploring the role of touch and other senses in physical and metaverse consumption experiences. In the first paper, I investigate the pandemic's influence on consumer shopping behaviors, focusing on the coping mechanisms for reduced tactile interactions. The research uses an exploratory, inductive sequential design to chronicle shopping experiences through longitudinal interviews and autodriving. The findings reveal two primary themes: Shopping as a Reprieve and Fear of Shopping. This research underscores the intricate connection between grieving and the sensory deprivation of touch in traumatic events like COVID-19. In the second paper, I adopt a mixed-method approach that combines short-form interviews and a 2x2 between-subjects design experiment to test whether the physical touch of a featured product before a virtual encounter affects brand attitudes, examining the moderating role of the NFT. A multiple linear regression analysis shows a significant interaction between the physical touch condition and the NFT on brand attitudes. Individuals with high-NFT reported lower brand attitudes, while low-NFT participants express enhanced positivity towards the brand. This paper contributes insights into the interplay between tactile experiences and the NFT on the formation of attitudes toward brands encountered in digitally immersive environments.

Keywords: need for touch, haptic engagement, sensory marketing, immersive digital experiences, COVID-19 shopping experiences

CHAPTER 1: INTRODUCTION

Over the past several years, consumers have experienced a marked disruption in how they engage with products haptically due to the COVID-19 pandemic, which significantly altered traditional shopping habits. Simultaneously, the emergence and advancement of immersive virtual technologies introduce a novel context where physical haptic engagement is limited, challenging the conventional understanding of consumption practices and stimulating a need to explore these new sensory landscapes.

My research merges two diverse but interrelated dimensions through the lens of the need for touch (NFT). First, I examine how a traumatic event like the COVID-19 pandemic disrupted consumers' ability to haptically engage with products while shopping and affected in-store consumer behavior. Second, I explore tactile needs in immersive virtual environments, where physical touch is limited and assess the impact on consumers' perceptions of brands encountered in this space.

This dissertation delves into how the COVID-19 pandemic transformed the role of haptic engagement in the in-store shopping experience. Fueled by pandemic-related distress, consumer attitudes and preferences toward shopping changed significantly, with a marked reduction in physical touch during shopping experiences. The pandemic's unprecedented circumstances and far-reaching impact compelled consumers to adjust and reassess routines, habits, and interactions (Salon et al., 2021). Fear and a desire to avoid illness (Gómez-Corona et al., 2021; Truong, 2022) primarily influenced consumer behavior during the pandemic, prompting the shift to online shopping as governmental agencies like the U.S. Centers for Disease Control and Prevention warned against in-person shopping (The Associated Press, 2020). Through an exploratory, inductive sequential design, I examine traumatic consumption, touch contamination, and shifting

consumer needs, aiming to comprehend the new shopping experience and how consumers adjusted behaviors during the turbulent time.

The second study in this dissertation investigates the NFT in digitally immersive environments. As technology revolutionizes consumption practices, providing consumers with a multi-sensory experience, my research questions the role of sensory activation, specifically touch, in shaping consumers' attitudes towards brands in virtual spaces. Focusing on virtual reality, I explore how low-touch, highly immersive environments shape consumer experiences, brand perceptions, and connections.

These two dimensions of touch, one focused on the disruption of touch in physical retail environments and the other on the NFT in digitally immersive contexts, provide comprehensive insights into the evolving landscape of sensory interactions in consumption. By exploring these dimensions in tandem, my research adds to the body of knowledge by examining the intricate dynamics of touch, contributing to the broader understanding of consumer behavior.

Research Motivation & Purpose

Sensory marketing as a discipline leverages our understanding of sensory experiences and perceptions in the context of marketing, shaping everything from a consumer's thought processes and emotional reactions to their individual preferences (Krishna, 2012). In my research journey, I have taken a deep dive into the world of the NFT, making it my primary interest and focus. Additionally, I am very interested in learning and developing novel methods to conduct research and qualitative methodologies associated with touch, even within the realms of undeveloped multimodal and sensory methods (Jewitt, 2021). To structure my research, I have employed a two-paper approach to explore the NFT within the contexts of COVID-19 and

immersive environments. My methodological approach involved a rigorous review of existing literature in search of patterns, insights, and, most importantly, gaps in the literature.

The discoveries made through my work can enhance and broaden our collective understanding in interconnected fields such as consumer behavior, psychology, sensory marketing, and haptics. This methodology was designed to yield valuable insights not only to marketing practitioners who can apply these findings in real-world scenarios but also to fellow researchers and academics who can further this knowledge through theory investigations.

Study 1 Research Question

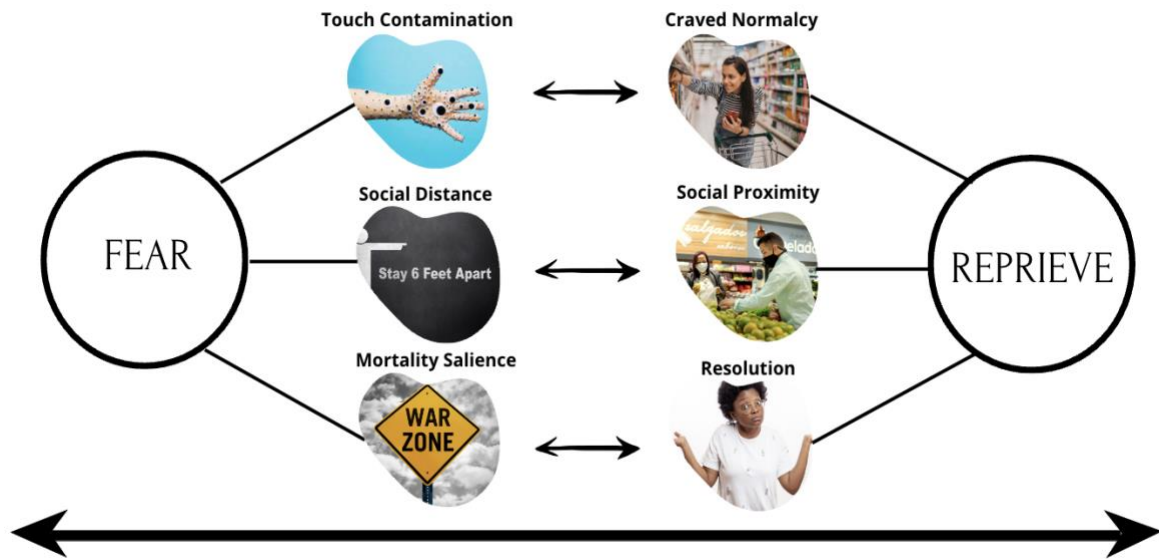
How did the COVID-19 pandemic affect consumers' shopping experience, and how did consumers cope with the loss of touch during in-store shopping experiences?

Aims & Objectives

Drawing on the NFT (Peck & Childers, 2003) and touch contamination (Argo et al., 2006) literature, I investigate the in-store shopping experience during the COVID-19 pandemic and how consumers coped with the loss of touch during in-store shopping experiences. First, I deployed a longitudinal inductive qualitative method over one year to investigate the phenomenon and supplement the findings with online surveys from panelists. Figure 1 visualizes the phenomenon expressed by 31 panelists a year into the crisis.

Figure 1

Shopping Experience Conceptual Model



How Aims Were Accomplished

In the spirit of grounded theory (Glaser & Stauss, 1967), I adopted an exploratory, inductive sequential design for my research focusing on a panel of 31 consumers. As the primary shoppers in their households during the pandemic, panelists were recruited through purposeful sampling techniques (Patton, 1990). In the first phase of interviews (March and April 2021), participants were prompted to reflect on how they shopped pre-pandemic, during the height of the pandemic (March 2020), and to describe their current shopping behaviors and experiences. The second phase of interviews (August 2021-March 2022) relied on autodiving with visual stimuli depicting shopping situations to guide the exchange. For a small subset of the consumer panel, the pre-interview using autodiving was followed by in-store observations and a post-interview to validate findings.

The dataset includes 45 hours of video footage and 651 pages of single-spaced transcripts. In the tradition of grounded theory, the analysis involved a combination of open, axial, and selective coding (Williams & Moser, 2019). Longitudinal coding was also utilized to compare and contrast codes over time. Additionally, survey measures, specifically the NFT scale, were compared across time points to assess any change in the autotelic and instrumental dimensions. The quantitative analyses supplement the qualitative insights.

Using a Consumer Culture Theory technique (Arnould & Thompson, 2005), retextualization is a technique where theoretical understandings and structures from one paradigmatic dialogue are reshaped with a different paradigmatic vernacular (Arnould & Thompson, 2005; Thompson et al., 1998). This approach allowed me to bridge how consumers reacted to the loss of touch and the coping mechanism they instituted.

Study 2 Research Question

How does consumers' need to touch affect brand connections in digitally immersive consumption experiences?

Objective and Aims of the Research

Despite its significance as a sensory modality (Klatzky & Lederman, 2001), touch has received less attention in marketing research when compared to other senses (Gatter, 2021; Peck & Childers, 2008). Although limited, researchers are showing interest in the role of touch, recognizing its fundamental importance in shaping consumer experiences, self-perception, and social connections (Bull et al., 2006). This research gap has generated increased interest in investigating the various dimensions of touch and haptics within different retail (Orth, 2013), online (Kühn, 2020), and virtual reality (Luangrath et al., 2022) environments.

Recognizing how human senses influence consumption decisions, immersive virtual technologies offer enriched prospects for shaping how consumers relate to brands, surpassing the possibilities of existing digital platforms (Laukkanen et al., 2022). Research predicts that by 2026 consumers will dedicate at least one hour a day to virtual reality environments for activities such as shopping, working, learning, socializing, or entertainment (Rimol, 2022). Moreover, even with the shift from the metaverse to Artificial Intelligence (AI), over 10 million Virtual Reality (VR) and Augmented Reality (AR) devices are forecast to be sold in 2023 (Erl, 2023).

Immersive environments can revolutionize how consumers engage with brands and products, yet our comprehension of this interaction is still limited (Labrecque, 2020). Despite the sensory saturation these technologies offer, the focus has been predominantly on visual and auditory stimulation, frequently overlooking the significant role of touch in the sensory journey (Rauschnabel, 2021).

How Aims Were Accomplished

I explore consumers' NFT in digitally immersive environments. A mixed-method approach provides the opportunity to gather data via a combination of qualitative semi-structured interviews and an experiment. The study began with qualitative interviews to garner insights into a successful VR experience. The most integral requirement for the interviews was to gauge the type of stimulus that would be the most effective for the experimental manipulation. Two resounding themes emerged from the data: Rooted in Reality and Let's Get Physical. Participants spoke about the need for elements in the virtual environment to be anchored in reality (Alexander et al., 2005) and the level of interaction required to stay engaged. These insights helped form the design of Study 2.

Study 2 tested three hypotheses. A physical, real-world tactile interaction with a product that is featured in an immersive experience should generate more positive attitudes toward the brand, compared to no tactile interaction/visual-only with the featured product (H1); NFT moderates the relationship between a physical encounter and initial brand attitude, such that a real-world tactile interaction before an immersive experience leads to more positive brand attitudes for high-NFT compared to low-NFT (H2), and narrative transportation mediates the relationship between a real-world tactile interaction and initial brand attitude (H3).

CHAPTER 2: LOSING TOUGH: EXPLORING THE SHOPPING EXPERIENCE DURING THE COVID-19 PANDEMIC

I go to Target, I get a Starbucks. Then, because I don't have a mask and I can walk around and I can drink my coffee. Um, this is pre-pandemic. Now I go in, and I look at the Starbucks, and I'm sad because I can't get a coffee and walk around and drink my coffee. So instead, now I'm just walking around, I don't really touch anything. I used to go straight to the clothing section, that's usually at the front, and I would kind of walk around. I would feel the different shirts; take a look at things.

Ashley remembers what it was like to walk through the aisles of Target, one of her favorite retail stores. She reminisces about picking up a cup of coffee from the in-house Starbucks and the enjoyment of touching random items as she shopped at her favorite retailer. During the onslaught of the COVID-19 pandemic, the shopping experience for Ashley (and many consumers) drastically changed. Some consumers experienced a shift from fun and enjoyable shopping experiences to feelings of dread and fear. The COVID-19 pandemic exacerbated stressors associated with shopping, leading to a period of behavior adjustment as consumers adapted to the new shopping environment.

COVID-19 and the Shopping Experience

The pandemic's unprecedented circumstances and far-reaching impact have compelled consumers to adjust and reassess routines, habits, and interactions (Salon et al., 2021). In total, 40% of U.S. adults have reported a substantial decrease in their enjoyment of in-store shopping compared to pre-pandemic times, with an additional 15% experiencing a slight decline in their shopping pleasure. At the same time, one-third of consumers anticipate they will have little to no inclination to resume in-store shopping even after the full resolution of the pandemic (Lai, 2021). About 31% of consumers note the pandemic fueled a longing for more personalized interactions,

with 36% looking to new shopping methods (i.e., booking appointments, virtual shopping consultations, curbside pickup) and 58% shopping online for products previously purchased in-store (Retail Customer Experience, 2020). Consumer behavior during the pandemic was primarily influenced by fear (Truong, 2022) and a desire to avoid illness (Gómez-Corona et al., 2021), fueling the shift to online shopping as governmental agencies like the U.S. Centers for Disease Control and Prevention warned against in-person shopping (The Associated Press, 2020). Between March 2020 and March 2022, an estimated \$218.53 billion was added to the e-commerce bottom line as consumers shifted their shopping behavior to online (Berthene, 2022).

In 2020, online grocery sales saw an increase of 103% year over year, with consumers spending \$73.7 billion; in 2021, online grocery sales were exceeded, with consumers spending \$79.2 billion, a 7.2% increase year over year (Berthene, 2022). As the e-commerce market experienced an influx of shoppers, there was a corresponding decrease in in-store shopping at brick-and-mortar stores and haptic engagement with products. Consumers reported a lower likelihood of physically handling produce (e.g., fruits, vegetables) than before the pandemic began (Otterbring & Bhatnagar, 2021).

Hedonic and Utilitarian Shopping Motivations

Consumers had to find ways to fulfill their desire for pleasure and enjoyment within the limitations and safety considerations imposed by the pandemic. Utilitarian shopping experiences were influenced by consumers' practical needs and functional goals, often prioritizing efficiency, safety, and convenience. Consumer researchers have documented the many facets of hedonic and utilitarian shopping motivations and their significant roles in consumers' behavior and choices.

Consumers are driven by emotional and sensory gratification, motivating them to engage in hedonic shopping for enjoyable and pleasurable experiences (Arnold & Reynolds, 2003).

Hedonic consumption encompasses the behavioral aspects of multisensory, fantasy, and emotive

consumption elements (Arnold & Reynolds, 2003). Consumer researchers have identified several motivations as to why consumer fun-seekers desire hedonic experiences: sensory stimulation (Arnolds & Reynolds, 2003; Westwood & Black, 1985), a sense of escapism and adventure (Babin et al., 1994; Hirschman & Holbrook, 1982), and increased arousal and enjoyment for shopping for others (Fischer & Arnold, 1990; Sherry et al., 1993).

Research documents utilitarian and problem-solving themes that emphasize shopping as productive and expeditious, presenting an alternative perspective where shopping is viewed as work (Peck & Childers, 2003; Sherry, 1990). Utilitarian shopping motivation is driven by practical needs and the desire to fulfill functional and instrumental goals (Babin et al., 1994; Peck & Childers, 2003). Utilitarian shoppers prioritize efficiency and achieving a goal or mission in shopping, focusing on task-oriented behavior (Babin & Attaway, 2000), functionality and practicality of products (Babin et al., 1994), the collection of product information (Bloch & Richins, 1983b) and time and cost efficiency (Green-Atkins & Kim, 2012). Although hedonic and utilitarian motivations can coexist, consumers may lean more heavily towards one motivation depending on the context, shopping situation, or personal preferences. The pandemic highlighted the coexistence and interplay of hedonic and utilitarian shopping experiences. While practicality and essential needs drove consumer behavior, the desire for pleasure, novelty, and emotional well-being remained significant factors influencing shopping choices.

The Importance of Touch in Consumers' Lives

As early as the 4th century BCE, touch and its importance in our lives has been studied. Greek philosopher Aristotle developed the theory of aisthesis, which proposes that human senses are systematically ordered, with the sense of touch sitting at the top of the hierarchy with the other senses (i.e., sight, sound, taste, smell), increasing the acuteness of the sensation of touch

(Krishna, 2012). Thousands of years later, scholars and practitioners have expanded the field of study in fields such as consumer behavior (Brasel & Gips, 2014), psychology (Spence & Gallace, 2011), and marketing (Peck, 2011).

Research by Jones and Yarbrough (1985) looked to define touch in an individual's everyday life. The findings highlighted 12 vague yet distinct meanings, ranging from support to playful aggression. An abundance of literature shows the positive effects of touching products in retail settings, which can influence and increase product evaluation confidence, purchase intentions, and consumer attitudes (Grohmann et al., 2007; Peck & Wiggins, 2006). Touch is connected to how consumers mentally and physically perceive information about a product (Balconi et al., 2021; Hultén, 2011) and allows consumers to haptically engage in assessing quality, feel textures, and evaluate sensory attributes such as softness, firmness, or smoothness. This tactile experience can reduce uncertainty and increase trust in the purchase decision.

Touching a product can create a sense of ownership even before purchase. Research suggests that physical contact with a product increases consumers' perceived ownership, leading to a greater likelihood of purchase and attachment to the item (Peck & Shu, 2009). McCabe and Nowlis (2003) concluded that consumers prefer retailers that allow haptic interactions to occur in-store. Consumers choose to shop for specific product categories in-store. Clothing is a good example, where texture is of utmost importance. This way, consumers can physically interact with the product (and not shop for such items online due to the inability to touch the product) (McCabe & Nowlis, 2003).

Research has shown that the human haptic system is exceptionally adept at encoding the physical characteristics of an object. The haptic system is immensely proficient in assessing four attributes which they coined *material properties*: texture, surface, temperature, and weight

(Lederman & Klatzky, 1987). As an example, consumers may touch a sweater to get a better idea of texture to ascertain if it is soft or rough or squeeze fruits and vegetables to identify how firm or soft the item is and equate the tactile information to its level of ripeness (Klatzky & Lederman 1992, 1993). Aristotle believed that touch shows a pure image of the inherent characteristics of an object, so the soft fur on a kitten would be revelatory of their intrinsic self or having a “softness of character” (Krishna, 2012, p. 335).

Touch and other senses, like sight and sound, contribute to a multisensory shopping experience (Krishna, 2012). The combination of sensory inputs enhances the overall perception and evaluation of products (Peck & Childers, 2008), making the shopping experience more immersive and memorable. Touching products has been found to create a personal and emotional connection between consumers and the items they are considering buying (Spence & Gallace, 2011). It enhances the shopping experience by allowing consumers to engage with the physical world, fostering a deeper connection to the product and brand. Haptic sensory provides shoppers with a rich psychological experience even when sight, smell, sound, and taste are missing or momentarily absent and should be utilized in retail marketing strategies (Balconi et al., 2021).

Touch adds a sensory dimension to the shopping process, allowing consumers to physically interact with products providing a more holistic and immersive experience, engaging multiple senses, and enhancing the overall shopping experience. The significance of touch can vary across product categories. While touch may be crucial for specific items like clothing, furniture, or cosmetics, it may have less relevance for digital products or experiences (Peck & Childers, 2008). However, in many retail contexts, the tactile experience remains a fundamental aspect of consumer decision-making and customer satisfaction.

Although touch significantly influences consumer shopping experiences, we are just beginning to learn and understand how (and to what degree) the COVID-19 pandemic affected consumers' NFT in in-store retail settings.

Product Touch Enhances the Shopping Experience

Shopping can be an inspirational experience where consumers go on a journey as they peruse up and down store aisles. Research has shown that consumers enjoy in-store shopping for its ability “to see, touch, feel, and try out items” (Skrovan, 2017, para. 6). An abundance of literature shows the positive effects of touching products in retail settings, which can influence and increase product evaluation confidence, purchase intentions, and consumer attitudes (Grohmann et al., 2007; Peck & Wiggins, 2006). Many (as much as 41%) view touch as central to the retail shopping experience (Retail Consumer Experience, 2020). Haptic engagement is critical to consumers who have a high NFT, which Peck and Childers (2003) “conceptually define as a preference for the extraction and utilization of information obtained through the haptic system” (p. 431). Touch allows consumers to gather haptic cues that aid in evaluating product attributes, quality, and utility (Peck & Shu, 2009). The tactile experience helps consumers form perceptions about the material (Veelaert et al., 2020), physical properties (Wongsriruksa et al., 2012), and texture (Klatzky & Peck, 2011) of products which can evoke emotional responses (Peck & Wiggins, 2006), creating a sense of connection between the consumer and the product (Peck & Shu, 2009).

Theoretical Foundations

An individual difference refers to a characteristic, attribute, or personality trait that distinguishes one person from another (Baumeister & Vohs, 2007) and is examined in a variety of fields, including personality and trait research (Boyle, 2010), sensory marketing (Gutman, 1988), psychology (Buss, 2009), and consumer behavior (Childers et al., 1985) to explain how

people differ in terms of their preferences, behaviors, or reactions. In the context of psychological needs, autotelic and instrumental tendencies refer to two different orientations or motivations behind engaging in activities for pleasure (autotelic) or pursuing specific goals (instrumental).

Varying significantly among individuals, the NFT refers to an individual's need or desire for physical contact, tactile stimulation, or interpersonal touch. Like many other needs, individuals may vary systematically in the degree to which they need to touch. The NFT measure (Table 1) developed by Peck and Childers (2003) is "conceptually defined as a preference for the extraction and utilization of information obtained through the haptic system" (p. 431). Haptics relates to the sense of touch and is a “subsystem of non-language communication which conveys meaning through physical contact” (Dictionary.com, n.d.). The NFT measure has demonstrated that some individuals have a greater need to touch products (or even imagine touching them) prior to making a purchase decision with confidence (Peck et al., 2013; Peck & Childers, 2003; Peck & Shu, 2009; Shu & Peck, 2011).

Table 1

12-Item Need for Touch Scale

Autotelic

- When walking through stores, I can't help touching all kinds of products.
- Touching products can be fun.
- When browsing in stores, it is important for me to handle all kinds of products.
- I like to touch products even if I have no intention of buying them.
- When browsing in stores, I like to touch lots of products.
- I find myself touching all kinds of products in stores.

Instrumental

- I place more trust in products that can be touched before purchase.
- I feel more comfortable purchasing a product after physically examining it.
- If I can't touch a product in the store, I am reluctant to purchase the product.
- I feel more confident making a purchase after touching a product.
- The only way to make sure a product is worth buying is to actually touch it.
- There are many products that I would only buy if I could handle them before purchase.

The NFT scale is a two-dimensional, 12-item scale that measures a consumer's need to touch products. The scale measures the instrumental and autotelic dimensions using six items, with responses ranging from strongly disagree (-3) to strongly agree (+3). Different individual characteristics can be identified based on dominant drivers. The NFT measurement aligns with McClelland et al.'s (1989) human motivation theory. The instrumental dimension of the NFT corresponds with self-attributed motivations (e.g., purposeful and goal-oriented drivers), while the autotelic dimension corresponds with implicit motivations, shopping for enjoyment and fun (Peck & Childers, 2003).

Supported by prior research, there are two dimensions of the NFT construct: instrumental (Babin et al., 1994; Peck & Childers, 2003; Sherry, 1990) and autotelic (Hirschman & Holbrook, 1982; Sherry et al., 1993). While the autotelic factor involves a hedonic-oriented response for fun where no purchase intent is required, the instrumental aspect of NFT looks to touch as a prerequisite for an outcome-directed salient purchase (Peck & Childers, 2003).

Autotelic individuals engage in activities for their own sake, finding intrinsic enjoyment and satisfaction in the process itself. Evaluating products in an autotelic fashion reflects hedonic tendencies and compulsive motivations (Peck & Childers, 2003). A consumer with an autotelic tendency may seek touch simply because they find it inherently pleasurable and satisfying, enjoying the touch's sensation, connection, and emotional benefits. In contrast, individuals with an instrumental tendency may seek touch to evaluate a product and consider the act a means to an end.

In reviewing the scale and assessing the qualifiers for each dimension (Table 2), instrumental is utilitarian in nature while autotelic is hedonic-oriented. Statement two on the scale is autotelic: "Touching products can be fun." Statement 3 is instrumental: "I place more

trust in products that I can touch before purchase" (Peck & Childers, 2003). The instrumental facet of touch is an outcome-directed transaction, while the autotelic factor is hedonic, and no purchase intent is required.

Table 2
Instrumental and Autotelic Drivers

Instrumental Drivers	Autotelic Drivers
Organized	Compulsive
Analyzed Thought	Fun Seeking
Specific Goal	No Goal Required for Haptic Stimulation
Utilitarian	Hedonic Response
Drives Purchase Behavior	Purchase Intention, not Required

Research has shown that touch is important for high-NFT consumers, for example, consumers with a higher NFT purchase with less confidence when they encounter a touch barrier (i.e., products locked in cases) (Peck & Childers, 2003). Researchers concluded that active interpersonal haptic blocking or sensory deprivation, where shoppers are individually told they cannot touch products, leads to feelings of frustration and negatively influences product evaluations (Peck, 1999; Peck & Childers, 2003; Ringler et al., 2019). With the onslaught of the COVID-19 pandemic, one such form of haptic blocking came in the form of touch contamination during traumatic consumption experiences.

Touch Contamination

Consumers experience touch contamination when they do not want to touch a product contaminated by the touch of another consumer or product (Argo et al., 2006). There is clear

evidence that the “risk perception of becoming infected with the coronavirus influences emotional responses associated with shopping considerations” (Szymkowiak et al., 2020, p. 53).

Researchers have examined touch contamination by employing the laws of contagion, an anthropological conceptual framework that elucidates the traditions and principles prevalent across various cultures to provide insights into the functioning of the world (Argo et al., 2006; Morales et al., 2018). The law of contagion is one of the fundamental laws of sympathetic magic and occurs when a source and a recipient, be it a person or an object, come into contact with another person or object, and the recipient is influenced by the source (Argo et al., 2006; Rozin & Nemeroff, 1990). Research has shown that contagion is the spill-over of effects, such as anxiety and fear, resulting from a significantly adverse event in one location as it spreads to impact other areas (Forbes, 2012).

The COVID-19 Pandemic & Consumer Shopping Habits

At the onset of the COVID-19 pandemic, there were instances of panic buying, stockpiling, and hoarding of essential items, such as food, sanitizer, and toilet paper. This behavior led to empty store shelves, scarcity of supplies, and an overwhelming sense of uncertainty and anxiety among shoppers. Stockpiling elevated pandemic-related distress signifies the adverse effect of higher levels of anxiety and apprehension that can influence shopping behavior (Schmidt et al., 2021). People who could not find the necessary items faced heightened stress and fear about their well-being and their families. Data from the pandemic showed that “trait-anxiety and intolerance of uncertainty are linked with increased levels of threat perception and fear of the coronavirus” (Schmidt et al., 2021, p. 1). Kim (2020) conducted three studies demonstrating participants' increased variety-seeking behaviors in response to an intensified perceived threat level.

Researchers have stressed the differences and importance of reactions related to disease or disaster (Slovic et al., 1980; Tomaka et al., 1993). Research has shown that when individuals cope with a threat, they are primarily affected by subjective threat appraisals (Slovic et al., 1980). When exploring subjective appraisal in relation to the threat of disease, Duncan et al. (2009) proposed the concept of perceived vulnerability to disease (PVD), which consist of two tendencies: perceived infectability and germ aversion. Depending on the disease, PVD showed individual differences were significant, as such, behavioral changes may be influenced by one's level of threat perception. As evidence, when faced with instability and uncertainty in disease-threat situations, behaviors associated with reducing the threat are induced (Hogg & Mullin, 1999; Van den Bos, 2001).

In pandemic-related conditions, behaviors skew to overreaction or irrational behavior (Kim, 2020). Szymkowiak et al. (2020) explored the Pleasure Arousal Dominance (PAD) model developed by Mehrabian and Russell (1974) when grocery shopping during the COVID-19 pandemic. It is the first study of its kind to examine how an individual's perception of risk (coronavirus infection) influences the emotional response associated with shopping habits and intentions (Szymkowiak et al., 2020).

Traumatic Consumption Experiences

Rew and Minor (2018) define a traumatic event as “a shocking, scary, or dangerous experience that affects someone emotionally” (NIMH, 2017, para. 3).) Others argue that individuals' psychological processes to cope with stressful experiences are ubiquitous and intricate (Carver & Scheier, 1994; Duhachek, 2013; Lazarus & Folkman, 1984).

Researchers have documented how consumers shop in traumatic events. Ryan (1993) identified that violence, crime, and attacks by terrorists adversely affect consumer decision-

making and behavior in the context of tourism. These adverse incidents can have a significant psychological impact on individuals and communities, leading to changes in their consumption patterns and behavior. We see examples of traumatic experiences with natural disasters (Sneath et al., 2014), separation and divorce (Pledge, 2008, 1998), and employment-related stress (Kasl, 1998). However, studies are beginning to examine the effects of pandemic-related stress on in-store shopping experiences and the ensuing coping mechanisms.

Research Questions

Millions of consumers experienced a drastic alteration in the shopping experience as they adjusted their behaviors to adapt to new sensory experiences, such as shifting to curbside pickup and not selecting their own products during the height of and post-pandemic. Extant research indicates that touch is an integral part of the in-store shopping experience and is even more prevalent for consumers with high NFT (Peck & Childers, 2003). Fear of haptic engagement due to the COVID-19 pandemic added another degree of uncertainty for consumers during in-store shopping experiences, impacting how some consumers perceive and initiate with products haptically and their overall level of enjoyment during their shopping experiences. Pandemic-related distress created anxiety and apprehension that likely influenced shopping behavior and affected the shopping experience. My research examines how the COVID-19 pandemic affected consumers' shopping experience and how consumers coped with the loss of touch during in-store shopping experiences.

Research Objectives

Anchored in consumers' NFT, I use longitudinal long-form interviews and autodiving to document consumers' shopping experiences and highlight the coping mechanisms that

consumers implemented when in-store haptic interactions with products were limited due to the COVID-19 pandemic. I supplemented the qualitative study with longitudinal surveys.

Research Design

To better understand how consumers' behaviors may have changed while shopping in the COVID-19 era, I take an exploratory, inductive sequential design approach. I conducted the research in the spirit of grounded theory (Glaser & Strauss, 1967) to legitimize qualitative research and emphasize the collection and analysis of data. Grounded theory is a systematic methodology in the social sciences that we use to construct theories through data collection and analysis, which operates inductively, contrasting with the hypothetico-deductive approach that tests a pre-existing theory (Pidgeon & Henwood, 2013). Because the researcher goes back and forth between the literature and their data, the theory is grounded, meaning the analysis and development of theories happen after you have collected the data.

A growing number of studies utilize longitudinal data collection and analysis as the technique allows us to identify and understand changes over time in people's lives and explore how individuals interpret and react to these changes (Hermanowicz, 2013). Longitudinally collected over a 12-month timeframe (Figure 2), I focused effort on a panel of 31 consumers (Table 3) who were the primary shoppers in their households before, during, and after the peak of the COVID-19 pandemic.

Figure 2

Study Timeline

STUDY TIMELINE

*DENOTES MONTH PHASE BEGAN

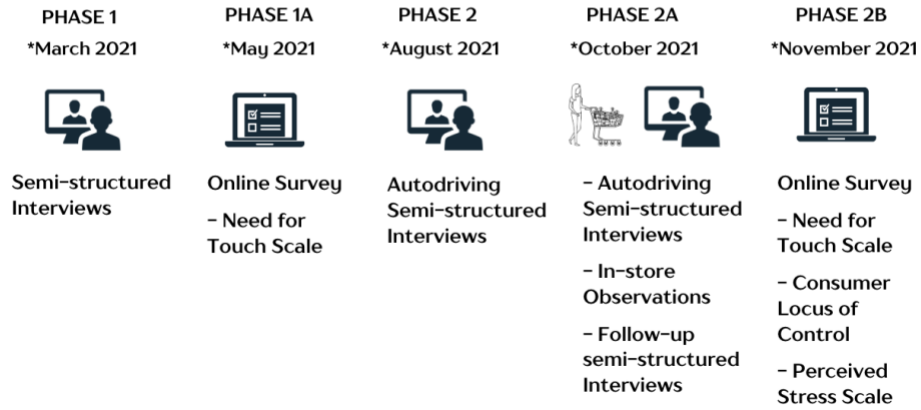


Table 3
Consumer Panel

	Pseudonym	Age, Gender, Race/Ethnicity	Occupation	Local	Household
1	Sophia	Mid 60's, F, Hispanic	Teacher	Orlando, Florida	Divorced
2	Ashley	Late 20's, F, Caucasian	Marketing Executive	Saint Louis, Missouri	Single
3	Tom	Late 40's, M, Caucasian	Graphic Designer	Chicago, Illinois	Single
4	Kennedy	Late 40's, F, Caucasian	Project Manager	North Carolina	Married
5	Erica	Early 60's, F, African-American	Nurse	Chicago, Illinois - Suburb	Divorced
6	Adam	Early 40's, M, Asian-American	Corporate Chef	New York, New York	Married
7	Tiffany	Early 50's, F, Caucasian	Marketing Director	Chicago, Illinois - Suburb	Divorced
8	Terri	Early 60's, F, African-American	Doctor	Chicago, Illinois - Suburb	Divorced
9	Amy	Mid 50's, F, Caucasian	Nurse	Chicago, Illinois - Suburb	Divorced
10	Diane	Early 50's, F, African-American	Business Owner	Dallas, Texas	Married
11	Dawn	Late 30's, F, Caucasian	Marketing Director	Chicago, Illinois	Married
12	Jade	Late 40's, F, Caucasian	Sales Manager	Minneapolis, Minnesota	Married
13	Evelyn	Early 40's, F, African-American	Teacher	Baltimore, Maryland	Married
14	Kathy	Late 30's, F, African-American	Account Executive	Alabama	Married
15	Timothy	Mid 40's, M, Caucasian	R & D Chef	New York, New York	Divorced
16	Tina	Late 20's, F, Caucasian	Researcher	Chicago, Illinois	Single
17	Sierra	Mid 40's, F, African-American	Writer	Chicago, Illinois	Single
18	Jim	Late 40's, M, African-American	Sound Designer	Chicago, Illinois	Divorced
19	Liz	Late 40's, F, African-American	Project Manager	Munster, Indiana	Single
20	Emily	Mid 40's, F, African-American	Account Manager	Chicago, Illinois - Suburb	Married
21	Rodney	Late 40's, M, African-American	Administrator	Chicago, Illinois - Suburb	Married
22	Eva	Late 30's, F, Italian-American	Graphic Designer	Chicago, Illinois	Married
23	Jordan	Late 40's, F, African-American	Writer	Chicago, Illinois	Single
24	Abigail	Late 40's, F, African-American	Teacher	Chicago, Illinois	Divorced
25	James	Early 50's, M, African-American	Project Manager	Houston, Texas	Married
26	Eleanor	Early 60's, F, African-American	Retired	Dallas, Texas	Divorced
27	Sarah	Mid 50's, F, Caucasian	University Administrator	Chicago, Illinois - Suburb	Married
28	Julia	Mid 40's, F, African-American	Administrator	Chicago, Illinois - Suburb	Married
29	Grace	Late 40's, F, Asian-American	C-Suite Executive	New York, New York	Married
30	Keno	Early 40's, F, Asian-American	Account Manager	Orange County, California	Single
31	Kerry	Mid 30's, F, African-American	Marketing Director	New York, New York	Single

I recruited informants using purposeful sampling. Virtual interviews began in March 2021 and concluded in March 2022. I employed semi-structured interviews to gather informants' insights regarding their grocery shopping experience. The interviews began by exploring their grocery shopping experiences and then proceeded to specific inquiries about their favorite in-store retail establishments. Informants reflected on their pre-COVID shopping experience and forecasted how it might change.

I conducted interviews with all informants using videoconferencing beginning in April 2021. Additionally, I conducted a second round of interviews with 17 panelists at another point during the study. Participants completed short surveys around the same time as the interviews to measure their NFT, COVID-19 Perceived Stress (Appendix B), and Consumer Locus of Control (Appendix B), and to capture sociodemographic information.

In the first phase of interviews (March and April 2021), participants were prompted to reflect on how they shopped pre-pandemic and during the height of the pandemic (March 2020). They were then asked to describe their current shopping behaviors and experiences. The second phase of interviews (August 2021-March 2022) relied on autodriving with visual stimuli depicting shopping situations to guide the exchange. I conducted autodriving pre-interviews with a small subset of the consumer panel, followed by in-store observations and post-interviews to validate the findings.

Consumer Panel Sample

The panel varied in race, gender, and age from consumers in their 20s through mid-60s. I recruited the consumer panel using purposeful (non-random) sampling techniques. The rationale and apparent power behind this approach is to select information-rich cases for study with rigor and depth (Patton, 1990).

Data Collection Methods

Phase 1

In the initial phase of interviews (March and April 2021), I prompted informants to reflect on their pre-pandemic shopping habits, their experiences of shopping during the height of the pandemic (March 2020), and their current shopping behaviors and experiences.

Phase 2

In the second phase of interviews (August 2021-March 2022), I used autodiving with visual stimuli depicting shopping situations to guide the conversation. Autodiving gives informants an increased level of authority when deciphering and explaining consumption-related events (Heisley & Levy, 1991; Sherry, 1988). During this phase, I interviewed 17 members of the consumer panel.

In a deviation from pure autodiving research, the visual stimuli were not of participants but were instead selected based on their demographic profile. This process aimed at helping informants project themselves onto the depicted scenarios. Based on our consumer panel, I created four main image decks containing a combination of gender- and age-appropriate images and videos for African Americans, Asian Americans, Caucasians, and Hispanics. The exploratory nature of photographs in qualitative research brings new questions to the surface, triggering both the subconscious and conscious of the informant, often producing unexpected results (Caldarola, 1988).

The initial autodiving interviews consisted of images and short-form videos, and participants projected themselves into the scenarios presented on the screen, in line with Heisley and Levy's (1991) recommendation that projective techniques are foundationally grounded upon human behavior having deep meaning and are indicative of one's identity and cultural principles.

Informants reflected on stimuli that spanned the height of the pandemic and normal shopping experiences represented by pre- and post-COVID shopping stimuli.

Phase 2A

During the pre-shop-along interview, informants viewed images and videos of people shopping in grocery and other in-person retail settings. To better understand shopping behavior, I employed ethnographic data collection techniques (naturalistic observation) combined with in-depth semi-structured interviews. I used field observations as a stimulus for a subset ($n = 2$) of our consumer panel. I conducted a pre-interview using autodriving, followed by in-store observations and a virtual follow-up post-interview to validate findings. This technique enables me to compare consumers' actual shopping behavior with their perceived shopping behavior. Moreover, this technique facilitates visual confirmation of coping mechanisms utilized by panelists with a high NFT. They visually inspect a product for extended periods before touching it to reduce touch contamination risks.

Supplemental Data Collection

The research design primarily utilized semi-structured interviews as the primary method, while the quantitative survey served as a secondary tool to substantiate qualitative findings and gather essential information regarding the participants' NFT. The rationale for including survey data was to supplement and inform the qualitative data during the analysis phase of the study. The semi-structured interviews led to the creation and distribution of two quantitative surveys in May and November of 2021.

Data Analysis

The dataset comprises of 45 hours of video footage and 651 pages of single-spaced transcripts. Following the tradition of grounded theory, the analysis employs a combination of

open, axial, and selective coding, which facilitates the evolution of a recurring and continuously developing data loop (Williams & Moser, 2019). I applied longitudinal coding to compare and contrast codes over time. In addition, I compared survey measures, specifically the NFT scale, across time points to evaluate any changes in the autotelic and instrumental dimensions. The quantitative analyses supplement the qualitative insights.

At the 26th informant, I reached data saturation as data collection and initial codes became repetitive. Data saturation is when new data no longer offers significant or novel insights, indicating that I have collected and dissected enough data to thoroughly meet research objectives and garner a comprehensive understanding of the data (Guest et al., 2020). To validate emerging themes and patterns in the data, I continued the interview process until I interviewed the 31st panelist, reaching theoretical saturation. For Phase 1 of the initial semi-structured interviews and Phases 1A and 2B of the longitudinal surveys, I involved the entire consumer panel of 31 participants.

Coding Process

Qualitative coding consists of data that is compiled, categorized, and thematically sorted (Williams & Moser, 2019), locating and examining commonalities in text, images, or photography and identifying concepts and categories within the data to explore relationships and outliers (Gibbs, 2007). Throughout the coding process, we gather and analyze panel data concerning “what they do, how they do it, and why they do it” (Charmaz, 2008, p. 408) within the context of in-store shopping during COVID. In the analysis (Table 4), I employed a combination of open, axial, and selective coding, allowing me to construct more profound theoretical interpretations and providing a nuanced understanding of the consumer panel’s viewpoints, dispositions, and behaviors (Williams & Moser, 2019).

Table 4
Coding Process

Open Coding	Axial Coding	Selective Coding
<ul style="list-style-type: none"> • Annoyance • Anxiety • Discomfort • Stress • Disgust • Frustration • Yearning • Fear • Unease • Denial • Loss • Sadness • Uncomfortable • Withdrawal... 	<ul style="list-style-type: none"> • Sight Before Touch • Resisting Touch • Can't Touch That! • You Touched It, It's Yours • From Inspirational to Transactional Shopping • Need for Social Proximity & Social Distance... 	<p>RQ1: How has the COVID-19 pandemic affected consumers' shopping experience, and what was the role of the need for touch?</p> <ul style="list-style-type: none"> • Fear of Shopping <ul style="list-style-type: none"> ◦ Touch Contamination ◦ Social Distance ◦ Mortality Salience • Shopping as a Reprieve <ul style="list-style-type: none"> ◦ Craved Normalcy ◦ Social Proximity ◦ Resolution <p>RQ2: How did consumers cope with the loss of touch during in-store shopping experiences amid the COVID-19 pandemic?</p> <ul style="list-style-type: none"> • Shock & Numbness • Yearning & Searching • Dispair & Disorganization • Reorganization & Recovery

The initial stage involved initiating open coding, where I disseminated the interview data into discrete excerpts and provided broad labels. The purpose of the codes was to be tentative and subject to evolve and change in a future round of coding. After five rounds of open coding, I transitioned to axial coding, identifying relationships and connections between codes and categories, enabling a deeper understanding of the data. During the axial coding stage, I aggregated the codes into categories that encapsulate the panel's behaviors and insights. In the final stage of the coding process (selective coding), I identified categorical connections by grouping similar codes into categories and developing overarching themes that emerged from the data for further analysis. Additionally, I implemented longitudinal coding measures to compare participants' insights over time (April 2019 through April 2022). To make informed interpretations of the data, I implemented a constant comparison method comparing new and previously coded data, ensuring consistency and facilitating the identification of patterns,

similarities, and differences (Glaser, 1965). Finally, by applying a technique from Consumer Culture Theory, retextualization, a process where theoretical insights and constructs from one paradigmatic conversation are reimagined and reshaped into a different paradigmatic vernacular, I have been able to bridge understanding of how consumers responded to the loss of touch and the coping mechanisms they adopted (Arnould & Thompson, 2005; Thompson et al., 1998).

Autodriving

In line with the role of imagery as a perceptual or sensory representation of information drawn from memory or created by modifying information from memory (Elder & Krishna, 2021; Kosslyn et al., 2001; MacInnis & Price, 1987), the visual stimulus provides a central anchor for informants to draw from. In the interviews, this sometimes triggered extreme responses such as anger, happiness, frustration, and loss associated with their in-store shopping experiences in the COVID-19 environment. Participants provided rich and detailed insights when identifying with the featured shoppers (i.e., physical attributes such as skin color, hair color or style, or facial features). A noticeable difference was the shift from singular and personal pronouns when participants could identify with and completely immerse themselves in the scenarios: statements with he, she, them, and they became “I” statements.

To minimize unintentional memory distortions, the autodriving interviews began with verbatim transcription statements from the initial interviews (Wallendorf & Brucks, 1993). Informants could reflect on previous shopping behavior to set the stage for autodriving. Using the modified autodriving technique, some informants struggled with identifying pre- and post-COVID-19 imagery. Some informants discussed mourning normal shopping experiences, and it was difficult for them to imagine and articulate what shopping would be like in a post-COVID environment.

Findings

Shopping During COVID

Examining the shopping experience for consumers during the COVID-19 pandemic, I found evidence of two dominant themes: shopping as a reprieve and the fear of in-person shopping. Some consumers looked to shopping as a respite, a getaway from the negative emotions triggered by the pandemic, to find a sense of everyday normalcy. At the same time, other consumers grappled with an intense fear associated with the in-store shopping experience. Consumers who once loved perusing up and down the aisles of their favorite retailers had a far different experience as they navigated their favorite retailers. As a reminder, the real names of participants in the exemplar quotes that follow have been replaced with pseudonyms.

Abigail's account exemplifies the difficulties she and others faced while navigating grocery store aisles. More than a year into the pandemic, she vividly expresses her stress and discomfort from additional concerns she now must consider, such as touch contamination (Argo et al., 2006), the fear of contracting COVID-19 from touching a contaminated item (Otterbring & Bhatnagar, 2022), and practicing safe social distancing from other consumers.

It was stressful, and the reason why I'm saying that is, well, for me, it was stressful because you have to think about extra things now. Is this cart clean? They're too close. Do they have a mask? Why don't they have on a mask? You know how I told you I like to touch? I was constantly sanitizing my hands because thinking somebody that may have been infected might have touched this product, so it was, that was different. Yes, very uncomfortable.

In contrast, Jordan's perception of shopping remains unchanged when comparing her experiences before and during the pandemic as she does not find shopping to be a source of stress, indicating a different psychological response compared to Abigail and other panelists. When asked if the shopping experience has changed, she commented, “No, it's (shopping) never stressful for me;

it's still the same.” Her viewpoint and a small subset of panelists highlight the individual differences in how consumers adapt to the changes brought about by the pandemic.

This divergence in perspectives showcases the varied psychological responses to the pandemic's impact on consumers' shopping routines and behaviors. This exploration has led to the emergence of six subcategories: Touch Contamination/Craved Normalcy, Social Distance/Social Proximity, and Mortality Salience/Resolution. Table 5 provides a comprehensive framework for understanding the range of psychological and emotional reactions observed in consumers during the pandemic.

Table 5

Fear/Reprieve Construct

Fear of Shopping	
Touch Contamination	The fear of touching products other consumers may have touched.
Social Distance	Spatial distance from others.
Mortality Salience	An overwhelming fear of disease or death associated with shopping.
Shopping as a Reprieve	
Craved Normalcy	The need to go back to the way things were before the pandemic.
Social Proximity	The need to be near others; a chance to physically see another person and acknowledge human existence.
Resolution	Finding ways to go back to the way things were before the pandemic, no longer allowing fear to control behavior.

A War Within

The Fear of Shopping and Shopping as a Reprieve during the pandemic presented significant challenges as panelists struggled with conflicting desires and anxieties associated with the shopping experience. The findings suggest that the panelist's level of NFT may play a role in shaping the way the grief model was experienced and managed.

The research brings to light the existence of ambivalence among a significant number of consumers. This subgroup faced an internal struggle, torn between seeking shopping as a reprieve from their daily stressors while simultaneously grappling with the fear and apprehension associated with in-store shopping. The conflicting emotions within this subgroup of panelists underscore the complex nature of their experiences, as they navigated a delicate balance between the desire for normalcy and the need for self-preservation.

I also found evidence of opposing tensions within the Fear and Reprieve pillars as a subset of panelists navigated both. The complex and multi-faceted nature of consumers' responses to the pandemic's impact on their shopping behavior is not a linear process.

Touch Contamination

I began by delving into the sub-pillar of Touch Contamination, where the fear of touching products and the potential repercussions, including the threat of severe consequences or even death, was prominently discussed by panelists. Tina vividly expressed her fear of contamination when reflecting on her shopping experiences during the pandemic, "We were like coronavirus is on everything. And you don't know who touched it before you, and we're all going to die." Her sentiment highlights the profound concerns that others discussed. Timothy's a self-proclaimed foodie who loves to go grocery shopping, further expanded upon this as he compares shopping during the pandemic to avoiding radioactive contamination. He professed, "There's too many

warning, and arrows, and negative signs, almost like poison. It's like toxic waste. Like you're not going to look at the flour. You're too busy worrying about, am I going to come into contact with the radioactive waste?" Other panelists had the same sentiment as they discussed shopping during the pandemic as navigating apocalyptic events and active war zones. Timothy's dramatic metaphor underlines the heightened state of tension and paranoia that enveloped the mundane task of grocery shopping.

Kathy adds another layer of complexity to the conversation by highlighting how pre-existing anxieties, such as germaphobia and OCD, were amplified with the onset of COVID-19. Kathy discusses the potential chain of contamination in transactions: "So in my mind, I was like, "You just touched that person's cash. They may have had COVID or something on the cash and now you're touching my groceries." Just watching that. Which again, I have that anxiety before COVID anyway, but it did get worse after COVID."

The pandemic made consumers more aware of their behavior and how it may affect others. Keno, another panelist, elaborated on this heightened awareness of cross-contamination and her conscious effort to minimize contact with products while shopping. She also discusses a behavior shift of sight before touch, as she inspects products visually and only touches items she intends to purchase.

When the pandemic hit, I was trying to be much more conscious of where I placed my hands, whether it was on my face or on things. I tried to watch cross-contamination as much as possible. When I was shopping in the grocery store, especially the first half of the pandemic, I didn't touch stuff. I eyeballed it and then I'm like, if that's what I want, I'm just going to pick it up and it's mine. I regret my choice, I regret my choice, but I'm not going to put it back.

When asked whether she prefers going through traditional checkout or self-checkout lines, Keno discussed the need to feel a sense of control during those turbulent times: "I think during the pandemic, it was one less person touching my stuff. I think for me it's just having a sense of

control of, I know what I picked up, I want to scan it to confirm and then I can place it into my bag and arrange it the way that I want to, and then I can go at a pace that is comfortable for myself.”

For some consumers, there were less extreme and minor shifts in their behavior. In Tiffany’s case, she no longer purchased food from the deli. Although she discusses being relatively comfortable going shopping during the height of the pandemic, there was one area where there was an apparent shift in behavior.

The only thing that I am consciously aware of a marked change is in the prepared hot food, so like fried chicken or the rotisserie chicken that was in a prepackaged clamshell. Something about that grosses me out. I think because I've watched people. I'll watch people pick it up or they'll play with the packaging. There's something about it that grosses me out and I'm just like yuck.

The fear of Touch Contamination triggered varying degrees of behavioral changes in consumers, from heightened fear and anxiety around touching products to minor alterations in purchasing preferences.

Social Distance

Social distancing is another resounding theme that emerged from the research. Sierra noted that other shoppers were the enemy, as she proclaimed, "I don't feel like there's a sense of camaraderie. I feel like everybody is a potential hazard and an enemy. If anything, I've noticed how many people are there." Her statement underscores the shift from viewing shopping as a communal experience to a solitary one, marked by vigilance and caution. She went on to say, “I generally do self-checkout, even if it's a lot of groceries, just because it's one less person handling your stuff. I for sure stay away from everybody and give them the look of death when they get anywhere near me.” She also discusses a vivid encounter with a fellow customer and the heightened exchange due to intrusive proximity.

It's stressful because really, other than visiting my parents, that's all I did. I didn't go anywhere else. In a way, it was nice to be out of the house, but then out of the house also felt very unsafe. Even last night at Jewel, there was a guy who came up to me and coughed right by me. When I visibly reacted, I was like, "What the fuck?" He started cracking up and fake coughing. I feel like, "Oh, my gosh." It was appalling.

Stephen continues the dialogue and further amplifies consumers' need for distance from other shoppers while navigating the store. Despite his typically non-confrontational nature, he admitted to asserting his boundaries when others encroached on his personal space: "While I'm a generally nonconfrontational person, I've had it three or four times where I've looked at the person behind me and been like, "Yo, I need a little bit more space in there. You're right up on me." Kathy echoed this sentiment, expressing her pre-existing discomfort with proximity and how it was intensified by the pandemic: "Like if somebody were to get too close to me, I would have anxiety with that, which I never liked people being too close to me anyway. Even with COVID, it's like, "Okay, I need you six feet at least," like, "Why do you have to come walk next to me? Go around the other way." That was in my head, like, "Get away." These quotes encapsulate the newfound assertiveness born from pandemic-induced anxiety and stressors.

Adding a poignant and important perspective to the dialogue, Kerry discusses the cultural dynamics intertwined with social distancing practices and the difficulty in attempting to control the direction of foot traffic in grocery stores, noting that such measures often contradict ingrained consumer patterns. Moreover, she discusses how markers indicating a six-foot distance have become useful, especially in large cities like New York City, where cultural norms regarding personal space may vary widely.

They tried to control which direction people were walking, and then the grocery store, which doesn't work. That's just not the consumer journey, and that's just not how people normally navigate. The six feet markers have been helpful, and especially in New York because we have so many different people and so many different cultures. Standing close to people is normal for certain cultures, and it's not an American culture, so I think even having that to remind people you can't be directly behind my head, it's helpful, especially in New York.

Our second pillar, social distancing, emerges as an important factor within our framework. The need for space during the pandemic caused consumers to perceive others as potential threats elevating assertive behavior to help consumers maintain personal boundaries.

Mortality Salience

The implementation of safety measures, such as wearing masks, maintaining physical distance, and sanitizing frequently, served as constant reminders of the potential danger and mortality associated with the coronavirus. Tina and other panelists discuss how the potential outcome of death became synonymous with the shopping experience: “We were like coronavirus is on everything. And you don't know who touched it before you, and we're all going to die.”

Sierra decreased her frequency and the amount of time she spent at retail establishments, particularly at the beginning of the pandemic, as she weighs the cost of venturing to the store. She extrapolates, “Are bananas worth dying over? Like I might want a banana, but I have other things I can eat. If I forgot something, it's just too bad. I'm not going back until I'm mentally ready and until I run out of enough stuff where I have to.”

Timothy echoed this sentiment, “There's too many warning and arrows and negative signs, almost like poison. It's like toxic waste. Like you're not going to look at the flour. You're too busy worrying about, am I going to come into contact with the radioactive waste?” Continuous exposure to news reports, social media, and conversations about the pandemic can reinforce mortality salience. Hearing about the number of cases, hospitalizations, and deaths may increase anxiety and make people more aware of their vulnerability (Zu et al., 2021). Timothy continues the discussion in his second interview where I used modified autodriving. The image he views is of a sign to keep a distance of six feet at a grocery store, he laments:

These are the signs that tell you something's wrong... It's going to put you on edge and you're going to be aware of it. These signs came on the heels of tens of thousands of

people dead in New York City that they didn't have space for them, for the bodies and they were being stored up in white containers, it was terrible. In the early days of COVID the death tolls in New York City was tremendous. And then you would see these signs.

Heightened consumer anxiety toward in-person shopping further fueled the final pillar of the Fear of Shopping construct, mortality salience.

Craved Normalcy

Consumers show an intense yearning for elements of their pre-pandemic life, expressing how ordinary shopping activities can serve as a comforting routine. The interviews reveal that consumers crave normalcy, and shopping excursions helped satisfy this need. Erica stated, "Going to the store is a way to just get out of the house and sometimes feel normal, a sense of normalcy to be around other people." adding to the dialogue, Sierra (with a touch of melancholy) states, "I miss it. I miss just aimlessly walking through any kind of store."

As more consumers switched to remote work, getting out of the house and breaking the monotony drove their shopping frequency. The grocery store took on a new role as a destination, not just a place to buy essentials but an opportunity to change environments. Tiffany shares, "I think more than anything, what drove the frequency was just that I was working from home, and sometimes it was just a reason to get out of the house. The grocery store became a destination because it got me out of the house."

The pandemic greatly influenced consumer behavior, turning shopping from a simple mundane routine into a sought-after sense of normalcy and escape from the confines of home.

Social Proximity

For some, the pandemic's social distancing measures and lockdowns led to isolation and loneliness while shopping. Restrictions on the number of people allowed in stores and limited social interactions can make the shopping experience impersonal, devoid of the usual social

connections once expected (Lai, 2021). Erica, an avid grocery shopper visiting stores daily pre-Covid, discusses how shopping became a source of depression.

However, there was also a need to be around others, and shopping fueled both, "It was very depressing to me to go out to the store in 2020. So, more times than not, the driving force was, I really needed something. And, honestly, working remotely, I would just feel kind of locked in and I needed to see people even if they had masks on, and I would go and just kind of roam around." She went on to discuss the therapeutic benefits that shopping provided her during the pandemic.

It's therapeutic sometimes just to go to a store with no plan, I don't have to stay and just look around at stuff or just touch and feel or just see other people doing things. In my line of work, I read about sick people all day and that can seemingly become huge. That is my world and I have to realize that's just a small part of my world. A lot of times it's therapeutic for me just to go out.

Jordan, also an avid in-store shopper, increased her shopping trips during COVID-19 as shopping was a reprieve: "Honestly, I really like grocery shopping, so that's like, my reprieve. When I go out, I'll just start looking, I don't buy things. I just look, say, "OK, this is cool. I didn't know this existed. I probably won't buy it anyway, but I just hang out at the grocery store."

Resolution

Panelists, much like Keno, reminisce about past shopping experiences, having the ability to walk through stores and try on clothes without a second thought, and how anxieties hinder them from re-engaging fully:

It's a little sad to think about what it used to be like and how long we've gone without it. I think when I think about like walking through the mall and just going into stores and checking things out, like trying clothes on and not even being really that worried about it. It's a little sad to me that I feel I haven't gave myself permission to do that in a while, and I probably won't for a while, but I do feel I have adjusted to a certain extent. I'm not expecting it to let up for at least several months. I do think that since we've been in it for so long, some of these mental thought processes and habits have become a little more solidified. I don't know if I'll ever go back to shopping, like, what it used to be, or if I do, it'll probably take some time for me to readjust back.

The pandemic caused consumers to analyze their actions to mediate the risk of exposure critically. However, for some, an endless cycle of worry repeats itself before a realization comes; despite their best efforts, precautions may not be enough to protect them. Erica, who believes she can assess problems with an analytical mind, continues this theme by sharing how the pressures of thinking about if she touched something was too high a cost: “The more the reality is setting in about it, it was just— I can be very analytical and when I start really analyzing what was I really doing, it just didn't make sense. Freaking out every time I forgot. If I touch something, "Oh, I touched-- oh, ah. Someone could have touched that.”

For some consumers, this may be a long process to adapt. Kennedy, a once-daily shopper at the time of the interview, had not entered a grocery store in over a year (as she shifted to curbside and deliveries) believes at some point in the future she would be able to venture into stores again: “I think maybe in a year. It's not happening tomorrow, that's for sure. I'm sure there's going to come a time where we're going to have to stop by, we don't have it, we're going to have to do it and rock, paper, scissors, who gets to be the person that goes in and runs in, runs out. Like I said, right now I like it, get it delivered, go pick it up.”

Coping with the Loss of Touch

The COVID-19 pandemic, considered a traumatic stressor, has the potential to significantly disrupt behaviors, with the psychological impact expected to last for months or even years to come (Bridgland, 2020). Researchers have found evidence of consumers experiencing grief, as demonstrated in Zhang and Amir's (2023) Consumer Pandemic Coping model. The data revealed that the stressors associated with the inability to touch triggered coping phases that resembled many of the facets and experiences evident in models of the grief process, such as Bowlby and Parkes' (1970) four-stages of grief model: Shock & Numbness, Yearning &

Searching, Despair & Disorganization, and Reorganization & Recovery. While these stages are linear and were initially associated with the process of grieving a loss of a loved one, they can also be applied to the emotional journey people experience during challenging times, such as the pandemic. Figure 3 shows the grieving the loss of touch conceptual model.

Figure 3

Grieving the Loss of Touch Conceptual Model

GRIEVING THE LOSS OF TOUCH



Shock & Numbness

Building upon the Fear/Reprieve conceptual model, initially, consumers enter a state of shock and numbness, experiencing a sense of disbelief and detachment as they come to terms with the sudden changes and restrictions imposed by the pandemic. At this beginning stage, most panelists do not miss haptic engagement with products specifically but mourn the shopping experience in its totality. Erica vividly paints a picture of shopping at the height of the pandemic:

That's probably part of the reason I decreased my time going. That is part of the reason as well I decreased my time going because one, it just looked like some apocalypse movie. I couldn't ever imagine shelves being as empty as they were, and then you had to go through a lot of hassles to go to a store, so I absolutely had to need something more. You had to stand in lines. Well, you still do, not as much though as then. The mask-wearing those-- now all of a sudden the things that I had not been concerned about before, every little thing like, "Oh, I did touch that," or make sure I carried my hand sanitizer all the time, watching people more so now, "You're a little bit too close." This became very depressing for me."

Some panelists discuss a sense of loss due to their inability to engage haptically with products as they once did freely. As evidence of this phenomenon, Ashley reflected, “One of my favorite things to do is go to Target and just touch things and just, you know, touch, touch the fabrics, touch the home goods, touch everything in it. Yeah, I'm a little bit weird in the fact that I just, I really wanted to go back to stores and touch things.” This initial stage serves as a crucial foundation for the subsequent stages of coping.

Yearning & Searching

In the second stage, Yearning & Searching, consumers longed for what they lost. They spoke of experiencing anxiety, frustration, and sadness and began searching for alternate ways to regain what was lost. Physical symptoms manifest in some consumers as Tina shares,

I think, I was just unsettled with how I was not clear on, like, how I could maybe get this virus, like, while shopping for food, like a necessity. So I definitely avoided going into the store because of that. It was a huge deterrent, just being unclear about how I could possibly get sick or my food, like the thought of touching everything was very gross and I would like literally feel my heart racing a lot of times in the store, like perspiration, like the whole physical symptoms as well.

Consumers sought out alternative ways to touch items. Adam notes a decline in in-store frequency but acknowledges a change in how he engages with items since COVID-19:

With watermelon I like to tap it. What I did realize, I did tap it instinctually because I want to listen to it when I tap it but I didn't use my hand. I used the back of my hand. I wouldn't have done that before but that was just-- I didn't even think about it. I just did it. That's how I've been doing. If I do need to touch something, I'll be mindful and try and touch it with the back of my hand. They had other herbs sitting out too. They had lettuces. I did not touch those at all unless I knew I was going to buy it.

Timothy continues this thread of thought by sharing,

In 2019, I wouldn't have cared. I would have smelled everything. I would've checked everything to make sure I'm getting optimal produce from asparagus to melon. Now I'm probably taking a piss on the wind and I'm just going to figure out a way to make it work because I really can't touch product. I might see someone else who's nearby giving me the stink eye type thing.

In a follow-up autodriving interview six months later Timothy goes on to say,

I've evolved this picking method to operation 2.0 now. I've done it now because I am still hyper-aware of, I shouldn't be fondling products that I may not be buying and someone else is going to have to have them. I don't know, I think we're always learning about this thing that's out there. Maybe I'm contributing to the spread by not being aware. I'm definitely hyper-aware, always was, even when I answered that. Now I really do have to trust my eyes and make a gut decision on whether or not that apple or that lime is going in my bag.

Erica shared the need to get a fix by touching items at the store:

I still miss touching. Sometimes though I'll go into the store like Kohl's-- I don't really go to Kohl's much but let's just say. [laughs] Well, even a fabric store and I'll just go through. [laughs] I'll just touch them and I'm like, "Oh, this is nice," or whatever and I'll get my fix that way... I got my fix on and I got to check stuff.

This stage is marked by feelings of anxiety, frustration, and sadness as consumers grapple with the limitations and adapt to new ways of interacting with products.

Despair & Disorganization

In the third stage, Despair & Disorganization, panelists become increasingly aware of the profound changes that the pandemic has brought about and the impact it has had on their shopping experiences as they navigate through a period of emotional turbulence. Informants reported feelings of anger, despair, and hopelessness, while the initial acceptance of the loss brought upon the need to withdraw from activities once enjoyed. Ashley shares, "And, um, when the pandemic hit, I was like, messed up, I had my, I was like, I got a holster of, of hand sanitizer, I got my gloves. It was honestly, I was like, practically hyperventilating by the end of the grocery trip, like, it was not fun, did not enjoy it, I was very bitter about it." Evelyn spoke of the change brought on by the pandemic, "It definitely has changed a lot. I have to pretty much go in there and get what I need to get. Don't touch everything. Stay away from people. You know, heaven forbid someone sneeze, I'm not going down that aisle, I'm turning around, that's it, even if they had their mask on, doesn't matter, or a cough is even worse, makes me feel like I need to exit the

store.” This stage also brought a sense of stress and confusion as Stephen shared his frustrations from a recent shopping trip:

I remember it was stressful. I was nervous. I wasn't nervous about me. I knew I had on my-- I remember, look, she just told you I had on my gloves so everything I'm touching. The funny thing is, I'm one of those people where-- this is not a joke. Well, I got through shopping, I'll never forget this. I was negotiating with myself about, "I touched my cart, I touched everything in that store. I now need to get my stuff in the car. Do I take off my gloves now? Should I touch my car with the gloves on? When do I take my mask--" That doesn't come with instructions. It sounds almost like sophomore to think at that level, but at the same time, I don't know, what do I know? I was very, very nervous.”

Lastly, some consumers like Evelyn disengaged entirely from in-store shopping activities:

Now I really don't even go to Best Buy because I know I want to go in and touch stuff and I'm really not doing that. So my husband, my son they have been into Best Buy numerous times since COVID, you know, since they reopened and you had to have an appointment for Best Buy. I would never go in, I just didn't want to go in and I still haven't actually. I don't think I've been back since, but pre-COVID-Evelyn, would've been in like, "Okay, let's go!" And you know, I would touch everything and even the CDs and look at this and go play with the printers and stuff, but not anymore.

Reorganization & Recovery

Characterized by a gradual acceptance of the new reality and the emergence of a renewed outlook, the final stage of Reorganization and Recovery emerges as consumers begin to find ways to adapt and regain a sense of control and stability. In evidence, participants spoke of intense feelings, such as anger and sadness that began to subside, and fond memories of past shopping experiences surfaced. Ashley proclaims,

I don't think that I have gotten really back to that place where I enjoy grocery shopping again, and where I feel like I can stop and touch things and look at new things it became very transactional in the pandemic. And that's not how I'm used to grocery shopping, I'm used to being a little bit more like inspired by my grocery shopping and it changed a lot during the pandemic, I'm feeling it start to change back a bit but I definitely don't stop and kind of, you know, enjoy my experience like I used to.

In an autodriving interview done six months after the initial interview, Tina expresses that with loosened restrictions, she is not as cognizant about touching things as she once was. She states,

I feel like I'm not as mindful of-- I don't want to touch everything. I do love feeling all the fabrics and things. Though I don't think I'm as reserved. I'm thinking-- We were in a new store two weekends ago or something and it had a ton of outdoor equipment. There's was all these Patagonias or whatever, and so I'm like feeling all of the fleece and stuff. It felt like I'm not scared to touch anything more just like, "This is worth it."

Panelists also acknowledged a shift in their pre- and post-COVID identities. Evelyn

shares, "So I'm definitely going to wear my mask and be cautious about what I do in public for probably years to come. Post-COVID-Evelyn isn't going away anytime soon."

Although the challenges persist, during the final stage, consumers continue to adapt, developing and instituting new strategies and behaviors to navigate the altered shopping landscape.

Phase 1A & 2B Supplemental Data

Data Collection, Method & Analysis

I administered the two-dimensional NFT Scale developed by Peck and Childers (2003) after conducting the primary qualitative interviews in May 2021. I asked the panel to reflect on their shopping experience in relation to their NFT during the height of the pandemic as well as at the time I distributed the survey.

In November 2021, I conducted Phase 2B of the study, as shown in Figure 4. The survey comprised of three validated measures: The NFT Scale (Peck & Childers, 2003), the Consumer Locus of Control Scale (Busseri et al., 1998), and the COVID-19-focused Perceived Stress Scale (Campo-Arias et al., 2020). I distributed the Consumer Locus of Control Scale to the consumer panel to identify if our level of control correlates or may interact with our NFT and stress levels. In addition, I collected demographic information in the survey. As part of the longitudinal design, I conducted a test/retest to compare how participants shopped at the time of the Phase 1A and 2B surveys. Test-retest reliability is assessed by distributing the same survey at least two times over a specified period to a group of people (Phelan & Wren, 2005).

Figure 4

Study 1A & 2B Measures

Need for Touch Scale

Recalled Perception During Height of Pandemic

Circa March 2020, Reported May 2021

Test / Retest: Recall Perception Circa May 2021, Reported November 2021

Consumer Locus of Control (CLOC) Scale

Measure distributed to assess if CLOC is a possible antecedent or moderator of need for touch.

COVID-19 Perceived Stress Scale

Scale dispersed to garner insights into how the COVID-19 pandemic may have affected stress levels in relation to need for touch..

Locus of Control

Locus of Control (LOC) is a psychological concept that directly relates to how individuals believe they have control of their surroundings, situations, and experiences (Rotter, 1954). According to Rotter (1966), LOC is a psychological theory that directly relates to the level of control individuals believe they have of their surroundings, situations, and experiences. Rotter's LOC is a personality construct and has prompted several studies that show the ebb and flow of control beliefs over one's lifetime (Ruth, 2007).

If an individual has a high internal LOC, they may believe that outcomes are within their control and firmly based on the decisions they make, while moderate internal LOC individuals may believe that outcomes are based on a combination of internal and external factors. Low external locus of control are when individuals believe that outcomes are out of their control.

The 14-item Consumer Locus of Control (CLOC) scale is an evolution of the aforementioned locus of control measure. The CLOC measure relates to consumer behavior and

can be used to forecast shopping behavior (Busseri et al., 1998). LOC is a robust predictor of internal and external factors associated with behavior and one's level of control.

Perceived Stress

Due to the public health crisis, there was a scarcity of scales to measure how the COVID-19 pandemic directly affected stress levels. As such, the COVID-19-focused Perceived Stress Scale developed by Campo-Arias et al. (2020) was the third and final measure included in the study. Based on qualitative findings, there was a severe increase in stress for some consumers, and garnering an understanding of one's level of stress could directly or indirectly affect how consumers engaged with products haptically was required to garner a better understanding of coping mechanisms that may be instituted in consumer in-store shopping experiences.

Study Design

As part of the longitudinal qualitative study that began in March 2021 (Phase 1) and August 2021 (Phase 2), the NFT scale was administered to compare and contrast participants' NFT prior to the pandemic against their current need. I reasoned a discernible decrease in autotelic touch (touch for enjoyment) and a simultaneous expansion in instrumental touch (touch for evaluation or functionality). This belief was driven by the qualitative findings and the behavioral shifts enforced by the pandemic's widespread influence.

Recruitment and Sample (Study 1A & 2B)

I collected survey data from the consumer panelists ($n = 31$) involved in the qualitative study ($M = 47.68$ years old; $SD = .40$). The surveys were distributed in April 2021 and again in November 2021. To prevent order effects, the presentation of the constructs in the survey was randomized. Participants were provided a \$10 Amazon gift card for their participation. As the participants were panelists in the qualitative study, no attention checks were included.

Study 1A

Power Analysis

The primary objective in administering the NFT scale to the consumer panelists from Study 1 (long-form interviews) was to supplement the qualitative findings; the aim was not to achieve statistical power given the limited sample size of 31 participants. To determine the necessary sample size based on the study design, a post hoc analysis was conducted. Results showed to achieve 87% power detecting a large (.50) effect size, the sample would need to be 31.

Measures

Study 1A measured respondents' individual NFT by using the 12-item NFT scale (Peck & Childers, 2003) (NFT Autotelic Current, $\alpha = .844$, NFT instrumental Current, $\alpha = .904$) and comparing past NFT (NFT Autotelic Reflective, $\alpha = .800$, NFT instrumental Reflective, $\alpha = .784$). A Cronbach alpha between 0.70 and 0.95 is considered acceptable and indicates good internal consistency (Tavakol & Reg Dennick, 2021); as such, the distributed NFT scales are reliable.

To compare the NFT over time, the NFT scales were written in the present and past tense (adapted NFT scale). Participants were provided explicit instructions (Table 6) to ensure the directions were understood and implemented correctly. Participants were first asked to answer questions based on their current shopping habits, such as “When walking through stores, I can't help touching all kinds of products.”

Table 6***NFT Survey Instructions***

<p style="text-align: center;">Current Shopping Habits</p> <p style="text-align: center;">“<i>I feel</i> more comfortable purchasing a product after physically examining it.” (NFT Scale, Peck & Childers, 2003)</p>	<p>The first part of this study is focused on your CURRENT habits. So, as you answer this series of questions, please reflect on your CURRENT behavior.</p>
<p style="text-align: center;">Past Shopping Habits</p> <p style="text-align: center;">“<i>I felt</i> more comfortable purchasing a product after physically examining it.” (NFT Scale, Peck & Childers, 2003)</p>	<p>The second part of this study is focused on your habits during the PEAK OF the COVID-19 PANDEMIC (about APRIL 2020). So, as you answer this next series of questions, please reflect on your behavior AT THE TIME OF THE COVID-19 PANDEMIC PEAK.</p>

After completing the 12 randomized items from the NFT scale, participants were provided the adapted NFT scale and asked to reflect on previous shopping habits and complete the questionnaire based on past behaviors (e.g., “When walking through stores, I couldn't help touching all kinds of products”). The scale was measured on a Likert-like scale, measured on 7 points anchored by -3= strongly disagree to +3= strongly agree.

Results

Table 7 reports all means, standard deviations, and correlations. The results reveal that Need for Touch Instrumental April 2021 ($M = .457$; $SD = 1.26$) has a positive correlation (.58) with Need for Touch Autotelic April 2021. Additionally, the Need for Touch Instrumental Reflective April 2020 ($M = -.645$; $SD = .996$) also shows positive correlations with all three variables but the highest correlation (.63) was observed with Need for Touch Instrumental April 2021. The survey results substantiated the qualitative findings, which indicate a decline in autotelic touch tendencies, (i.e., haptic engagement for fun, and a rise in instrumental touch, touch with purposeful intention).

Table 7***Study 2B Correlation Table***

	MEAN	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Need for Touch (A) (November 2021)	.295	1.45	1													
2. Need for Touch (I) (November 2021)	.655	1.28	.409*	1												
3. Need for Touch (A) (Reflective April 2021)	.177	1.38	.430*	.339*	1											
4. Need for Touch (I) (Reflective April 2021)	.457	1.26	.277	.698**	.512**	1										
5. Need for Touch (A) (April 2021)	-1.87	1.22	.775**	.496**	.457**	.309	1									
6. Need for Touch (I) (April 2021)	-.645	.996	.440*	.821**	.226	.566**	.581**	1								
7. Need for Touch (A) (Reflective April 2020)	-1.29	1.57	.292	.162	.691**	.193	.273	.080	1							
8. Need for Touch (I) (Reflective April 2020)	-.371	1.56	.219	.569**	.394*	.654**	.311	.634**	.290	1						
9. Consumer (I) LOC (November 2021)	3.62	.592	-.253	-.142	-.216	-.104	-.126	.017	-.101	-.013	1					
10. Consumer (E) LOC (November 2021)	2.10	.578	.277	.270	.184	.332	.132	.170	.061	.099	-.557**	1				
11. Pandemic (I) PSS (November 2021)	3.91	1.09	.025	.090	-.323	-.077	-.108	-.011	-.372*	-.159	-.138	.246	1			
12. Pandemic (D) PSS (November 2021)	4.29	1.16	.329	.207	.094	.409*	.274	.254	-.246	.245	.101	.110	.312	1		
13. Useful Touch (November 2021)	1.23	.644	.571**	.623**	.121	.479**	.438*	.693**	-.042	.213	.036	.239	.108	.339	1	
14. Actual Touch (November 2021)	1.14	.698	.632**	.618**	.321	.553**	.487**	.600**	.117	.288	.085	.084	.110	.382*	.895**	1

Note. Scale (1-7), Pearson Correlations (2-Tailed), *p<.05, **p<.01

The findings show there was a shift of reported NFT between the peak of the pandemic in April 2020 (autotelic, $M = -1.87$; $SD = 1.22$; instrumental $M = -.645$; $SD = .996$) and April 2021 (autotelic, $M = .177$; $SD = 1.38$; instrumental $M = .457$; $SD = 1.26$) when the survey was distributed. Consumers reported a reduced NFT during April 2020; however, one year later, there was an increase in reported NFT, indicating a shift back towards a greater desire for physical interaction with products.

Study 2B***Measures***

Participants began by completing the NFT scale to measure the current and past NFT. Next, participants provided insights into their current shopping behavior by answering the

approximate frequency of in-store grocery shopping visits ($M = 5.48$; $SD = 2.39$), the number of times they shop online ($M = 2.26$; $SD = 1.63$), the approximate amount of time (in minutes) spent in the grocery store in-person ($M = 491.26$; $SD = 108.3$), and the amount of time spent online (in minutes) shopping for items ($M = 448.16$; $SD = 133.4$).

Next, I established a scale encompassing 11 diverse categories of grocery store products ranging from fresh produce in packaging to frozen foods and paper goods. The scale, anchored with 0-Touch is Not Useful at All to 4-Touch is Extremely Important, was designed to decipher the influence of product categories on the perceived utility of haptic interactions ($\alpha = .843$) before purchase and the extent to which items within these product categories are actually physically interacted with ($\alpha = .890$) before consumers decide to finalize a purchase.

Following, participants completed the 14-item CLOC (Busseri et al., 1998) by reporting consumers' attitudes toward shopping (0-strongly disagree, 4-strongly agree) (Internal LOC, $\alpha = .468$, External LOC, $\alpha = .647$). I removed one item from Internal LOC (i.e., “Usually I make an effort to be sure that I don’t end up with a “lemon” when I go shopping”), increasing the Cronbach alpha to .680. I removed the item as I believed that some participants might find the survey question referencing a lemon confusing while answering questions about shopping in the grocery store. As an aside, removing “It’s hard for me to know if something is a good buy” increases the Cronbach alpha to .788; however, there was no valid rationale for deleting the item as it is not highly correlated with other external variables nor could it be considered confusing or difficult to understand.

Lastly, participants answered the 10-item Perceived Stress Test (Campo-Arias et al., 2020) by reporting their approach to shopping (1-strongly disagree, 7-strongly agree). The scoring mechanism for the PSS items entails that six items are evaluated directly on a 1-7 scale

($\alpha = .826$). Conversely, four items are scored inversely ($\alpha = .685$). The scale included items such as, “I have been confident about my ability to handle by personal problems related to the COVID-19 pandemic” and “I have felt overwhelmed during the COVID-19 pandemic.”

Results

The findings indicate a shift in the NFT between the peak of the pandemic in April 2020 and April 2021. In April 2020, participants reported a reduced NFT (autotelic, $M = -1.87$; $SD = 1.22$) and (instrumental, $M = -.645$; $SD = 0.99$) measures. However, one year later, in April 2021, there was a discernible increase in reported NFT by participants. The mean scores for autotelic ($M = .177$; $SD = 1.38$) and instrumental ($M = 0.457$; $SD = 1.26$) measures indicate a shift back towards a greater need for haptic engagement with products. This finding is consistent with qualitative findings that consumers sought increased tactile engagement with products when the survey was distributed in April 2021 in comparison to reported past behavior in April of 2020. Additionally, there was a positive correlation between autotelic and instrumental NFT ($r = 0.41$, $p < 0.05$) in November 2021 and April 2021 (reflective) when participants reflected on their past behavior, indicating a positive association between the two measures during that timeframe. I saw no significant interaction between NFT and Useful and Actual Touch, CLOC, or the Perceived Stress Scale.

As depicted in the paired t-test results, in Pairs 1 and 2, autotelic and instrumental tendencies during November and April 2021 did not exhibit statistical significance, indicating that participants' NFT remained relatively stable during this period. This lack of significant change could potentially be attributed to the timing of data collection, as by April 2021 the COVID-19 pandemic had been ongoing for a year, leading to potential adaptation and stabilization of consumer behaviors. Pair 4, in which participants reflected on past shopping

behaviors during April 2021 and April 2020 investigating instrumental NFT, also shows no significant change during this timeframe. In Pair 3, I examined autotelic NFT among participants when reflecting on their past shopping experiences during April 2021 ($M = -1.87$) and April 2020 ($M = -1.29$). The term reflective refers to how participants believed they shopped when looking back on their past shopping interactions and product interactions. The results reveal a notable shift in autotelic NFT mean scores, suggesting evidence of a significant change over the course of one year in participants' tactile preferences, which was influenced by the pandemic.

- **Pair 1: Autotelic NFT November 2021 / Autotelic NFT April 2021**

Autotelic tendencies in November 2021 ($M = .295$) and April 2021 ($M = .177$), ($\delta = .118$, $t = 0.69$, $df = 30$) shows a (one-sided $p = .248$; and a two-sided $p = .496$).

- **Pair 2: Instrumental NFT November 2021 / Autotelic NFT April 2021**

Instrumental NFT in November 2021 ($M = .655$) and April 2021 ($M = .457$), ($\delta = .198$, $t = 1.44$, $df = 30$, shows a (one-sided $p = .079$; and a two-sided $p = .158$).

- **Pair 3: Autotelic NFT Reflective April 2021 / Autotelic NFT Reflective April 2020**

Autotelic NFT Reflective April 2021 ($M = -1.87$) and April 2020 ($M = -1.29$), ($\delta = .580$, $t = 2.82$, $df = 30$) shows a (one-sided $p = .004$; and a two-sided $p = .008$).

- **Pair 4: Instrumental NFT Reflective April 2021 / Instrumental NFT Reflective April 2020**

Instrumental NFT Reflective April 2021 ($M = -.645$) and April 2020 ($M = -.371$), ($\delta = .274$, $t = 1.28$, $df = 30$) shows a (one-sided $p = .104$; and a two-sided $p = .208$).

During April 2020, the early stages of the COVID-19 pandemic, widespread fear and uncertainty led to a shift in shopping behavior, with consumers increasingly turning to online shopping to meet their needs while avoiding physical retail environments. As a result, participants' autotelic NFT scores in April 2020 ($M = -1.29$) may reflect a heightened desire for tactile experiences, possibly driven by the deprivation of physical touch due to safety restrictions and the closure of physical stores. Participants may have reported increased autotelic touch during this period as

they recalled pre-pandemic shopping experiences involving engaging with physical products. However, as the pandemic progressed and consumers adapted to shopping conditions, a decline in the perceived NFT during shopping experiences was found as participants indicated a considerable decrease in autotelic NFT scores ($M = -1.87$). Participants' reflections on their past shopping behavior during the pandemic may have revealed that they relied less on touch and more on alternative means of engagement, such as digital interfaces and virtual shopping experiences, the sustained prevalence of online shopping, and the emergence of new consumer habits and preferences formed during the pandemic.

The paired t-test analysis was significant, reinforcing the substantial nature of this shift in reflective autotelic NFT over time. The findings emphasize the importance of understanding not only consumers' actual sensory experiences but their beliefs and reflections when examining the dynamic changes in shopping behavior during an event like the COVID-19 pandemic.

Summary of Findings

The loss of touch prompted a shift in consumers' touch tendencies as we saw a decline in autotelic touch (haptic engagement for enjoyment) and an increase in instrumental touch (purposeful haptic interactions with products). By examining consumers' coping mechanisms in the face of traumatic experiences and considering the additional stressors brought about by COVID-19, the research initiates a discussion about the evolving landscape of consumer behavior and the importance of haptic engagement as part of the in-person shopping experience.

Our findings highlight two prominent themes that emerged concerning how consumers perceived shopping during the pandemic. Within each pillar, six subcategories emerged: Touch Contamination/Craved Normalcy, Social Distance/Social Proximity, and Mortality Salience/Resolution.

Within the Fear of Shopping pillar, consumers experience Touch Contamination, which manifests as a fear of touching products that other consumers may have touched. This fear is deeply rooted in the concern over potential virus transmission through surface contact, leading to hesitancy in engaging with products physically. Social Distance becomes a significant factor, as consumers aim to maintain spatial distance from others while shopping to reduce the risk of infection, some choosing to avoid physical stores altogether. Moreover, Mortality Salience played a role in the Fear of Shopping pillar, as some consumers experienced an overwhelming fear of disease or death associated with shopping. This heightened awareness of mortality influenced their perceptions and behaviors, prompting them to re-examine how they shopped.

The Shopping as a Reprieve pillar captures consumers' desire for Craved Normalcy, reflecting their need to revert to pre-pandemic shopping experiences and regain a sense of familiarity and comfort. Shopping serves to escape from the stressors and uncertainties of the pandemic, allowing consumers to find solace in familiar activities and routines. Additionally, Social Proximity becomes an essential aspect within this pillar, as consumers yearn for human connection, the act of seeing and acknowledging another person in a retail environment providing a sense of social fulfillment and reassurance. Furthermore, Resolution highlights how consumers overcome fear and apprehension, allowing them to engage in shopping activities without being controlled by fear.

A primary contribution of this research delves into the intricate connection between the grieving process and the loss of touch, specifically in the context of traumatic experiences such as the COVID-19 pandemic. The analysis reveals four distinct stages that some consumers underwent, namely Shock and Numbness, Yearning and Searching, Despair and Disorganization,

and Reorganization and Recovery. This closely resembles the facets of the grief process based on Bowlby and Parks (1970) grief model.

The Pursuit of Normalcy

As a result, some consumers became far more cautious about touching products to reduce the risk of infection and possible death. First, many consumers viewed shopping as a respite, a means to regain a sense of normalcy amidst the many stressors imposed by the pandemic. For these consumers, engaging in the shopping experience provided an escape from the uncertainties and anxieties triggered by the pandemic.

Conversely, a contrasting group of consumers who harbored a profound fear of in-store shopping led to an increase in health and safety concerns and a decrease in in-store shopping trips. Driven by health and safety concerns, consumers actively sought alternative avenues to procure goods and services. This fear, deeply rooted in the risks associated with physical interaction and potential exposure to the virus, prompted them to actively seek alternative avenues to procure goods and services (i.e., online platforms, delivery services, and other non-contact options) for their shopping needs. The fear of touch contamination emerged as a prominent driving factor for this shift in shopping habits.

Too Close for Comfort

Social distancing measures implemented during the pandemic created a sense of unease and isolation during in-store shopping experiences. The restrictions on social interactions and limited opportunities for interpersonal connections contributed to feelings of loneliness and detachment from the usual shopping experience. Tension emerged among consumers who yearned for social connections and proximity with others, highlighting the importance of human

interaction even in the context of shopping, while others embraced the rigidity of social distancing measures. This tension can be seen as consumers warred within themselves.

From Fear to Freedom

The continuous exposure to pandemic-related information and the implementation of safety measures led to heightened mortality salience among consumers. The heightened awareness of potential dangers and mortality associated with the virus became ingrained in the shopping experiences affecting consumer's perceptions and behaviors, influencing their decision-making and reshaping their interactions within retail environments. I found evidence that consumers expressed a strong desire to return to pre-pandemic routines and used shopping to experience a sense of normalcy in their lives. The act of shopping became a way to reclaim a semblance of their former lives while finding comfort in familiar activities.

Grieving the Loss of Touch

A primary contribution of the research delves into the intricate connection between the grieving process and the loss of touch, specifically in the context of traumatic experiences such as the COVID-19 pandemic. The analysis reveals distinct stages that consumers undergo during this emotional journey. These stages, namely Shock and Numbness, Yearning and Searching, Despair and Disorganization, and Reorganization and Recovery, closely resemble the facets of the Bowlby and Parks (1970) grief model.

Initially, consumers enter a state of shock and numbness, experiencing a sense of disbelief and detachment as they come to terms with the sudden changes and restrictions imposed by the pandemic. This initial stage serves as a crucial foundation for the subsequent stages of coping. During the second stage, Yearning and Searching, consumers long for what they have lost (e.g., the freedom to go shopping and touch products freely) and begin actively

seeking alternatives to regain a sense of fulfillment. As the pandemic progresses, consumers move into the stage of yearning and searching. This stage is marked by anxiety, frustration, and sadness as consumers grapple with the limitations and adapt to new ways of interacting with products. In the third stage, Despair & Disorganization, informants reported heightened emotions such as anger, despair, and a sense of hopelessness. Consumers become increasingly aware of the profound changes that the pandemic brought and the impact placed on their shopping experiences, often choosing to withdraw from activities they once enjoyed navigating through this period of emotional turbulence. Lastly, the stage of Reorganization and Recovery emerges; at this phase, consumers start to gradually accept and adapt to the new normal, developing new strategies, behaviors, and coping mechanisms to navigate the altered shopping landscape.

By examining these stages, I emphasize the significant emotional impact of the pandemic on consumers' lives and shopping experiences. The grieving process provides a framework for understanding the profound influence of the pandemic as a traumatic event. Recognizing these stages and consumers' emotional journey allows us better to comprehend the complexities of their behavior and motivations. By shedding light on the grieving process and its relation to the loss of touch during in-store shopping, this research provides valuable insights into the profound impact of the pandemic on consumers' lives and shopping experiences.

Limitations

While our research offers important insights into the emotional journey of consumers during the COVID-19 pandemic and its impact on shopping experiences, I acknowledge that there are several limitations that must be considered.

Firstly, this research focuses on a specific context of in-store shopping during the COVID-19 pandemic. This research captures the experiences and coping mechanisms of

consumers during a specific period of the pandemic, with data collection for the study beginning in March 2021, approximately one year after the height of the pandemic. Although panelists continued to face pandemic stressors during data collection, consumer behaviors and emotions may have evolved over time. Additionally, participants were asked to reflect on their pre-pandemic experiences. A limitation of this method of retrospective recall is that memory is reconstructive and can degrade over time (Bartlett, 1932; Norman, 1976; Wallendorf & Brucks, 1993). This provides an opportunity for future research to examine the phenomenon within a post-COVID context, collecting data that focuses on current shopping behavior without reflecting on past experiences.

Next, this research relies on self-reported data, which may be subject to recall biases, providing responses based on their perceptions or idealized versions of the pandemic, potentially leading to inaccuracies or incomplete understanding of behaviors and emotions. Saturation was achieved to combat this effect; however, further research could explore in-depth field observations as a potential data collection method.

These findings may not be directly applicable to other traumatic events when the loss of touch is experienced (e.g., an accident that causes severe bodily injury or dismemberment, natural disasters, or living in a combat zone). To further validate these findings, future research should expand to examine consumers within alternative crises that may have experienced a loss of haptic interactions with products. Future research can expand the scope to investigate if the loss of interpersonal touch may also experience the loss of touch grieving process.

This study utilizes purposeful sampling recruitment methods that can introduce unintentional and unconscious bias, limiting the generalizability of research findings. This brings an opportunity for future research to look to new methods to recruit participants, such as random

sampling. Although the longitudinal qualitative study was conducted with an ethnically, racially, socioeconomic, and geographically diverse panel, it is not intended to be a representative sample of the U.S. population. This provides an opportunity for further research to examine how traumatic experiences may affect different demographic and socioeconomic groups within (and outside of) the United States.

This research predominantly utilizes qualitative methods. A cross-sectional survey was distributed to the 31 panelists, but it held no statistical power and can only be used to supplement qualitative findings. A larger sample size would allow for a more robust analysis and a broader understanding of the phenomena at play. Additionally, I utilized a modified autodiving technique to collect the second phase of longitudinal data with custom image and video decks curated for each informant based on their demographic information as well as the Phase 1 interview. Although an innovative and novel methodology, there is limited data available about this form of data collection. Image selection by me (and not the informant) may introduce unintentionally for both parties. Further research should continue to embrace new methodologies such as this, testing them thoroughly with extreme rigor.

In assessing the quantitative results, the lack of significant correlations could be attributed to the small sample size ($n = 31$). Although the Useful and Actual Touch scale reached a Cronbach Alpha over .70, the scale was not validated and may have a measurement error introducing uncertainty in the accuracy and reliability of results (Dowrick, 2015). Due to the limited COVID-related perceived stress scales during the time of data collection, I utilized the Pandemic-Related Perceived Stress Scale, which was not previously cross-culturally validated (Peng et al., 2015) with a U.S. population. This could contribute to the low Cronbach as well as given the potential variations that can be observed based on the characteristics of the population.

Crafting the CLOC closer to a grocery shopping scenario may have benefited the robustness of the survey (Busseri et al., 1998). Additionally, prompting individuals to consider the advantages and disadvantages of different life decisions and consumer choices can lead to lower-quality decision-making outcomes (Wilson & Schooler, 1991).

Finally, it is important to note that external factors outside the scope of our research (e.g., economic conditions, political affiliations, government policies) may have impacted how consumers view the pandemic and the changing retail landscape.

Despite these limitations, this research contributes to the existing literature by exploring the grieving process and the loss of touch in the context of the COVID-19 pandemic. It lays the groundwork for future investigations to build upon and expand our understanding of consumer behavior during traumatic events, fostering more targeted interventions and strategies to support individuals and businesses in times of crisis.

Conclusion and Future Research

The findings suggest a multitude of directions for future research to explore. This study primarily focuses on the shopping experience amid COVID-19, the loss of touch, and its relation to the grieving process. While touch is a crucial aspect of consumer behavior and the in-store shopping experience, other factors, such as working conditions (e.g., a shift to remote work), financial constraints, and fluctuating economic conditions may also contribute to the complexities of consumer behavior during the pandemic.

As new developments unfold, future research could examine the phenomenon from a temporal perspective (distance from the pandemic) to capture behavioral shifts and the evolving nature of consumer experiences.

This research focuses on the loss of touch as a specific aspect of the pandemic experience. Future studies can explore the multidimensional impact of this loss, considering other sensory experiences, such as smell and sound, and their effects on consumer behavior. Understanding the interplay between sensory deprivation and consumer responses can guide businesses in designing sensory-rich environments or alternative ways to engage consumers in the absence of traditional tactile interactions. Future research could also benefit from examining the loss of other senses (e.g., sight, sound, taste, hearing) and the grieving process in both retail, online, and digitally immersive (e.g., augmented reality, virtual reality) settings. Future studies could also delve into the exploration of how these altered sensory experiences affect brand attitude and perception.

Examining the grieving process and the loss of touch in different cultural contexts can provide valuable insights into the universality or cultural specificity of consumerism on a micro and macro scale. Additionally, cross-cultural studies can uncover cultural variations in coping mechanisms, attitudes toward touch, and the emotional impact of traumatic events.

This research highlights the stages of coping that consumers go through in response to a traumatic event like the pandemic. Conducting comparative studies across different traumatic events can help uncover commonalities and distinctions in the grieving process and the loss of touch (and other senses). Comparing the experiences of consumers during the COVID-19 pandemic with other significant events, such as loss of employment, vehicular accident, or the loss of freedom (i.e., immobility, incarceration) can provide insights into the unique aspects and implications of consumer behavior. Future studies can investigate other coping mechanisms consumers employ and how this behavior may evolve over time.

While this research identifies stages of reorganization and recovery, further investigation is needed to understand the long-term effects of the pandemic on consumer behavior. Studying the trajectory of recovery and exploring the factors that contribute to resilience and adaptation will contribute to our understanding of post-traumatic growth, informing strategies for retailers, brands, and marketers.

The lingering effects of the pandemic continue to leave an imprint on the consumer psyche. By building upon this research and exploring these areas, future studies can deepen our understanding of the emotional and behavioral responses to traumatic events, such as the COVID-19 pandemic. This knowledge can inform the development of strategies and interventions to support individuals and businesses in times of crisis and contribute to the growing field of consumer psychology, sensory marketing, and haptic research.

The project highlights consumers' coping mechanisms in response to a traumatic experience and the limits the pandemic placed on in-store haptic interactions with products. The grief-life process for coping with the absence of touch has implications for retail marketing strategies, given the role of haptic senses as providing shoppers with a "full and complete cognitive experience" even when sight, smell, sound, and taste are "absent or temporarily isolated" (Balconi et al., 2021, p. 8). The findings also open new avenues for thinking about how trait-like consumer variables like the NFT may be more malleable than previously sought, especially because of traumatic experiences. The data signal that some of the sensory adjustments consumers made to their shopping experiences may be permanent and have lasting implications for retailers and brands.

CHAPTER 3: SENSE AND SENSE-ABILITY: CONSUMERS' SENSORY EXPERIENCES OF PRODUCTS AND BRANDS IN DIGITALLY IMMERSIVE ENVIRONMENTS

Virtual technologies can revolutionize the way we engage in consumption within digital environments. Given the pivotal role of human senses in shaping consumption choices, immersive virtual technologies present enhanced opportunities to influence how consumers connect to brands compared to the current digital environment (Laukkanen et al., 2022). This perspective is illustrated by Shawn's (current study's informant) description of an immersive virtual reality experience:

Your senses are much more heightened. It's almost like there's an instinct of-- Your instincts come back in a way that they don't when you're watching tv. When you're in that program, you're like, "I've got all my five senses. I've got to be aware." It's almost like your basic human needs of fight or flight or any of those survival-type instincts will-- they're there in your experience. Whereas when you watch a TV screen, it's just feedback. You're getting a message versus actually being a participant in a program.

While immersive environments have changed how consumers interact with brands and products, our understanding of this dynamic is still emerging (Labrecque, 2020). Despite the richness of sensory engagement offered by these technologies, they have primarily focused on stimulating the visual and auditory senses, often neglecting the power of touch in the sensory experience (Gatter, 2022; Rauschnabel, 2021). This research investigates the role of sensory activation, specifically touch, and how it may impact brand attitudes in immersive virtual environments.

As a fundamental sensory modality, the sense of touch holds significant importance in shaping consumer attitudes and perceptions. Extensive research on touch in consumer markets has consistently shown the positive effects of physical product interactions within retail settings (Grohmann et al., 2007; Peck & Wiggins, 2006). However, there is limited research on how

consumers engage with immersive technologies (Labrecque, 2020), and we currently do not know if it is possible to use sensory cues to influence consumer behavior in virtual environments (Laukkanen et al., 2022). Furthermore, limited research shows how the inability to touch products in digitally immersive settings affects brand attitudes. To address a gap in the literature, the research focuses on immersive technologies such as VR and consumers' NFT in these virtual environments, striving to understand how this critical sensory factor shapes consumers' perceptions and affects connections with brands (Laukkanen et al., 2022).

This research utilizes a mixed-method approach, providing the opportunity to gather data via a combination of exploratory qualitative research methods and an experiment enabling.

The Evolution of Digital Experiences

In the 1990s, the internet was primarily used to gather data; the 2000s brought the internet of people by connecting on social media platforms. The internet of the 2010s evolved into the Internet of Things (IoT). While there is no singular definition, the IoT is generally described as scenarios where network connectivity extends to items that are not typically considered computers (Ashcroft, 2022; Rose et al., 2015). Projections indicate that the economic impact of the IoT will exceed \$11 trillion, and by 2025, there will be approximately 100 billion IoT-connected devices (Rose et al., 2015).

The Internet of Place (IoP) introduces the concept of place into the digital realm. In the IoP, our physical and virtual locations (our places) become an integrated part of the internet experience. The IoP consists of things like homes, neighborhoods, and even virtual destinations where device sensors connect us to the world while exemplifying and contributing to the IoT (Carroll, 2018). The Internet of Ownership looks to develop a more democratic economic ecosystem through platform cooperativism (Schneider, 2018).

Virtual Worlds

The initial concept of virtual reality (VR) was developed in the 1960s by Dr. Ivan Sutherland, an internet pioneer and computer scientist. Augmented reality (AR) enhances the real world by overlaying digital graphics onto physical elements and is grounded in reality where it can be accessed through smartphone technology, providing users with the ability to interact with and manipulate their physical world (Sandström, 2022; xmreality, 2022). VR enhances fictional realities that can cultivate low touch, highly immersive experiences through which the visual and auditory senses are the primary activated receptors.

Currently, there are three types of VR: non-immersive, semi-immersive, and fully-immersive (Johnson, 2022). Non-immersive VR is a prevalent format that utilizes video game consoles or computers to create virtual environments. In this VR experience, the user remains aware of their physical surroundings while simultaneously engaging with a computer-generated virtual environment where they can assume control of a character and manipulate their actions within the virtual world. Semi-immersive VR offers users a partially immersive experience within a virtual environment but does not allow for physical interaction with the virtual environment. Users can explore and engage with the virtual world visually and audibly, but they cannot physically interact with objects or elements. This limitation distinguishes semi-immersive VR from fully-immersive VR experiences, where users can have physical encounters within the virtual environment, aiming to create an immersive and true-to-life experience by simulating as many sensory elements as possible. In essence, fully-immersive VR delivers a comprehensive three-dimensional environment. This technology necessitates users to wear a VR headset, isolating them visually from their physical surroundings and placing them into a digitally constructed environment, providing a higher degree of immersion (Slater & Wilbur, 1997).

Digital Sensory Marketing

Researchers widely agree that understanding human cognition necessitates recognizing the fundamental role of individuals interacting with their environment through senses and conducting thinking processes within their bodies (Krishna & Schwarz, 2014). Broadly defined, sensory marketing is marketing stimuli that affect consumer perceptions, actions, and judgment by engaging the senses (Krishna, 2012). Sensory marketing has focused on consumers' reactions to physical surroundings in retail settings until recently (Laukkanen et al., 2022). Petit et al. (2019) introduced the concept of digital sensory marketing. Digital sensory marketing is the next evolution of sensory marketing research set in a virtual environment and looks to understand how technology may assist in stimulating the consumer experience via multisensory representation (Laukkanen et al., 2022; Petit et al., 2019).

Digitally immersive environments, such as virtual and augmented reality, are increasingly influencing how consumers interact with products and brands. These technologies offer multisensory experiences tailored to simulate real-world product interactions or create new, impossible-in-reality experiences. VR empowers consumers to immerse themselves within a wholly simulated environment fully. This technology allows brands to construct VR experiences that narrate their story in an immersive 360-degree landscape. With VR, consumers can immerse themselves fully in branded environments designed to enhance the shopping experience. Retailer TOMS has installed VR devices in their retail stores worldwide to give consumers the option to go on virtual giving trips (Read, 2022), while Dyson's VR app allows consumers to interact with their hairdryers and vacuums virtually (Shah, 2021), experiencing products in context before making a purchase (Rauschnabel et al., 2017).

Literature Review

The Role of Touch

A predisposition, NFT is a trait-like measure referring to an individual's need to explore and interact with products via touch (Peck & Childers, 2003). Individuals exhibit systematic variations in their need for tactile encounters, like other needs: Need for Cognition (Cacioppo & Kao 1984), Need to Own (Shanahan et al., forthcoming), and the Need for Uniqueness (Tian, 2001). The NFT scale captures this dynamic using a two-dimensional framework comprising the instrumental dimension (associated with purposeful intent) and the autotelic dimension (related to hedonic experiences). The scale assesses each dimension using six items, resulting in six items for both the instrumental and autotelic dimensions. Examining dominant drivers allows for the discernment of individual characteristics. In the NFT construct, the autotelic dimension corresponds to implicit motivations associated with shopping for enjoyment and fun. In contrast, the instrumental dimension aligns with self-attributed motivations, such as purposeful intent and goal-oriented drivers (Peck & Childers, 2003).

While there is substantial evidence for the importance of physically touching products in retail settings, predictions are that within three years (2026 as of this writing), consumers will spend at least one hour in VR environments daily to shop, work, learn, socialize, or for entertainment (Rimol, 2022). Research shows that augmented and virtual reality has the potential to be a digital sensory-enabling technology (Gatter et al., 2021), allowing consumers to quench their need for sensory input while shopping online (Velasco et al., 2019). Although literature demonstrates that H-NFT consumers prefer to shop in person rather than online (Gatter, 2021; McCabe & Nowlis, 2003; Rathee & Rajain, 2019), the evolution of VR may decrease the sensory

gap experienced in online settings as it continues to advance “psychological, sensorial, and bodily immersion” (Murray, 1999, p. 1).

Consumers do not yet have the ability to physically reach out and touch virtual products (Rau Theschnabel, 2021). As such, there may be apparent drawbacks to the technology as digital environments may potentially frustrate consumers (Velasco et al., 2021), especially H-NFT consumers who experience touch barriers from the inability to physically engage (Peck & Childers, 2003). This directly impacts how touch-motivated consumers are transported into virtual environments.

Mental Simulation

Mental simulation is a key component of narrative transportation, and mental simulation is the imitation of past experiences or hypothetical events processed cognitively, often taking the form of stories or narratives (Escalas, 2004; Fiske, 1993; Polkinghorne, 1991). Mental simulation allows people to reexperience and redefine past events, practice for situations to come, and reconstruct past occurrences while blending in elements of a hypothetical nature (Escalas, 2004). Often taking the form of narratives or stories, the ability to simulate past or hypothetical situations could be one of cognition's most distinctive and vital features (Escalas, 2004; Taylor & Schneider, 1989). Mental simulation is a key component of narrative transportation, as mental simulations will often take the form of stories or narratives (Escalas, 2004; Fiske, 1993; Polkinghorne, 1991).

Narrative Transportation

Identified as a psychological state, transportation is related to transportability, a trait measure (Appel et al., 2015; Dal et al., 2004; Mazzocco et al., 2010). Transportation is associated with several personality trait measures: the need to affect, the degree to which

individuals want to experience (Appel et al., 2012; Appel & Richter, 2010), and trait absorption, which is a predisposition to deeply immerse oneself in sensory experiences such as smells, sounds, and pictures, as well as mystical experiences, which involve experiencing altered states of consciousness (Witthöft et al., 2008).

Gerring (1993) first coined narrative transportation when referring to reading books and the story receiver being transported into the narrative. Narrative transportation allows one to be lost and immersed within a story. When consumers are transported into a narrative world, they can experience deep emotional connections and intense mental imagery, with intentions and attitudes changing to reflect the story in which they have been immersed (Green, 2008, 2021). The feeling of being “lost in a story” (Green, 2021, p. 87) is indeed the essence, the nucleus of narrative transportation theory. Narrative transportation is conceptualized as “transportation into a narrative world as a distinct mental process, an integrative melding of attention, imagery, and feelings” (Green & Brock, 2000, p. 701) while one's surroundings and the passing of time in the physical world may go unnoticed. Research has shown that the content (the story) is more important than the medium (i.e., books, television shows, movies, virtual reality) in which it is consumed (Braddock & Dillard, 2016; De Graaf et al., 2012; Green, 2021). However, the story must be relatable to the audience, so there is a level of narrative engagement, a theory closely aligned to narrative transportation in which one becomes engaged within the narrative by mentally simulating or imagining the narrative event (Green, 2021; Mar & Oatley, 2008).

Individuals are more likely to be transported by stories through highly emotional experiences, be it happiness, sadness, or surprise (Green, 2021). While an immersive digital environment can stimulate all the senses (i.e., sight, sound, touch, taste, smell), three pillars are required for a deeply engaging digital experience: a) a narrative that offers b) high-quality visuals and sound and c) intuitive user interactions.

Research Objectives and Methods

Understanding the role of senses in shaping how consumers perceive and connect with brands in virtual settings can assist in creating immersive digital experiences within the metaverse. This research investigates how sensory cues may influence consumer behavior in virtual environments (Laukkanen et al., 2022). Specifically, it explores the role of touch in an environment that primarily activates the visual and auditory senses.

There is a long history of consumer researchers using experiments to manipulate environmental elements and garner insights into consumer behavior and decision-making processes (Peck & Childers, 2008). This research extends this body of knowledge by using qualitative research methods in tandem with an experiment. Adopting a mixed-methods approach, this research presents a comprehensive platform for data collection, beginning with qualitative semi-structured exploratory interviews that allow for flexible and deep-diving discussions (Study 1) and an experiment designed to generate empirical, quantifiable data for rigorous analysis (Study 2). This blend of methodologies enhances the richness and robustness of the data, allowing us to capture a holistic view of the research topic. Across two studies, I explore if the inability to engage in digitally immersive environments physically affects initial brand attitudes.

Study 1, Study Context

The recruitment strategy utilized purposeful sampling techniques to target informants. The method's power and reasoning come from its concentration on "information-rich cases" (Patton, 1990, p. 169), which requires a comprehensive examination of the data. I interviewed 17 participants from across the U.S.

Immersive Experience and Short-Form Interviews

Study 1 had informants experiencing a seven-minute VR meditation. Following this digitally immersive experience, I conducted short-form interviews to identify the elements that participants found most critical in the VR setting. The immersive environment emulated outdoor nature scenes, encompassing desert landscapes, caves, trees, mountain peaks, stars, and the sun. At certain points during the experience, the setting transformed into an interactive virtual galaxy, giving participants the sensation of floating through space. After the immersive experience, participants shared their insights about the experience, which were instrumental in identifying the most impactful components of the VR setting. These interviews aimed to pinpoint the most effective stimulus for the experiment. Table 8 showcases the consumer panel for Study 2.

Table 8
Consumer Panel

	Pseudonym	Gender, Race/Ethnicity	Occupation	Local	Household
1	Melissa	Late 40's, F, African-American	Genair	Chicago, Illinois	Single
2	Peter	Early 40's, Male, Mexican-American	Rudy	Los Angeles, California	Married
3	Joshua	Early 50's, M, African-American	Ali	Los Angeles, California	Single
4	Caroline	Late 40's, F, Caucasian	Candice	Chicago, Illinois	Divorced
5	Angela	Late 20's, F, Caucasian	Lauren	Los Angeles, California	Single
6	Megan	Late 20's, F, Mexican-American	Karla	Los Angeles, California	Single
7	Sharon	Late 40's, F, African-American	Kim	Baltimore, Maryland	Married
8	Terrance	Late 20's, M, Caucasian	Rankin	Los Angeles, California	Single
9	Sean	Late 40's, M, Caucasian	Dean	Portland, Oregon	Married
11	Eric	Late 50's, M, Caucasian	Rod	New York, New York	Married
12	Delila	Early 30's, F, Indian-American	Sangeetha	Los Angeles, California	Single
13	Barabara	Mid 40's, F, Caucasian	Nina	Los Angeles, California	Married
14	Jennifer	Mid 40's, F, African-American	Dejuan	Los Angeles, California	Single
15	Bridget	Late 50's, F, Caucasian	Anne	Chicago, Illinois	Married
16	Jennifer	Mid 30's, F, African-American	Sherie	South Bend, Indiana	Single
17	Sarah	Late 30's, F, Mexican-American	Marlene	Los Angeles, California	Married

Findings

I analyzed the data with open, axial, and selective coding. Through the coding process, two primary themes emerged: Rooted in Reality and Immersion Through Physicality.

The emergence of the theme Rooted in Reality became evident during the data analysis. Informants made frequent associations between elements of the virtual environment and their real-world experiences or familiar locations. Eric states, "If you want people to feel as if this is reality, make it places people know." His comments further solidify this theme: "When you're

out in nature, you can see the stars better. I always loved that about nature, and so that helped me feel grounded like, 'Oh, this is real.' This is what I would see in real life.”

Megan continues this theme of realism, expressing how in her everyday life she goes outside to settle after long days and how she felt connected in the immersive experience, "I felt connected to the galaxy, only because in my regular life when I want to feel relaxed or when I want to settle down after a long day, I tend to go outside and I look into the sky, the moon, the stars." She goes on to say, “When you're in outer space and then it comes back to the desert, that's when it felt like really real because it reminded me of Joshua Tree.” Terrance continued this stream of thought, sharing, "It felt real, especially the final location; imagery was pretty realistic, looking at the mountains in the back and everything. That was really cool."

The theme of Immersion Through Physicality was evident in participants' perceived sensation of movement and interaction with virtual objects. Participant responses indicated an impression of physical presence within the virtual environment, as exemplified by Adam, "I liked it because it helped me stay grounded and pay attention to what's going on because I was actually interacting, actually doing something.” Sean continued the theme as he enjoyed the immersiveness and wanted to engage in the virtual environment physically. “I think the 3Dness of it convinced me. Being in the cave was immersive; being in space in a way was immersive. Seeing the 3D imagery of the rock was really, really distinctive for me because, as I mentioned before, I wanted to climb over it.”

All did not enjoy the physicality, as Sarah had an alternate perspective of the experience:

It's telling you at one point to pull the cords of your musical something. You're like, "Okay, well, I'm supposed to be relaxing, but you have me pulling chords and trying to make noises." I feel when a person really wants to be relaxed, they don't want to be exercising all these other elements of oneself.

The qualitative data provided critical insights into how immersive consumers perceive digital experiences. The Rooted in Reality theme demonstrated that participants often grounded their immersive experiences in real-world contexts, associating elements of the virtual environment with familiar locations or experiences. Participants frequently expressed that the more the virtual environment mirrored or evoked real-world experiences, the more real and impactful the experience felt. The relatability and familiarity of the virtual environment enhanced their sense of immersion, suggesting that effective virtual environments may not entirely be about creating something new, but effectively engagingly simulating the known.

The second theme, Immersion Through Physicality, highlighted the perceived sensation of movement and interaction within the virtual environment. Many participants enjoyed the physicality of the experience, with interactive elements contributing to a deeper sense of presence and engagement. However, this sentiment was not universal, with some participants finding the interactive demands incongruent with their desire for relaxation in the virtual meditation.

The qualitative study was instrumental in shaping the stimulus for Study 2. The recurring theme of linking the virtual environment to real-world experiences among panelists prompted me to select a stimulus that was grounded in reality, despite the expansive nature of a virtual meditation that takes individuals on a journey through space. It was essential to opt for a stimulus that was not only realistic but also commonplace, something that individuals might encounter daily. An industry partner suggested an origami maple tree, a notion that study participants further reinforced.

This choice of stimulus, embodying an everyday object represented artistically and thoughtfully, was both meaningful and grounded, mirroring the real-world connections sought in

the virtual experience. Consequently, it allowed me to authentically bridge the virtual and physical worlds, thereby enhancing the study's effectiveness and relevance.

Overview of Pre-Study 2A, Pre-Study 2B, & Study 2

Study 2 shifts to a quantitative paradigm, assessing the moderating role of NFT in forming brand attitudes in immersive digital environments.

Study 2 adopts a quantitative measurement approach to test the hypothesized relationships and model empirically. It takes place in three phases, with two pre-tests followed by the main study. The goal was to understand better if the NFT impacted brand attitudes in immersive environments. Contrary to intuition, Gatter et al. (2022) illustrates across multiple experimental studies that consumers with a high-NFT rank AR content more favorably compared to those with a low-NFT.

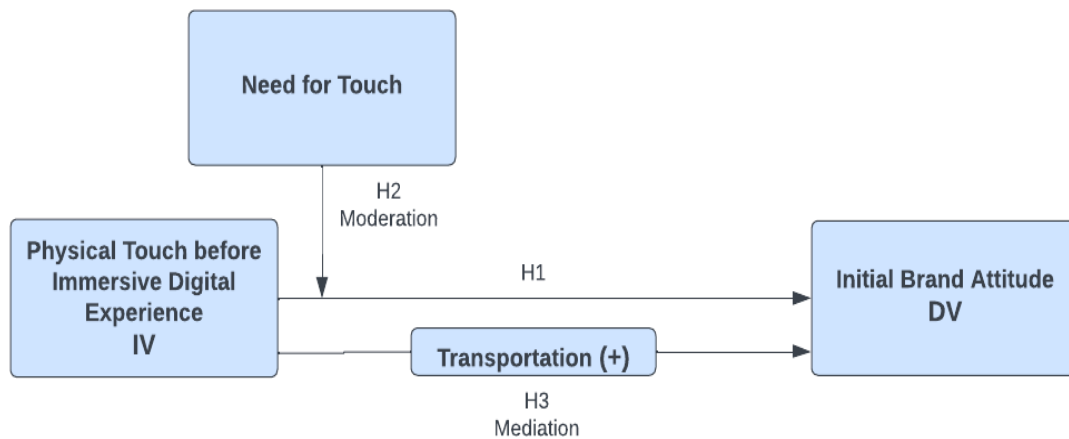
Given that AR integrates both physical and digital realms, I actively question how NFT influences brand attitudes within fully immersive VR contexts.

I expect that the degree to which encounters with brands in an immersive digital environment generates brand attitudes will change as a function of consumers' NFT. A physical, tactile encounter (compared to no encounter) with a featured product before an immersive experience should lead to more positive brand attitudes (H1). Additionally, NFT moderates the relationships between a physical encounter and initial brand attitude, such that a real-world tactile interaction before an immersive experience should lead to more positive brand attitudes for high-NFT consumers in comparison to low-NFT individuals. Furthermore, narrative transportation (the degree to which an individual is immersed in the virtual environment), is hypothesized to mediate the relationship between physical touch and initial brand attitude (H3).

Conceptual Model

Figure 5

Conceptual Model



Touch is a central sense, and the ability or inability to touch an item can influence how consumers mentally and physically perceive information about the product (Hulten, 2011). The inability to haptically engage with products has far more significant negative implications on consumer attitudes and purchase intention than the inability to inspect products visually (Balaji et al., 2011). A physical, real-world tactile interaction with a featured product before a digitally immersive experience will likely generate a more positive attitude toward the brand. First, tactile interactions provide a multisensory experience, engaging visual and haptic senses (Spense & Gallace, 2011), leading to a stronger and more memorable impression of the product and enhancing the overall brand experience. Second, touch is known to elicit emotional responses (Peck & Wiggins, 2006), and a positive haptic encounter can, in turn, influence brand attitudes. Third, tactile interactions can enhance the perception of product quality (Peck & Childers, 2003), and physically touching a product before an immersive experience may foster a more favorable attitude toward the brand. Moreover, a tactile encounter may increase the consumers' sense of

ownership (Mardon et al., 2023) and connection to the product, strengthening their brand loyalty and positive brand associations (Peck & Shu, 2009). Lastly, the real-world tactile interaction may serve as a priming effect, preparing consumers for the immersive experience and shaping their expectations, which can lead to a more positive response to the digital encounter with the product. As such, I propose a physical, real-world tactile interaction with the featured product acts as an influential precursor to a digitally immersive experience, enriching the sensory and emotional aspects of the brand encounter, which can lead to a more positive attitude toward the brand compared to a no-touch/visual-only condition. Thus,

H1: A physical, real-world tactile interaction with a product that is featured in an immersive experience should generate more positive attitudes toward the brand, compared to no tactile interaction/visual-only with the featured product.

The sensory-rich experiences provided by digitally immersive environments could influence how consumers perceive products and brands; however, existing literature lacks sufficient guidance on strategically designing VR experiences to generate favorable customer perceptions, attitudes, and behaviors (De Regt et al., 2021). Touch plays a crucial role in our everyday lives, influencing our interactions, judgments, and decisions; however, in a VR environment, the absence of tactile feedback can create a sense of incompleteness or disruption, which may impact the user's sense of presence, immersion, and overall experience. Current research dictates that high-NFT consumers tend to have stronger imagery (Huang & Tseng, 2015) and AR may provide key benefits for touch-motivated consumers. As such, I propose that NFT will moderate the relationship between a tactile encounter and initial brand attitudes:

H2: NFT moderates the relationships between a physical encounter and initial brand attitude, such that a real-world tactile interaction before an immersive experience

leads to more positive brand attitudes for high-NFT compared to low-NFT.

Narrative transportation is a likely candidate to mediate the relationship between a real-world tactile interaction and initial brand attitude. First, narrative transportation fosters deep emotional connections and intense mental imagery (Green, 2008, 2021), which may heighten the emotional impact of a real-world tactile experience leading to a stronger connection with the brand. Second, narrative transportation requires cognitive involvement and mental simulation (Escalas, 2004), enhancing individuals' attention to the tactile aspects of the product and its brand, influencing initial brand attitudes. Third, being lost in the story during narrative transportation induces a state of absorption (Green, 2021), potentially amplifying the sensory experience of touching the product and further shaping consumers' brand attitudes. When individuals are transported into a compelling story, the messages and themes can influence their perceptions of the brand, making the real-world tactile interaction more persuasive in shaping initial brand attitudes. Additionally, the seamless integration of a real-world tactile interaction into the narrative context reinforces its significance, making it an integral part of the story experience and impacting brand attitudes. Narrative transportation can act as a cognitive and emotional bridge, connecting real-world tactile interactions with consumers' brand attitudes. Its mediating effect may likely be significant in shaping initial brand perceptions within immersive environments.

Building upon these insights, our hypothesis posits that narrative transportation serves as a mediating factor between real-world tactile interactions and initial brand attitudes. As individuals become engrossed in a narrative world, the experience of tactile interactions can influence and shape their initial brand attitudes within the immersive digital environment. Thus,

H3: Narrative transportation mediates the relationship between a real-world tactile interaction and initial brand attitude.

To garner a comprehensive understanding of consumer behavior in immersive environments, I developed surveys with a series of measures that included NFT to assess participants' desire for tactile encounters. Involvement gauged psychological investment in the VR experience while frustration captured negative emotional responses to the VR setting. Further details regarding the measures applied in the studies are shown in Study 2A.

Pre-Study 2A

Study Design

Upon arrival, participants signed the study consent form and completed a six-question survey as part of another study. I then provided participants with an Oculus VR headset to experience a seven-minute immersive virtual reality meditation. Immediately following the immersive experience, participants completed a battery of questions. The objective of the pre-study was to streamline and remove highly correlated measures for the next research phase.

Recruitment and Sample

Survey data were collected from 43 U.S. college students from a west coast university who were recruited as part of a course requirement. Females were 61.5% of participants ($M = 20.87$ years old; $SD = .641$), and one participant preferred not to answer (2.9%). Three respondents failed at least one of the three attention-check questions, and one did not complete the survey and was removed from the data analysis ($n = 39$).

Power Analysis

A post hoc analysis was conducted. To achieve 73% power, detecting a large effect size (0.50), and having a significance criterion of 0.05, the sample size required is 39.

Measures

The three-part cross-sectional survey first measured respondents' NFT with the 12-item NFT scale (Peck & Childers, 2003) (NFT autotelic, $\alpha = .86$, NFT instrumental, $\alpha = .69$).

Respondents completed the measure as part of a prescreening criterion to measure their level of NFT. The Likert-like scale was measured on seven points, anchored by Strongly Disagree (1) and Strongly Agree (7). NFT includes items such as "I feel more comfortable purchasing a product after physically examining it" and "Touching products can be fun."

Immediately following the immersive experience, participants completed the adapted five-item, seven-point short form Transportation Scale ($\alpha = .82$, Appel et al., 2015) anchored by Strongly Disagree (1) and Strongly Agree (7). This assesses the degree to which a person immerses in an experience (Green, 2021; Thompson et al., 2018). The adapted scale included items such as "I was mentally involved in the immersive experience" and "The immersive experience affected me emotionally."

Following this, I assessed involvement via a five-item, seven-point scale ($\alpha = .89$; Ungar & Kernan, 1983). Items like "The experience totally absorbed me" and "The experience was like getting away from it all" were anchored from Strongly Disagree (1) to Strongly Agree (7).

I measured frustration using a four-item measure ($\alpha = .83$) that included elements from the three-item frustration discomfort scale. One example was "The experience was frustrating" (Williams & Aaker, 2002), and an item from the advertising value irritation sub-scale, namely "The experience was irritating" (Ducoffe, 1996). The scale was anchored by Strongly Disagree (1) and Strongly Agree (7).

I assessed participants' arousal levels using a comprehensive three-item, seven-point scale ($\alpha = .92$; Thomson, 2006). The scale included items such as "The experience totally absorbed

me" and "I feel I have found new sources and types of stimulation for myself." This scale was anchored by (Strongly Disagree (1) to Strongly Agree (7).

Following, participants completed the adapted 10-item, seven-point Multidimensional Measure of Presence Scale (MPS), which assesses the degree to which an individual feels present or immersed in a virtual or mediated environment (Makransky et al., 2017). In our research context, we specifically employed two dimensions of the scale: Self Presence ($\alpha = .76$) and Physical Presence ($\alpha = .84$), anchored by (Strongly Disagree (1) to Strongly Agree (7). I deliberately omitted the Social Presence component since the participants interacted individually with the virtual environment, thus rendering items such as "I felt like the people in the virtual environment were aware of my presence" irrelevant to the investigation.

Table 9 showcases Study 2A's descriptive statistics alongside a correlation table.

Table 9

Study 2A Descriptive Statistics and Correlation Table

		Mean	Std. Deviation	1	2	3	4	5	6	7	8	1	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	NFT	4.801	0.854	1																						
2	NFT Autotelic	4.671	1.212	.908**	1																					
3	NFT Instrumental	4.932	0.794	0.768**	0.428**	1																				
4	Narrative Transportation	4.421	1.296	-0.308	-0.292	-0.218	1																			
5	Involvement	4.990	1.465	-0.207	-0.167	-0.191	0.729**	1																		
6	Arousal	4.376	1.658	-0.263	-0.221	-0.229	0.794**	0.777**	1																	
7	Physical Presence	4.697	1.177	-0.219	-0.191	-0.181	0.745**	0.753**	0.751**	1																
8	Self Presence	4.554	1.119	-0.048	0.040	-0.165	0.436**	0.406**	0.497**	0.499**	1															
9	Entertainment Value	5.096	1.403	-0.299	-0.226	-0.298	0.780**	0.767**	0.852**	0.733**	0.404*	1														
10	Frustration	5.231	1.338	0.154	0.037	0.275	-0.499**	-0.342*	-0.399*	-0.313	-0.338*	-0.594**	1													
11	Emotional Reactance	3.149	0.982	-0.230	-0.207	-0.179	0.794**	0.797**	0.833**	0.773**	0.380*	0.904**	-0.534**	1												
12	Brand Love	4.049	0.901	-0.340*	-0.296	-0.28	0.760**	0.627**	0.751**	0.683**	0.363*	0.852**	0.485**	0.752**	1											
13	Initial Brand Attitude	4.932	1.238	-0.291	-0.170	-0.366*	0.697**	0.632**	0.731**	0.714**	0.563**	0.843**	0.519**	0.706**	0.853**	1										
14	Self Brand Connection	3.147	1.316	-0.336*	-0.293	-0.276	0.685**	0.660**	0.699**	0.672**	0.434**	0.713**	0.387*	0.715**	0.799**	0.694**	1									
15	Invite Feel Touch All	4.910	1.295	-0.019	0.031	-0.088	0.574**	0.377*	0.493**	0.601**	0.314	0.606**	0.225	0.570**	0.605**	0.612**	0.510**	1								
16	Invite Feel Touch Tree	4.551	1.499	-0.028	0.052	-0.139	0.563**	0.263	0.417**	0.512**	0.306	0.513**	-0.327	0.507**	0.498**	0.505**	0.425**	0.911**	1							
17	Invite Feel Touch Star	5.090	1.428	-0.036	0.023	-0.113	0.588**	0.429**	0.506**	0.638**	0.321*	0.602**	0.140	0.586**	0.639**	0.626**	0.583**	0.946**	0.791**	1						
18	Invite Feel Touch Orb	5.090	1.287	0.015	0.007	0.021	0.425**	0.355*	0.442**	0.510**	0.235	0.565**	-0.144	0.479**	0.538**	0.565**	0.398*	0.909**	0.710**	0.826**	1					
19	Virtual Touch	4.009	1.088	-0.036	0.037	-0.133	0.517**	0.394*	0.390*	0.569**	0.309	0.523**	0.262	0.395*	0.533**	0.552**	0.338*	0.771**	0.661**	0.756**	0.720**	1				
20	Virtual Touch Importance	3.077	1.082	-0.120	-0.055	-0.175	0.530**	0.380*	0.469**	0.563**	0.395*	0.479**	0.225	0.442**	0.433**	0.479**	0.413**	0.685**	0.687**	0.698**	0.493**	0.722**	1			
21	Physical Movement	2.342	0.612	0.070	0.041	0.087	0.436**	0.447**	0.523**	0.522**	0.194	0.368	-0.017	0.464	0.351*	0.313	0.426**	0.381*	0.260	0.439**	0.361*	0.413**	0.405*	1		
22	Trait Reactance	4.495	1.207	.536**	0.364*	0.598**	-0.290	-0.307*	-0.321	-0.249	-0.334*	-0.320*	-0.209	-0.247	-0.340*	-0.341*	-0.402*	-0.167	-0.290	-0.107	-0.047	-0.033	-0.112	0.105	1	
23	Cognition	4.388	0.771	-0.127	-0.145	-0.052	-0.024	0.034	0.116	0.208	0.045	0.189	-0.039	0.283	0.014	-0.035	0.022	0.132	0.163	0.102	0.095	0.166	0.174	0.166	-0.063	1

I measured the adapted Advertising Value Scale (Ducoffe, 1996) using eight items, anchored on a seven-point Likert-like scale ($\alpha = .96$), to assess participants' experience within the virtual reality environment, specifically focusing on two key dimensions: entertainment and value. The entertainment subscale was used to quantify the extent to which participants found the experience enjoyable, entertaining, pleasing, and exciting. The value subscale was used to determine the perceived usefulness, value, and importance of the experience. In addition, I incorporated an item to measure narration enjoyment: "The narration was enjoyable." All items were anchored from Strongly Disagree (1) to Strongly Agree (7).

Next, participants assessed emotional reactions (i.e., amused, captivated, satisfied, delighted) elicited by the virtual reality experience using the 10-item, five-point (1 = none at all, 5 = a great deal) Emotional Reaction Scale (Derbaix, 1995; $\alpha = .95$).

Next, participants completed the 10-item Brand Love Scale ($\alpha = .76$) which assesses emotional attachment to a specific brand (Carroll & Ahuvia, 2006). The scale included items such as "The brand makes me feel good" and "I have neutral feelings about the brand." The scale was anchored from Strongly Disagree (1) to Strongly Agree (7).

Participants reported their attitude toward the featured brand, on a three-item measure ($\alpha = .89$) adapted from Jung et al. (2014) with items such as, "I feel positive toward (brand)" and "I like (brand)." All items were anchored from Strongly Disagree (1) to Strongly Agree (7).

The seven-item Self-Brand Connection Scale (S-BC; $\alpha = .93$) assessed the degree to which bonds are formed with a brand (Escalas & Bettman, 2003) anchored from Strongly Disagree (1) to Strongly Agree (7). The scale included items such as "The brand makes me feel good" and "I have neutral feelings about the brand."

I used an adapted version of Klatzky and Peck's (2012) two-item "Invite, Feel" scale. This scale included statements like, "The Japanese Maple Tree invited me to touch it" and "Touching the Japanese Maple Tree would feel good." Additionally, one item from Peck et al.'s (2009) scale, "It seems like I could feel the Japanese Maple Tree," was incorporated ($\alpha = .91$). The response scale for all items was anchored from Strongly Disagree (1) to Strongly Agree (7).

The three-item Virtual Touch Scale assessed the extent to which participants desired to reach out and touch items within the virtual environment ($\alpha = .92$). The scale included items such as "Would you like to reach out and touch the Japanese Maple Tree in the immersive experience." The scale was anchored from Strongly Disagree (1) to Strongly Agree (7).

The five-item Virtual Touch Importance Scale assessed how important it is (1 = Not at All Important to 7 = Extremely Important) for participants to feel like they can touch items within the virtual environment ($\alpha = .92$). The scale included items such as "How important is it to feel like you are touching the Japanese Maple Tree?"

The six-item Virtual Reality Physicality Scale assessed the extent to which (1 = Not at All Important to 5 = A Great Deal) participants physically moved their bodies while in an immersive setting ($\alpha = .70$). The scale included items such as "How did you move around the room?" and "How much did you move your hands?"

We utilized the seven-item Trait Reactance Scale (Russell et al., 2013) to measure participants' inclination toward resistance ($\alpha = .88$). The scale consists of statements like, "I become frustrated when I am unable to make free or independent decisions" and "When something is prohibited, I usually think that is exactly what I am going to do," with the anchoring points ranging from Strongly Disagree (1) to Strongly Agree (7).

Lastly, we employed the 18-item Need for Cognition to measure to assess the extent to which participants engage in and enjoy thinking ($\alpha = .86$). The scale included items such as “I would prefer complex to simple problems” and “I only think as hard as I have to.” The scale was anchored from Strongly Disagree (1) to Strongly Agree (7).

Results

The results indicate several correlations between measures. Although not significant, I find narrative transportation correlated with the closely related concepts of involvement ($r = .729, p < .01$), arousal ($r = .794, p < .01$), and physical presence ($r = .745, p < .01$), signaling that variables may be removed in future phases. Participants' level of immersion in the virtual experience also correlates with the touch-ability of featured items within the digital environment: star ($r = .588, p < .01$) and the Japanese Maple Tree ($r = .563, p < .01$).

Study 2A Learnings

The objective of the pre-study was to streamline the survey, removing highly correlated or redundant measures for the next phase of research. This rationale was three-fold: to combat survey fatigue (Sharp & Frankel, 1983), to ensure the highest chance of accurate responses, and to assess the reliability and validity of the research measures. Also, the pilot study revealed that measures such as Brand Love and Self-Brand Connection might not be suitable for capturing participants' sentiments and establishing a strong brand connection within the study context. The limited duration of a single seven-minute virtual experience in a laboratory setting may not provide sufficient time for participants to fully express their emotions and form a deep self-connected relationship with the brand. As such, initial brand attitude is a more relevant outcome.

Pre-Study 2B

Study Design

The aim of this study was to validate the experimental manipulations for the main study. The between-subjects design consisted of a touch condition where participants had the opportunity to haptically engage with the stimulus, an origami Japanese Maple Tree, for 25 seconds. The stimulus was a physical representation of a virtual tree shown throughout the immersive experience. Participants in the no-touch/visual-only condition could visually inspect the stimulus for the same duration of time. Upon completion of the visual or tactile inspection, participants were instructed to put on an Oculus VR headset and begin the immersive seven-minute experience, followed by a series of questions to determine the level of immersion experienced within the two conditions. The design was intended to provide a comparative analysis of the immersive experiences under touch and no-touch/visual-only conditions and to ensure that the necessary procedures were in place for the pre-experience manipulation (i.e., clear divider for no-touch/visual-only condition; length of time participants engaged with stimulus).

Recruitment and Sample

To recruit undergraduate and graduate participants at the west coast university, recruitment flyers were posted in a library and a technology innovation lab offering a \$5.00 Starbucks gift card for being part of the study.

Survey data were gathered from a sample of 22 college students from an innovation lab. There were 12 males ($M = 19.88$ years old; $SD = 1.26$). Participants were randomly assigned a condition (11 in the touch condition; 11 in the no-touch/visual-only condition).

Pre-Experience Touch Manipulation

In the pre-experience touch manipulation, we used the Origami Japanese Maple Tree, confirmed in Study 1, as a stimulus. For the no-touch/visual-only condition (Figure 6), participants were provided a visual encounter with the origami tree, which was placed behind a clear divider 12 inches away from the desk's edge. Participants observed the stimulus without touching it for 25 seconds, noting any relevant details about it. In contrast, for the touch condition (Figure 7), the origami tree was positioned within participants' reach, 12 inches from the edge of the table. Participants were directed to physically interact with the tree by picking it up and unfolding it to examine it thoroughly. After a 25-second exploration, they were requested to place the tree back on the table.

Figure 6

No Touch Condition



Figure 7

Touch Condition



To prevent order effects, the presentation of the constructs in the survey was randomized. Participants were provided a \$5.00 Starbucks gift card at the completion of the survey.

Study 2B Learnings

The pre-test provided invaluable insights, significantly shaping the methodology for the main study. A key observation was the use of a clear divider in the no-touch/visual-only condition. Despite providing clear oral and written instructions, a participant attempted to handle the stimulus when no barrier was present. Another crucial lesson was the importance of incorporating headphones into the experimental setup, which enhanced the immersive quality of the experience. These findings guided the refinement of the approach for the primary study.

Power Analysis

A post hoc analysis was conducted. To achieve 73% power, detecting a large effect size (0.50), and having a significance criterion of 0.05, the sample size required is 22.

Measures

As part of the methodological design for the 2B pre-test, seven psychometric scales outlined in the preliminary study were employed to gauge the impact of the NFT on brand attitude and the potentially mediated effect of narrative transportation, frustration, involvement, and touch-ability of virtual products. This selection aimed at a broad but relevant capture of participant responses without the redundancy of similar measures, thereby optimizing the data collection process and reducing potential survey fatigue.

I used the NFT scale (Peck & Childers, 2003) to measure participants' overall NFT ($\alpha = .85$) and its autotelic ($\alpha = .88$), and instrumental ($\alpha = .62$) dimensions. Despite the moderate Cronbach's alpha for the instrumental component, I still considered it reliable due to its well-established nature and previously confirmed internal consistency. Narrative Transportation (Appel et al., 2015) ($\alpha = .68$) and involvement (Ungar & Kernan, 1983) ($\alpha = .86$) gave insights into the participant's psychological immersion and perceived entertainment value (Ducoffe,

1996) ($\alpha = .83$) derived from the immersive experience. The Frustration scale (Williams & Aaker, 2002) served as a counterpoint to the positive measures by capturing any adverse emotional responses ($\alpha = .86$). The degree to which the virtual Japanese maple tree in the immersive environment invited physical touch was assessed using the adapted Touch-Ability scale ($\alpha = .80$) (Klatzky & Peck, 2012; Peck et al., 2009). To understand the influence of the virtual experience on participants' attitudes toward the brand, I employed the Brand Attitude scale (Jung et al., 2014) with a reliability coefficient ($\alpha = .80$).

Results & Discussion

Table 10 reports all means, standard deviations, and correlations. The results show for that autotelic NFT ($M = 4.83$, $SD = 1.27$) and instrumental NFT ($M = 5.01$, $SD = 0.71$) were higher than expected based on Study 2A results. As illustrated in Table 11, an independent sample t-test reveals differences in reported NFT between the touch ($M = 5.28$) and no-touch/visual-only conditions ($M = 4.55$) $t(20) = -2.13$, $p < .05$). The high mean scores could be attributed to the participants completing the NFT measure after the immersive experience and not at a different point in time as was done in Study 2A.

Table 10

Study 2B Descriptive Statistics

		Mean	Std. Deviation	1	2	3	4	5	6	7	8	
1	NFT	4.92	0.875	1								
2	NFT Autotelic	4.825	1.274	.940**	1							
3	NFT Instrumental	5.015	0.705	.785**	.525*	1						
4	Touch Ability	4.212	1.456	-0.17	-0.214	-0.034	1					
5	Narrative Transportation	4.509	0.973	-0.216	-0.255	-0.074	0.323	1				
6	Involvement	4.872	1.345	-0.072	-0.149	0.091	.515*	.764**	1			
7	Entertainment Value	5.188	0.804	0.025	0.042	-0.013	.707**	.707**	.626**	1		
8	Frustration	3.045	1.29	-0.302	-0.359	-0.101	-.249	-0.249	-0.387	-.470*	1	
9	Initial Brand Attitude	4.727	1.143	0.281	0.28	0.192	.521*	.521*	.570**	.743**	-0.322	1

Note. Pearson Correlations (2-Tailed), * $p < .05$, ** $p < .01$

Table 11

Study 2B Independent Samples t-test Results

Measure	Condition 0 No Touch	Condition 1 Touch	Levene's Test for Equality of Variances							95% Confidence Interval of the Difference	
			F	Sig.	t-value	df	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
NFT	4.5530	5.2879	3.937	0.061	-2.127	20	0.046	-0.73485	0.34554	-1.45563	-0.01406
NFT Autotelic	4.3939	5.2576	2.292	0.146	-1.653	20	0.114	-0.86364	0.52254	-1.95364	0.22636
NFT Instrumental	4.7121	5.3182	3.157	0.091	-2.191	20	0.04	-0.60606	0.27666	-1.18315	
Touch Ability	4.4242	4.0000	0.184	0.672	0.674	20	0.508	0.42424	0.6294	-0.88866	1.73715
Narrative Transportation	4.4545	4.5636	0.951	0.341	-0.257	20	0.8	-0.10909	0.42461	-0.99482	0.77664
Involvement	4.8727	4.8727	0.595	0.450	0.00	20	1.000	0.000	0.58809	-1.22674	1.22674
Entertainment Value	5.2338	5.1429	0.084	0.775	0.259	20	0.798	0.09091	0.35113	-0.64154	0.82335
Frustration	2.8409	3.2500	1.526	0.231	-0.735	20	0.471	-0.40909	0.55624	-1.56938	0.7512
Initial Brand Attitude	4.5758	4.8788	0.251	0.622	-0.612	20	0.547	-0.30303	0.49516	-1.33591	0.72985

Notes: 0=No Touch Condition 1=Touch Condition

Narrative transportation ($M = 4.51$, $SD = 0.97$), involvement ($M = 4.87$, $SD = 1.35$), and entertainment value ($M = 5.19$, $SD = 0.80$) were correlated. The positive correlation between narrative transportation and involvement ($r = .76$, $p < .01$) and between narrative transportation and entertainment value ($r = .71$, $p < .01$) suggests a higher degree of narrative transportation and involvement is associated with a greater entertainment value. Not surprisingly, I found frustration ($M = 3.05$, $SD = 1.29$) negatively correlates to the entertainment value ($r = -.47$, $p < .05$) of the immersive experience. Lastly, initial brand attitude ($M = 4.73$, $SD = 1.14$) was positively correlated with narrative transportation ($r = .52$, $p < .05$), involvement ($r = .57$, $p < .01$), and entertainment value ($r = .74$, $p < .01$).

Overall, participants enjoyed the immersive experience as shown with overall high mean scores in involvement ($M = 4.7$, $SD = 1.34$), narrative transportation ($M = 4.50$, $SD = .97$), and entertainment value ($M = 5.18$, $SD = .08$).

To ensure the effectiveness of the experimental manipulation, I conducted a manipulation check, where participants indicated if they had physically interacted with the origami Japanese maple tree. As anticipated, 10 of 11 participants (90%) in the no-touch/visual-only condition

reported they only visually examined the stimulus. Similarly, eight of 11 participants (72%) in the touch condition confirmed physical interaction, while the remaining three did not. With a significant chi-square value ($\chi^2(1) = 9.21, p = .002$), these results confirm a correlation between the experimental condition and reported tactile engagement. To examine the influence of the experimental condition on participants' inclination to take the stimulus home with them, another chi-square test was conducted. Within the no-touch/visual only, eight of 11 participants (72.7%) reported wanting to take the origami Japanese Maple Tree home with them. In comparison, 11 participants (100%) in the touch condition reported wanting to take the tree home with them. The analysis revealed a marginally significant chi-square ($\chi^2 = 3.47, df = 1, p = .06$). Although the p-value did not reach conventional levels of significance, the findings suggest a tendency for participants in the touch condition to express a higher desire to take the stimulus home compared to those in the no-touch condition.

An independent t-test revealed a significant difference in instrumental NFT means between conditions ($t = -2.13, p = 0.02$) and a marginal difference in NFT ($t = -1.65, p = 0.057$). Participants reported higher NFT in the touch condition ($M=5.29$) than in the no-touch/visual-only condition ($M = 4.55$). I found that measuring NFT after the manipulation affected participants' reporting, creating a confounded variable condition. This issue potentially arose as participants, having just completed the immersive experience, may have had their attention drawn to their NFT. As such, in the main study, I altered our procedure by measuring NFT as part of another study to ensure accurate results. To establish a buffer and ensure the independence of our study when measuring NFT, I created a completely different study assessing participants, NFT, need to own, authentic pride, and state anxiety. Taking these steps allowed me to clear short-term memory and minimize any potential association between the study and the

measurement of NFT. To accomplish this, I randomly assigned participants to complete the alternate survey before or after the experiment.

Main Study

Study Design

The experiment relied on a 2 (ability to touch prior to experience: no-touch/visual only vs. touch, manipulated) X 2 (NFT, measured) between-subjects design. Participants were randomly assigned to the touch conditions. To avoid interfering with the main experimental manipulation, I randomly assigned participants to have NFT measured before or after the experimental session as part of another study.

The metaverse experience is a seven-minute visually engaging meditation in a VR headset. The guided meditation begins with an image of the Tree of Knowledge in the form of a Japanese Maple. The tree, with vivid red leaves and a dark trunk, sits in a cave with the brand's logo slightly below. The tree is a central focal point within the immersive meditation to ground the participant into the 'new world' they will explore. The tree sends an orb of light to the participant to further connect them to the virtual object. Soon after, the tree disappears, and participants are transported out of the cave and into the galaxy so they may 'float' through space. At the end of the meditation, the tree returns, retrieving the orb of light from the participant. When the experience is completed, the brand logo reappears.

Recruitment and Sample

Undergraduate students from the southeastern university were recruited as part of a course requirement and received course credit for being a part of the study. Participants were required to stay in the laboratory for 50 minutes with no phones or other outside distractions. Participants were part of four different studies.

Pre-Experience Touch Manipulation

In the pre-experience touch manipulation, I featured an origami Japanese Maple Tree throughout the immersive experience. For the no-touch/visual-only condition, I positioned the origami maple tree behind a clear divider 18 inches from the edge of the desk, allowing participants to see the tree but not touch it. Participants in the no-touch/visual-only condition were instructed to observe the origami Japanese Maple Tree for 20 seconds and note any relevant details. In the touch condition, as done in the no-touch/visual-only condition, I positioned the origami tree on the table in front of the participant, 18 inches from the table edge. Participants in the touch condition were instructed to pick up and open the origami Japanese Maple Tree, carefully examining the entire card. After 20 seconds, they were asked to place the card back on the table. This manipulation underwent pre-testing in Pilot Study 2B.

Recruitment and Sample

As part of a course requirement, students at a university in the southeastern United States participated in the study. The initial sample consisted of 143 participants, but 12 participants were excluded due to incomplete survey responses. This resulted in a final sample size of 131, with 61.8% of the participants being female (mean age $M = 20.53$, $SD = 1.33$). A small proportion, 1.5%, chose not to provide their gender preference.

Power Analysis

To determine the necessary sample size, a post hoc power analysis was conducted. Results show to achieve 80% power, detect a medium effect (.15), at a significance criterion of .05, using linear multiple regression, the sample size is 98. As such, the sample size of 131 is sufficient to test the model.

Measures

As part of the main study, I chose seven measures from the 2B preliminary study to assess the degree to which the NFT plays a role in initial brand attitudes in digitally immersive environments. Each of the Cronbach alphas reached internal consistency of over .70 (Table 12). The increase in the instrumental NFT and transportation alphas may be attributed to the increased sample size of 131.

Table 12

Cronbach Alpha Reliability Scores

Measure	α	Mean	Variance	Std. Deviation	N of Items
NFT	0.890	57.81	141.602	11.9	12
NFT Autotelic	0.902	28.38	60.946	7.807	6
NFT Instrumental	0.804	29.43	33.632	5.799	6
Touch-Ability	0.830	13.76	22.355	4.728	3
Narrative Transportation	0.855	25.80	44.868	6.698	5
Involvement	0.945	26.88	59.723	7.728	5
Entertainment Value	0.931	44.69	81.383	9.021	8
Frustration	0.853	10.39	32.163	5.671	4
Initial Brand Attitude	0.961	16.62	12.761	3.372	3

Results

Touch-ability exhibited a positive correlation with narrative transportation ($r = .543, p < .05$) and involvement ($r = .517, p < .05$), suggesting that participants who perceived greater touch-ability of the virtual stimulus also experienced higher levels of narrative transportation and involvement. Table 13 shows the full results.

Table 13***Main Study Descriptive Statistics***

		Mean	Std. Deviation	1	2	3	4	5	6	7	8	9
1	NFT	4.81	0.99	1								
2	NFT Autotelic	4.73	1.30	.909**	1							
3	NFT Instrumental	4.90	0.96	.828**	.519**	1						
4	Touch Ability	4.58	1.57	.124	.178*	.015	1					
5	Narrative Transportation	5.16	1.33	.127	.063	.177*	.543**	1				
6	Involvement	5.37	1.54	.173*	.123	.188*	.517**	.851**	1			
7	Entertainment Value	5.58	1.12	.127	.104	.121	.625**	.808**	.774**	1		
8	Frustration	2.59	1.41	.021	.032	0	-.289**	-.408**	-.432**	-.542**	1	
9	Initial Brand Attitude	5.53	1.19	.046	.102	-.044	.587**	.699**	.686**	.813**	-.517**	1

Pearson Correlations (2-Tailed), * $p < .05$, ** $p < .01$, *** $p < .001$.

Similarly, perceived entertainment value demonstrated positive correlations with narrative transportation ($r = .625, p < .01$), involvement ($r = .808, p < .01$), and initial brand attitude ($r = .774, p < .01$), signaling that greater the perceived entertainment value of the immersive experience was associated with higher levels of narrative transportation, involvement, and initial brand attitudes. Frustration showed a negative correlation with entertainment value ($r = -.289, p < .01$) and initial brand attitude ($r = -.517, p < .01$), indicating that higher levels of frustration were associated with lower entertainment value and initial brand attitudes.

Based on an independent samples t-test, NFT did not differ between experimental conditions and did not interfere with the touch, no-touch/visual-only manipulation. This further confirmed that the reported NFT results in Study 2B were due to measuring NFT as part of the main survey and that I successfully disconnected the measurement of NFT from the main study measures. An independent sample t-test shows that the touch-ability measure reveal ($t(129) = -2.02, p = .046$) is the only measure that significantly differed between the two conditions. All independent samples t-test results can be found in Table 14.

Table 14

Main Study Independent Samples t-test Results

Measure	Condition 0	Condition 1	Levene's Test for Equality of Variances							95% Confidence Interval of the Difference	
			F	Sig.	t-value	df	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
NFT	4.7705	4.8636	3.602	0.060	-0.536	129	0.592	0.593	0.173	-0.43692	0.25067
NFT Autotelic	4.6333	4.8258	1.405	0.238	-0.845	129	0.400	0.399	0.227	-0.64277	0.25792
NFT Instrumental	4.9077	4.9015	0.314	0.576	0.036	129	0.971	0.971	0.169	-0.32928	0.34164
Touch Ability	5.4615	5.6162	6.527	0.012	-2.024	129	0.046	0.045	0.272	-0.55537	0.42856
Narrative Transportation	5.0585	5.2606	0.486	0.487	-0.863	129	0.390	0.390	0.234	-1.08942	-0.01237
Involvement	5.1938	5.5545	1.705	0.194	-1.340	129	0.183	0.183	0.269	-0.66578	0.26149
Entertainment Value	5.4423	5.7292	0.439	0.509	-1.462	129	0.146	0.146	0.196	-0.89345	0.17206
Frustration	2.5654	2.6288	0.889	0.348	-0.255	129	0.799	0.799	0.248	-0.67504	0.10132
Initial Brand Attitude	5.5390	5.7292	2.409	0.123	-0.742	129	0.460	-0.154	0.208	-0.56702	0.25778

Notes: 0=No Touch Condition 1=Touch Condition

A manipulation check in which participants indicated if they touched the tree or not confirmed three of 65 participants in the no-touch/visual condition touched the origami tree. In comparison, two of 66 participants in the touch condition indicated they did not touch the tree. I confirmed if participants touched the tree before the experiment began, and the results show the manipulation check was successful. I checked if the participants had actually touched the tree before the experiment with a chi-square ($\chi^2(131) = 67.31, df = 1, p = .001$).

In the regression model (Process Model 8; Hayes 2013), I sought to understand if the NFT plays a role in initial brand attitudes in immersive environments. H1 posited that a physical, real-world tactile interaction with a product featured in an immersive experience would generate more positive attitudes towards the brand, compared to a no tactile interaction/visual-only encounter with the product. These regression results can be found in Table 15.

Table 15***Regression Results with Brand Attitude as DV***

	coeff	se	t	p	LLCI	ULCI
Constant	2.8621	0.5813	4.9239	0.0000	1.7116	4.0126
Condition	1.6437	0.7130	2.3052	0.0228	0.2324	3.0550
Transportation	0.5285	0.0583	9.0661	0.0000	0.4131	0.6438
Frustration	-0.2385	0.0544	-4.3877	0.0000	-0.3461	-0.1309
NFT	0.0993	0.0924	1.0745	0.2847	-0.0836	0.2822
Condition on NFT	-0.3280	0.1453	-2.2572	0.0257	-0.6156	-0.0404
Gender	0.0403	0.1282	0.3143	0.7538	-0.2135	0.2941

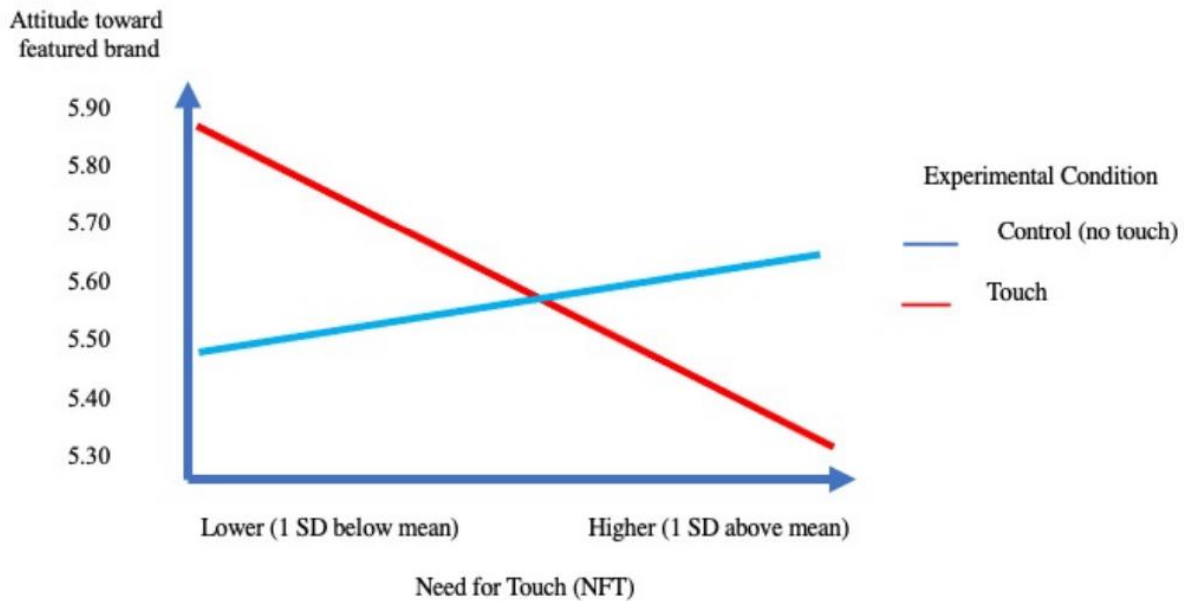
Note: $R^2 = .57$ $MSE = .6361$ $F(6, 124) = 27.6322$, $p < .01$

The condition variable, distinguishing between tactile and visual-only experiences and NFT ($\beta = 1.6437$, $SE = 0.71$, $p = 0.02$) shows a significant main effect on initial brand attitudes as participants who had a tactile engagement with the product demonstrated more positive initial brand attitudes than those who only had a visual interaction.

H2 suggested that NFT would moderate the relationship between a physical encounter and initial brand attitudes, with more positive brand attitudes anticipated for high-NFT individuals compared to low-NFT individuals following a real-world tactile interaction before an immersive experience. As illustrated in Figure 8, NFT did not directly impact initial brand attitude significantly ($\beta = 0.09$, $t = 0.09$, $p = 0.28$), and condition X NFT had a significant negative relationship ($\beta = -0.32$, $t = -2.25$, $p = 0.03$). This indicates that for individuals with a higher NFT, the positive effect of the touch condition on initial brand attitude was decreased. So, although I see an interaction, it is the opposite of the predicted hypothesis: low-NFT participants reported a more positive brand attitude in comparison to high-NFT participants. This finding did not align with H2. This may be due to high-NFT participants touching the stimulus as part of the pre-experience and then losing the ability during the immersive experience, thus affecting the view of the brand.

Figure 8

Interactive Effect of Pre-Experience Touch and NFT on Brand Attitudes



As shown in Table 16, I found no support for H3 that narrative transportation mediates the condition and brand attitude. However, as shown in Table 17, a post hoc analysis (Process Model 4; Hayes 2013) shows that touch-ability, a product's intrinsic inclination to elicit touch primarily for hedonic purposes (Klatzky & Peck, 2012) is significant and mediates the relationship between the condition and brand attitude ($\beta = .551$ $t = 2.02$ $p = .0450$). For a complete list of mediation regressions performed, see Appendix C.

Table 16

Mediation Results with Transportation as IV and Brand Attitude as DV

	coeff	se	t	p	LLCI	ULCI
Constant	5.0585	0.1663	30.4123	0.0000	4.7294	5.3875
Condition	0.2021	0.2043	0.8626	0.3899	-0.2615	0.6658

Note: $R^2 = .0057$ $MSE = 1.7983$ $F(1, 129) = .7441$, $p = .3899$

Table 17***Mediation Results with Touch-Ability as IV and Brand Attitude as DV***

	coeff	se	t	p	LLCI	ULCI
Constant	4.3077	0.1932	22.2969	0.0000	3.9254	4.6899
Condition	0.5509	0.2722	2.0240	0.0450	0.0124	1.0894

Note: $R^2 = .0308$ $MSE = 2.4261$ $F(1, 129) = 4.0964$ $p < .01$

Discussion

This research aimed to explore the influence of real-world tactile interactions on initial brand attitudes in digitally immersive environments (H1) and determine the role NFT played in this relationship (H2) and if narrative transportation mediated the (H3) relationship. The findings provide some understanding of the complex relationship of sensory experiences in digitally immersive environments while underscoring the need for further investigation and research.

H1 predicted that a physical, real-world tactile interaction with a product featured in an immersive experience would generate more positive attitudes towards the brand compared to a no-touch/visual-only encounter with the product.

H2 proposed that NFT would moderate the relationship between a physical encounter and initial brand attitudes, with higher brand attitudes expected for individuals with high NFT following a real-world tactile interaction. NFT did not directly impact initial brand attitudes, but it interacted with the manipulation of pre-experience touch in affecting brand attitudes. The effect, however, is in the opposite direction as was predicted: individuals in the touch condition with low-NFT reported more positive attitudes towards brands than compared to those who reported high-NFT.

H3 proposed that narrative transportation would mediate the relationship between the touch or no-touch/visual-only condition and initial brand attitudes. However, I found no evidence that narrative transportation mediates the relationship, indicating that although participants

shared feelings of “being lost” in the narrative while in the VR experience, narrative transportation did not significantly influence their initial brand attitudes.

Although the hypotheses were not fully supported, further analysis demonstrated that touch-ability, defined as a product's intrinsic inclination to elicit touch primarily for hedonic purposes (Klatzky & Peck, 2012), mediated the relationship between the condition and brand attitudes. This suggests that touch-ability, participants' perception of a product's intrinsic properties that elicit touch for hedonic purposes (Klatzky & Peck, 2012) played a role in shaping their brand attitudes. The tactile condition influenced participants' perception of the product's touch-ability which, in turn, impacted their brand attitudes. This mediation effect highlights the importance of considering virtual products' specific characteristics and perceived touch-ability in immersive experiences.

General Discussion

The results show the importance of continuing touch research in both real-world and VR environments from a qualitative and quantitative perspective.

In Study 1, with short-form interviews, I qualitatively examined some of the dynamics needed for an enjoyable VR experience. I identified two primary themes, elements of the virtual need to be rooted in reality for consumers, and the interactive elements of the VR experience can lead to more immersive experiences in VR. The qualitative data yielded valuable insights into consumers' perceptions of immersive digital experiences. The theme of Rooted in Reality highlighted how participants frequently connect elements of virtual settings with familiar real-world contexts. Informants expressed that the virtual experience felt more authentic and impactful when it closely mirrored or evoked real-world experiences. The relatability and familiarity of the virtual environment enhanced their sense of immersion, suggesting that

successful virtual environments may not solely rely on creating entirely novel experiences but rather effectively simulating the known in an engaging manner.

With H1, I posited that a physical, real-world tactile interaction with a product that is featured in an immersive experience should generate more positive attitudes toward the brand, compared to no no-touch/visual-only with the featured product. As past touch literature has shown, a physical encounter with a product can increase consumer confidence in evaluating products, purchase intention, and attitude toward the brand itself (Grohmann et al., 2007; Peck & Wiggins, 2006). This research extends this body of knowledge, showing that a haptic encounter prior to an immersive experience can also lead to more favorable brand attitudes for consumers.

H2 investigated if NFT moderates the relationships between a physical encounter and initial brand attitude, such that a real-world tactile interaction before an immersive experience leads to more positive brand attitudes for high-NFT compared to low-NFT. I found evidence that NFT does moderate the relationship between a physical encounter with stimulus and initial brand attitude. However, I found that low-NFT consumers reported more positive brand attitudes in comparison to high-NFT consumers. One potential explanation could be that individuals with higher NFT may have higher expectations or different preferences for tactile experiences, which may not be fully met in this study's context.

The level of focus stimulated by touching the tree as a pre-experience may play a role in the observed effects. High-NFT individuals may have had a heightened focus on tactile encounters while in the immersive environment, and as the touch encounter was not met, had an adverse effect on their overall brand attitude. Low-NFT consumers may be more focused on cognitive and symbolic aspects of the immersive experience due to their decreased touch motivation, leading to more favorable brand attitudes.

I did not find evidence of narrative transportation as a process mechanism for H3. However, I found evidence that touch-ability mediates the relationship between the touch and no-touch/visual-only conditions and initial brand attitudes.

Managerial Implications

The research findings highlight the importance of incorporating tactile interactions in VR experiences to create a sense of connection and realism for consumers. Research has shown that touch is crucial in enhancing the immersive nature of VR environments (Spence & Gallace, 2013). VR inherently isolates users from the physical world by blocking sensory input, simulating a state of sensory deprivation (Biocca & Levy, 1995). However, using VR hardware, sensory information is substituted with virtual stimuli, leading to a highly immersive and substituted sensory experience (Murray, 2000). By incorporating physical touch encounters before an immersive VR experience, companies can strategically blend physical and virtual touchpoints, enhancing consumer engagement. For instance, TOMS (Read, 2022) exemplifies this approach by incorporating VR stations in their retail stores, providing both touch and virtual experiences within a single setting. This hybrid strategy could enhance the effectiveness of immersive omnichannel marketing campaigns and brand interactions in digitally immersive environments.

Recognizing the moderating role of NFT can guide businesses to tailor VR experiences to different consumer segments; brands may consider focusing on cognitive stimulation for low-NFT consumers while catering to continuous tactile engagement for high-NFT consumers, creating engaging experiences that cater to both high- and low-NFT consumers. This insight may be useful in creating VR designs that invite and sustain haptic engagement to optimize brand attitudes when active haptic systems are not included in the application.

The findings show that a product's touch-ability in the virtual environment is key in mediating the relationship between touch and no-touch conditions and initial brand attitudes. Understanding the role of touch-ability in digitally immersive environments can help brands create more engaging and emotionally resonant product experiences. By incorporating tactile features and cues that evoke positive emotional responses, virtual products can be designed in VR and AR settings to elicit similar hedonic experiences as their physical counterparts potentially. This approach may allow consumers to form more meaningful connections with products within virtual environments, potentially influencing initial brand attitudes and future brand connections.

Immersive marketing and experiential consumption have become components of marketing strategies, aiming to forge strong connections with consumers beyond traditional advertising methods (Scheal, 2023). The study's examination of the impact of real-world tactile interactions on brand attitudes within immersive environments reinforces the importance of creating memorable and emotionally engaging experiences for consumers.

Theoretical Implications

The research holds significant theoretical implications for research in consumer behavior, sensory marketing, NFT, haptics, and immersive experiences, providing insights into physical tactile encounters within digitally immersive environments, underscoring the need for continued exploration and scholarly inquiry in this field.

The study effectively bridges the gap between digital sensory marketing and immersive experiences by examining the role of physical tactile encounters in shaping brand attitudes. Sensory marketing traditionally focuses on physical retail environments (Laukkanen et al., 2022), while digital sensory marketing explores virtual environments to understand technology's

impact on the consumer experience through multi-sensory representation (Laukkanen et al., 2022; Petit et al., 2015). This research highlights the significance of considering the multi-sensory nature of immersive environments and the potential impact of physical tactile stimuli on consumer perceptions and behaviors. Integrating these insights into traditional sensory marketing and digital marketing research can lead to a more comprehensive understanding of how tactile sensory inputs interact and contribute to consumer experiences in physical and digital settings.

While direct evidence of narrative transportation mediating the relationship between tactile interactions and brand attitudes was not found, the study provides valuable insights into the complexities of this psychological process, contributing to the advancement of narrative transportation theory. Future research can build on these findings to refine and expand narrative transportation theory, exploring how individual differences and situational factors influence consumers' emotional engagement and immersion in virtual narratives.

The findings on the moderating role of NFT in the relationship between tactile encounters and brand attitudes offer novel insights into consumer psychology, sensory marketing, and haptic research. Understanding how individual differences in NFT influence consumers' responses to immersive experiences advances our knowledge of the interplay between touch motivation and brand perceptions. Further exploration of the mechanisms through which NFT interacts with other variables, such as emotional states and cognitive processing, can provide valuable predictions about consumer behavior in both virtual and physical shopping contexts.

In the context of digitally immersive environments, where consumers interact with products virtually, the concept of touch-ability (Klatzky & Peck, 2012) takes on a new significance, providing insights into how the touch ability of a product may influence product perception and consumer behavior in virtual environments. Delving deeper into touch-ability not

only in immersive environments but also in traditional retail settings can expand our knowledge of how the touch ability of real and virtual products may evoke tactile motivations in consumers, enhancing product and brand evaluations and how this may impact initial brand attitudes and connections. By integrating touch-ability into theories of product perception, researchers can gain valuable insights into how virtual products' specific characteristics influence consumers' emotional engagement and cognitive evaluations.

Limitations and Future Research

While this research offers important insights into how product touch, or the lack thereof, affects brand attitude within immersive environments, I acknowledge that there are limitations that must be considered.

The use of college students may result in a homogenous sample in terms of age, race, education, income, and other demographic characteristics, limiting the generalizability of the findings to a broader population. Additionally, while the sample size of 131 participants is statistically adequate, it may not comprehensively represent consumer responses from a more diverse population, further limiting the generalizability of findings. Future research should aim to include more diverse and representative samples to enhance the external validity of results.

The immersive environment consisted of a specific seven-minute VR meditation. While this experience was engaging and immersive, its unique characteristics may limit the generalizability of the findings to other types of immersive environments or products. As the meditation's goal was to get participants to relax, a more energetic and physically engaging experience may impact results. To address this limitation, future studies should explore immersive environments that offer different cognitive and physical engagement levels.

The tactile experience was limited in duration, which may not fully represent real-world interactions where consumers may have prolonged physical interaction with a product. The limited duration of the tactile experience and the short immersive virtual environment may have influenced the observed differences between low-NFT and high-NFT participants. The absence of sustained tactile engagement during the immersive experience for high-NFT individuals could have disrupted their sense of immersion and connection with the brand. Future research may benefit from including passive haptics in the experiment (physically engaging with stimulus in the virtual environment).

The controlled environment of a laboratory setting (Study 2) increases internal validity but does not capture conditions consumers would encounter in real-world settings when interacting with products and brands. As such, the findings do not reflect consumers' experiences in a more naturalistic setting, highlighting the potential for future research in natural settings, and further enhancing the external validity of findings.

The study examined attitudes towards a single brand. While this allowed me to examine the impact of physical tactile encounters before an immersive experience on brand attitudes, it does not entirely capture the complexity of consumer responses in other contexts. Given the meditation's objective to induce relaxation, users may become emotionally engaged, making the absence of tactile interactions less disruptive to the overall experience. Future research should validate if similar effects are observed across other products, brands, and industries.

I manipulated the touch/no-touch condition using an origami Japanese Maple Tree featured throughout the immersive environment; however, the impact of physically touching the stimuli might differ with different objects or contexts. While the origami Japanese Maple Tree shared similarities with the virtual tree within the meditation, it was not a replica, potentially

influencing how consumers related to and engaged with the stimulus. Employing different stimuli or environmental contexts in future VR experiences could yield valuable insights, prompting further exploration of diverse tactile elements and their impact on brand attitudes. A limitation of the study is the virtual Japanese Maple Tree itself, as the intrinsic properties that invite haptic engagement are not generalizable to all products or virtual environments. Physically touching a featured product during an immersive experience, known as passive haptics, could also vastly affect the immersive experience compared to interacting with the stimulus for a limited time before an immersive experience.

Future research may benefit from longitudinal studies investigating the long-term effects of tactile interactions and immersive experiences on brand attitudes. By tracking participant attitudes and behaviors over an extended period, researchers can gain insights into the sustainability and stability of the initial brand attitudes formed through tactile interactions.

Conducting comparative studies to explore differences in brand attitudes resulting from autotelic and instrumental touch motivations is another avenue for future research to explore. Lastly, examining the similarities and differences between virtual and augmented reality immersive environments and how they may impact consumers' emotional connections with brands can provide practical implications for marketers and designers.

Conclusion

This study offers valuable insights into the complex relationships between real-world tactile interactions, immersive experiences, and brand attitudes. It reveals that individual characteristics, such as NFT, can intricately influence these relationships. Understanding the moderating role of NFT and the mediating effect of touch-ability provides valuable insights for brands when tailoring immersive experiences.

As brands continue to invest in immersive experiences to engage consumers, understanding these complexities becomes increasingly important. The findings provide a foundation for marketers to craft effective branding strategies in immersive environments and for researchers to explore tactile encounters in virtual spaces further. Despite its counterintuitive nature, our data's richness underlines the possibilities for future research in this space. The findings emphasize the importance of incorporating physical touch encounters before immersive virtual reality experiences to enhance consumer engagement and brand perceptions for low-NFT consumers. This study contributes to consumer behavior, digital sensory marketing, NFT, and haptics, paving the way for further exploration of physical and virtual touch encounters in digitally immersive settings.

CHAPTER 4: DISSERTATION CONCLUSION

The Dissertation Journey

My dissertation journey has been a transformative and empowering experience, reaffirming my passion for academia while shaping my career aspirations and personal growth. I am grateful for the support and guidance I have received, and I am confident that my dissertation journey has prepared me to make a meaningful impact in academia and beyond.

The road to academia began two decades ago when an African American academic inspired me during my undergraduate studies, igniting my desire to pursue an academic career. This motivation stayed with me throughout the years, and when a university offered me a position, it served as a catalyst for embarking on a doctoral degree.

The Journey of the Scholar-Practitioner

As I reflect on my doctoral journey, I am filled with a sense of accomplishment and gratitude. Having graduated from the Executive Doctorate of Business (EDBA) program at Pepperdine University, pursuing this academic endeavor has been one of the best decisions I have made for my personal, academic, and professional growth. Throughout the program, I embraced and utilized my practitioner experience while delving into the world of peer-reviewed academic research, creating a perfect blend of practical and theoretical applications.

The road of the scholar-practitioner was an elaborate balancing act that shaped my doctoral experience. First and foremost, identifying the right advisor was crucial to my success. I was fortunate to find Dr. Cristel Russell, a mentor and dissertation supervisor who became a guiding force in my research journey.

Amidst the demanding workload of pursuing an advanced degree, I learned the importance of recharging and maintaining a healthy work-life balance. Engaging in activities that brought me joy helped me refuel and approach my research with renewed conviction.

During my academic journey, I also realized the significance of thinking big and taking bold steps. When exploring my research topic, I had the opportunity to interview an expert in the field, Dr. Joann Peck, a leading researcher and creator of the NFT measure. Not only did Dr. Peck graciously accept the invitation, but she also became a valuable member of my dissertation committee. This experience taught me the power of courage and seizing opportunities, even when they seem beyond reach.

Throughout the doctoral program, I embraced three essential principles that proved invaluable: be reliable, be flexible, and be humble. As with any pursuit of knowledge, the road to a doctorate had its share of highs and lows, peaks and valleys, failures and successes. However, it was essential to cherish and enjoy the journey, for it is in these moments of growth and exploration that authentic learning takes place.

As I close this chapter of my academic journey, I am grateful for my opportunities, the invaluable knowledge I gained, and the personal growth I achieved. Pursuing knowledge is a lifelong endeavor, and I am excited to continue contributing to advancing consumer research and qualitative methodologies as a scholar-practitioner.

Throughout the doctoral program, I questioned the true significance of obtaining the title of Dr. Shields. After successfully defending my dissertation, I reflected on this again. I think differently, with a breadth and depth that I did not know existed. My logic is more concrete, yet more abstract. As I embark on a new journey as a scholar-practitioner, I am excited about the possibilities and opportunities that lie ahead.

As I look back on my journey as a doctoral student, one of the aspects that fills me with the greatest pride is my exploration of novel qualitative methods, specifically, adapted-autodriving and avatar-to-avatar (AVA) interviewing.

Adapted-Autodriving Interviewing

Adapted-autodriving allowed me to explore the impact of the COVID-19 pandemic on consumer shopping behaviors and coping mechanisms for reduced tactile interactions. With the onslaught of the 2020 pandemic, there was a need to be extremely strategic in how data was collected while staying true to rigorous research. My brilliant primary advisor suggested modifying autodrivering, a well-known qualitative research method.

The adapted autodrivering method introduced a unique and immersive dimension to the traditional interview process. Unlike pure autodrivering research, I curated visual stimuli based on participants' demographic profiles. By doing so, I aimed to facilitate a sense of projection, allowing informants to envision themselves within the depicted scenarios. This method harnessed the power of imagery as a perceptual or sensory representation of information drawn from memory or created by modifying existing information (Elder & Krishna, 2021; Kosslyn et al., 2001; MacInnis & Price, 1987).

Through longitudinal interviews and the use of adapted-autodriving, I immersed myself in the lived experiences of informants as they navigated the challenging landscape of shopping during the pandemic. This approach provided invaluable insights into the intricate connection between grieving and the sensory deprivation of touch in traumatic events like COVID-19. While conducting the interviews, it became evident this was what I was meant to do. The insights garnered were compelling as informants spoke about the effects on their life, even with something so trivial as going to the grocery store.

The adapted-autodriving interviews encouraged participants to reflect on their shopping experiences during various pandemic stages, including the height of the crisis and the subsequent post-pandemic period. As participants projected themselves into the depicted scenarios, they provided rich and detailed insights into their emotional responses, coping mechanisms, and adaptations. The adapted-autodriving technique was particularly impactful in understanding the coping strategies employed by consumers when in-store touch experiences were limited due to the COVID-19 pandemic. This novel method allowed participants to immerse themselves in the virtual shopping environment, engaging their senses and emotions, providing me with an opportunity to explore the complexities of consumer behavior and the role of touch during a time of unprecedented disruption.

One challenge encountered during the adapted autodriving interviews was that some informants struggled to distinguish between pre- and post-COVID imagery, as they mourned the loss of normal shopping experiences. Despite this challenge, the visual stimuli served as a crucial anchor, eliciting robust responses and shedding light on the emotional and psychological impact of the pandemic on shopping experiences. The adapted-autodriving method was a valuable in exploring consumer behavior, particularly during periods of disruption and change.

Avatar-to-Avatar Interviewing

As the boundaries between reality and virtuality blur, immersive interviewing provides a powerful means to connect with consumers on a profound level and gain deeper insights into their digital identities and lived experiences. As part of my exploration into immersive digital experiences, I also ventured into the realm of ATA interviewing, a method that pushes the boundaries of traditional qualitative research. ATA interviewing offered a unique opportunity to

interact with informants in virtual reality settings, allowing them to express themselves through avatars in naturalistic and authentic virtual environments.

As consumers increasingly inhabit multiple worlds, encompassing physical, digital, and virtually immersive spaces, it is essential for researchers to adapt their methods and embrace the potential of immersive technologies. Unlike video conferencing, immersive interviewing allows researchers to explore how consumers navigate and interact within virtual environments. By meeting informants in their habitat, this approach enables a more profound understanding of how technology impacts everyday life and shapes consumer behaviors (Vindenes & Wasson, 2021). An essential aspect of ATA interviewing is examining the avatar's representation and whether it reflects the informant's true self. The interactions in the immersive environment can provide researchers with valuable insights into the dialogical self, allowing them to distinguish between the various levels of self that the avatar embodies (Bahl & Milne, 2010).

Initial data collection and analysis provided intriguing findings as informants perceived their avatars as extensions of themselves, expressing a sense of ownership and identity attachment to their digital counterparts (Procter, 2021). Integrating sight, sound, and haptic engagement in the virtual environment fosters a heightened sense of telepresence, co-presence, social presence, and self-presence, further enriching the interview experience (Biocca, 1997; Procter, 2021). Additionally, immersive interviews demonstrated higher focus, presence, and engagement levels than traditional online interviews, such as those conducted via Zoom.

As with any novel research method, ATA interviews have challenges that require careful consideration. Researchers must be mindful of time constraints, as informants may experience adverse reactions or discomfort in the virtual environment, impacting the duration of the interview sessions. Also, using VR headsets necessitates alternative note-taking methods, as

researchers cannot rely on traditional written notes during the interview itself. Despite these challenges, the immersive interviewing approach shows great promise for understanding consumer experiences and perceptions within immersive virtual worlds.

As technology advances, researchers must remain adaptable and responsive, meeting consumers in the places they live, work, and play to gain a comprehensive understanding of their needs and motivations. ATA interviews in immersive virtual environments represent a transformative research approach that aligns with the evolving nature of consumer experiences. This journey into immersive digital interviewing has offered compelling findings and underscores the importance of meeting consumers where they reside, be it physical or virtual. By adopting innovative research methods and exploring the metaverse, researchers can stay at the forefront of understanding consumer behavior in an ever-changing and interconnected world.

The adventure continues as the wild terrain of the metaverse beckons researchers to explore further, uncovering hidden gems of consumer knowledge and illuminating the path to a deeper comprehension of human behavior.

What is Next...

Engaging with informants through these qualitative research methods opened new horizons of knowledge and expanded my appreciation for the power of qualitative research in understanding the intricacies of human experiences. The flexibility and authenticity of these methods have allowed me to capture rich and contextually relevant data that may have been challenging to obtain through traditional interview approaches.

The findings from both forms of qualitative interviewing have been a transformative experience. The adapted autodiving method shed light on how the pandemic influenced consumers' shopping behaviors, preferences, and attitudes, providing practical insights for

businesses to adapt and thrive in the post-pandemic era while ATA interviewing enabled me to explore the extension of self-concept to avatars, as informants perceived their digital counterparts as representations of their true selves.

I am committed to pushing the boundaries of qualitative research methods, exploring innovative approaches, and contributing to advancing knowledge in academic research. Equally important to me is providing practical applications for practitioners, bridging the gap between theory and real-world impact. As a scholar-practitioner, I embrace the dynamic interplay of academia and practice, seeking to create meaningful insights and actionable solutions that enrich both realms.

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APPENDIX A: RECRUITMENT LETTERS AND CONSENT FORMS

Phase 1, 2, 2A Losing Touch Recruitment Form

My name is Joy Shields. I am a doctoral student at Pepperdine University working with Professor Cristel Russell, a faculty member in the Graziadio Business School at Pepperdine University. We are conducting a research study examining the shopping experience during a pandemic and would like to invite you to participate in the study. The study will include a shop-along where the researcher will accompany the participant at a retail venue of choice followed by a semi-structured virtual interview. The shop-along will range from 30- minutes to 1- hour. The follow-up interviews will consist of a 45- to 60-minute exchange about your experience within the store environment (i.e., how you shop), and whether and how these experiences may have changed during the pandemic. With your permission, the virtual interview portion will be audio and video recorded for transcription purposes. Participation in this study is voluntary. To protect participants' identity and the confidentiality of your answers, only pseudonyms will be used in the final report, or any publications related to this project.

If you have questions or would like to participate, please contact us as follows:

Contact Information

Joy Shields

Email: joy.shields@pepperdine.edu

Cristel Russell

Email: cristel.russell@pepperdine.edu

Thank you for your interest,

Joy Shields

Joy Shields, Doctoral Student, MBA, MS

Cristel Russell

Cristel Russell, Ph.D., Professor of Marketing Pepperdine University

Phase 1, 2, 2A Losing Touch Consent Form

IRB #: 20-12-1503

Formal Study Title: Understanding the Shopping Experience

Authorized Study Personnel

Principal Investigator: Dr. Cristel Russell

Doctoral Student: Joy Shields

Key Information:

If you agree to participate in this study, the project will involve:

- (Males/Females) above the age of 19
- Procedures will include a virtual interview up to 60 minutes
- There are minimal risks associated with this study
- You will be offered a \$20 Amazon Gift Card for the completion of the interview
- You will be provided a copy of this consent form

Invitation

You are invited to take part in this research study. The information in this form is meant to help you decide whether or not to participate. If you have any questions, please ask.

Why are you being asked to be in this research study?

You are being asked to be in this study because you shopped online or in a retail establishment during the Covid-19 pandemic.

What is the reason for doing this research study?

The research team is interested in the sensory aspects of the shopping experience. By that I mean, what people look at, what we pay attention to as we shop. As you know, the five senses are seeing, hearing, tasting, touching, and smelling. And of course, over the last year your shopping experience have changed and I'm interested in that as well.

What will be done during this research study?

We do not expect more than minimal risk. This research presents risk of loss of confidentiality however protocols are in place to decrease the level of risk.

This is a virtual interview about people's sensory experience when shopping, We anticipate no more than minimal psychological risks. It is possible that participants will experience some stress recounting shopping experiences during COVID19 and we will ensure that, if a participant feels uncomfortable answering any questions, they are reminded that the study is voluntary and that they do not have to answer any given question if they prefer not to.

The identity of individuals will not be revealed as names will be changed in the final report. Furthermore, transcription will be limited to the researcher which will further assure confidentiality to the participants.

It is possible that participants, in recounting experiences of shopping during the pandemic may feel anxious and thus some psychological discomfort. However, our previous data collection using these same interview processes tells us that these rarely occur or if they are rather mild risks. The tone of the interview is conversational and nonjudgmental to avoid any such discomfort.

Participants are ensured that their answers are confidential and that they do not have to answer any questions they are not comfortable answering. In the event that participants have suggestions of other people who may be interested in the study , we will not request names/ contact information and instead, we will simply ask you to provide the study details and our contact information to those potential participants. In that way, potential participants would initiate the contact, with full knowledge that the referring person was part of the study. This will ensure that the referring people and those being referred are aware and comfortable with each other's knowledge of each other's participation (but not the nature of their actual participation).

Although it is unlikely that participants would experience psychological or emotional distress, we will have information available about local health and counseling resources / professional assistance. For example, at Pepperdine, it will be student.counseling.center@pepperdine.edu. We will also have handy the number for the Free Counseling Hotlines (available from [OpenCounseling.com](https://www.opencounseling.com)).

What are the possible benefits to you?

You are not expected to get any benefit from being in this study.

What are the possible benefits to other people?

The benefits to science and/or society may include better understanding of how the experience of shopping during the time of Covid-19 has been altered; a phenomenon that has not yet been explored within the marketing field.

What are the alternatives to being in this research study?

The alternative is non-participation.

What will being in this research study cost you?

There is no cost to you to be in this research study.

Will you be compensated for being in this research study?

You will be offered a \$10 Amazon Gift Card for each online survey you complete during the study.

What should you do if you have a problem during this research study?

Your welfare is the major concern of every member of the research team. If you have a problem as a direct result of being in this study, you should immediately contact one of the people listed at the beginning of this consent form.

How will information about you be protected?

Reasonable steps will be taken to protect your privacy and the confidentiality of your study data.

The data will be stored electronically through a secure server and will only be seen by the research team during the study and for six years after the study is complete.

The only persons who will have access to your research records are the study personnel, the Institutional Review Board (IRB), and any other person, agency, or sponsor as required by law. The information from this study may be published in scientific journals or presented at scientific meetings but the data will be reported as group or summarized data and your identity will be kept strictly confidential.

What are your rights as a research subject?

You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study.

For study related questions, please contact the investigator(s) listed at the beginning of this form. For questions concerning your rights or complaints about the research contact the Institutional

Review Board (IRB):

Phone: 1 (310) 568-2305

Email: gpsirb@pepperdine.edu

What will happen if you decide not to be in this research study or decide to stop participating once you start?

You can decide not to be in this research study, or you can stop being in this research study (“withdraw”) at any time before, during, or after the research begins for any reason. Deciding not to be in this research study or deciding to withdraw will not affect your relationship with the investigator or with Pepperdine University (list others as applicable)

You will not lose any benefits to which you are entitled.

Documentation of informed consent

You are voluntarily making a decision whether or not to be in this research study. Signing this form means that (1) you have read and understood this consent form, (2) you have had the consent form explained to you, (3) you have had your questions answered and (4) you have decided to be in the research study. You will be given a copy of this consent form to keep

If you agree to participate in this research study, please click the button below for your electronic signature or scan and return this document via email to joy.shields@pepperdine.edu.

Participant Full Name: (First, Last)

Today's Date: (Month, Day, Year)

Participant Consent:

- I agree to participate in the study
- I do not agree to participate in the study

Phase 1A Need for Touch Now and Then Survey Recruitment Form

Thank you for your interest in learning more about my research study.

Here you will find the direct link to the consent form: Understanding the Sensory Experience when Shopping. Upon agreeing to participate in the online survey, you will be directed to the survey which will take approximately 5 to 10 minutes to complete.

The following tells you more about the research project that will be conducted.

As you know, I am a doctoral student at Pepperdine University. I am working with Professor Cristel Russell, a faculty member in the Graziadio Business School at Pepperdine University. We are conducting a research study examining the shopping experience during a pandemic and would like to invite you to participate in the study.

This portion of the study is an online survey to get a better understanding about your online and in-store shopping experiences (i.e. how you shop), and whether and how these experiences may have changed during the pandemic.

Participation in this study is voluntary. To protect participants' identity and the confidentiality of your answers, only pseudonyms will be used in the final report or any publications related to this project.

If you have questions, please contact us as follows:

Contact Information

Joy Shields

Email: joy.shields@pepperdine.edu

Cristel Russell

Email: cristel.russell@pepperdine.edu

Thank you for your interest,

Joy Shields

Joy Shields, Doctoral Student, MBA, MS

Cristel Russell

Cristel Russell, Ph.D., Professor of Marketing Pepperdine University

Phase 1A Need for Touch Now and Then Survey Consent Form

Consent Form

IRB #: 20-12-1503

Formal Study Title: Understanding the Shopping Experience

Authorized Study Personnel

Principal Investigator: Dr. Cristel Russell

Doctoral Student: Joy Shields

Key Information:

If you agree to participate in this study, the project will involve:

- (Males/Females) above the age of 19
- Procedures will include an online survey
- One (1) online survey and possibly follow-up online surveys
- These online survey will take approximately 5 to 10 minutes to complete
- There are minimal risks associated with this study
- You will be offered a \$10 Amazon Gift Card for the completion of the online survey
- You will be provided a copy of this consent form

Invitation

You are invited to take part in this research study. The information in this form is meant to help you decide whether or not to participate. If you have any questions, please ask.

Why are you being asked to be in this research study?

You are being asked to be in this study because you shopped online or in a retail establishment during the Covid-19 pandemic.

What is the reason for doing this research study?

The research team is interested in the sensory aspects of the shopping experience. By that I mean, what people look at, what we pay attention to as we shop. As you know, the five senses are seeing,

hearing, tasting, touching, and smelling. And of course, over the last year your shopping experience have changed and I'm interested in that as well.

What will be done during this research study?

We do not expect more than minimal risk. This research presents risk of loss of confidentiality however protocols are in place to decrease the level of risk.

This is an online survey about people's sensory experience when shopping, We anticipate no more than minimal psychological risks. It is possible that participants will experience some stress recounting shopping experiences during COVID19 and we will ensure that, if a participant feels uncomfortable answering any questions, they are reminded that the study is voluntary and that they do not have to answer any given question if they prefer not to.

The identity of individuals will not be revealed as names will be changed in the final report. Furthermore, transcription will be limited to the researcher which will further assure confidentiality to the participants.

It is possible that participants, in recounting experiences of shopping during the pandemic may feel anxious and thus some psychological discomfort. However, our previous data collection using these same interview processes tells us that these rarely occur or if they are rather mild risks. The tone of the interview is conversational and nonjudgmental to avoid any such discomfort.

Participants are ensured that their answers are confidential and that they do not have to answer any questions they are not comfortable answering. In the event that participants have suggestions of other people who may be interested in the study , we will not request names/ contact information and instead, we will simply ask you to provide the study details and our contact information to those potential participants. In that way, potential participants would initiate the contact, with full knowledge that the referring person was part of the study. This will ensure that the referring people and those being referred are aware and comfortable with each other's knowledge of each other's participation (but not the nature of their actual participation).

Although it is unlikely that participants would experience psychological or emotional distress, we will have information available about local health and counseling resources / professional assistance. For example, at Pepperdine, it will be student.counseling.center@pepperdine.edu. We will also have handy the number for the Free Counseling Hotlines (available from OpenCounseling.com).

What are the possible benefits to you?

You are not expected to get any benefit from being in this study.

What are the possible benefits to other people?

The benefits to science and/or society may include better understanding of how the experience of shopping during the time of Covid-19 has been altered; a phenomenon that has not yet been explored within the marketing field.

What are the alternatives to being in this research study?

The alternative is non-participation.

What will being in this research study cost you?

There is no cost to you to be in this research study.

Will you be compensated for being in this research study?

You will be offered a \$10 Amazon Gift Card for each online survey you complete during the study.

What should you do if you have a problem during this research study?

Your welfare is the major concern of every member of the research team. If you have a problem as a direct result of being in this study, you should immediately contact one of the people listed at the beginning of this consent form.

How will information about you be protected?

Reasonable steps will be taken to protect your privacy and the confidentiality of your study data.

The data will be stored electronically through a secure server and will only be seen by the research team during the study and for six years after the study is complete.

The only persons who will have access to your research records are the study personnel, the Institutional Review Board (IRB), and any other person, agency, or sponsor as required by law. The information from this study may be published in scientific journals or presented at scientific meetings but the data will be reported as group or summarized data and your identity will be kept strictly confidential.

What are your rights as a research subject?

You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study.

For study related questions, please contact the investigator(s) listed at the beginning of this form. For questions concerning your rights or complaints about the research contact the Institutional

Review Board (IRB):

Phone: 1 (310) 568-2305

Email: gpsirb@pepperdine.edu

What will happen if you decide not to be in this research study or decide to stop participating once you start?

You can decide not to be in this research study, or you can stop being in this research study (“withdraw”) at any time before, during, or after the research begins for any reason. Deciding not to be in this research study or deciding to withdraw will not affect your relationship with the investigator or with Pepperdine University (list others as applicable).

You will not lose any benefits to which you are entitled.

Documentation of informed consent

You are voluntarily making a decision whether or not to be in this research study. Signing this form means that (1) you have read and understood this consent form, (2) you have had the consent form explained to you, (3) you have had your questions answered and (4) you have decided to be in the research study. You will be given a copy of this consent form to keep

If you agree to participate in this research study, please click the button below for your electronic signature or scan and return this document via email to joy.shields@pepperdine.edu.

Participant Full Name: (First, Last)

Today's Date: (Month, Day, Year)

Participant Consent:

- I agree to participate in the study
- I do not agree to participate in the study

Losing Touch Recruitment Form



Cover Letter (Shared via email to Consumer Panel)

Hello,

Thank you for agreeing to be a part of my dissertation research. I hope you have been well. Would you mind taking a short online survey as part of my doctoral research on the shopping experience? If so, I have included the link below for the consent form and survey. If you could complete the survey over the next 10 days (by December 18th) it would be greatly appreciated. Upon agreeing to participate, you will be directed to the survey which will take approximately 10 minutes to complete. As a thank you, you will be provided a \$10 Amazon gift card.

The following tells you more about the research project that will be conducted. As you know, I am a doctoral student at Pepperdine University. I am working with Professor Cristel Russell, a faculty member in the Graziadio Business School at Pepperdine University. We are conducting a research study examining the shopping experience during a pandemic and would like to invite you to participate. This portion of the study is an online survey to get a better understanding of your online and in-store shopping experiences (i.e., how you shop), and whether and how these experiences may have changed during the pandemic.

Participation in this study is voluntary. To protect participants' identity and the confidentiality of your answers, only pseudonyms will be used in the final report, or any

publications related to this project. Upon agreeing to participate in the online survey, you will be directed to the survey which will take approximately 10 minutes to complete. Here you will find the direct link to the consent form: [Understanding the Shopping Experience](#).

If you have questions, please contact us as follows:

Joy Shields Contact Information

Doctoral Student, MBA, MS

Email: joy.shields@pepperdine.edu

Cristel Russell Contact Information

Ph.D., Professor of Marketing Pepperdine University

Email: cristel.russell@pepperdine.edu

Thank you for your interest,

Joy & Cristel

Phase 2B Consent Form

Self-Administered Questionnaire (SAQ)

Understanding the Shopping Experience

Anonymous Survey Link: http://pepperdine.qualtrics.com/jfe/form/SV_1FVZakVNkROSkXI

Consent Form

IRB #: 20-12-1503

Formal Study Title: Understanding the Shopping Experience

Authorized Study Personnel

Principal Investigator: Joy Shields

Key Information:

If you agree to participate in this study, the project will involve completing a 10-minute online survey.

What is the reason for doing this research study?

The research team is interested in the sensory aspects of the shopping experience. By that I mean, what people look at, what we pay attention to as we shop. As you know, the five senses are seeing, hearing, tasting, touching, and smelling. And of course, over the last year your shopping experience have changed, and I'm interested in that as well.

What will be done during this research study?

We anticipate no more than minimal psychological risks. It is possible that participants will experience some stress recounting shopping experiences during COVID-19, and we will ensure that, if a participant feels uncomfortable answering any questions, they are reminded that the study is voluntary and that they do not have to answer any given question if they prefer not to.

Will you be compensated for being in this research study?

You will be offered a \$10 Amazon Gift Card for each online survey you complete during the study.

The data will be stored electronically through a secure server and will only be seen by the research team during the study and for six years after the study is complete.

The only persons who will have access to your research records are the study personnel, the Institutional Review Board (IRB), and any other person, agency, or sponsor as required by law.

The information from this study may be published in scientific journals or presented at scientific meetings but the data will be reported as group or summarized data and your identity will be kept strictly confidential.

What are your rights as a research subject?

You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study.

For study related questions, please contact the investigator(s) listed at the beginning of this form. For questions concerning your rights or complaints about the research contact the Institutional

Review Board (IRB):

Phone: 1 (310) 568-2305

Email: gpsirb@pepperdine.edu

I have been informed that the activities I will complete relate to academic research and that their purpose is to gain insight into consumers' evaluations. I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences; my participation is voluntary. I understand that my participation in this study is confidential, and that while the data from this study may be published, all results will be compiled and analyzed as an aggregate, therefore I cannot be identified by my answers. There are no potential risks to participant, and potential benefits include participation in the research process.

I understand the purpose of this study and know that there is no hidden motive of which I have not been informed.

By clicking next, you AGREE to participate in this survey.

- ☐ I agree to participate in the study.
- ☐ I do not agree to participate in the study.

Page Break

Participant Full Name: (First, Last)

Today's Date: (Month, Day, Year)

APPENDIX B: RESEARCH INSTRUMENTS

Perceived Stress Test

On the whole, how would you describe your feelings and thoughts about the COVID-19 pandemic?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I have felt as if something serious was going to happen unexpectedly with the COVID-19 pandemic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt that I am unable to control the important things in my life because of the COVID-19 pandemic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt stressed about the COVID-19 pandemic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been confident about my ability to handle my personal problems related to the COVID-19 pandemic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt optimistic that things are going well with the COVID-19 pandemic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt unable to cope with the things I have to do to monitor for a possible infection.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt that I can control the difficulties that could appear in my life as a result of the infection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt that I have everything under control in relation to the COVID-19 pandemic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been upset that things related to the COVID-19 pandemic are out of my control.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt overwhelmed during the COVID-19 pandemic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Consumer Locus of Control

This next set of questions has to do with your personality. Please indicate the degree to which each statement represents the kind of person you are.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
If it happens that I buy an unsatisfactory item, I try to do something about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes when I don't know much about a product, I might as well decide which brand to buy just by flipping a coin.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Usually when I plan to buy something I can find the best deal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making good buys depends on how hard I look.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There have been times when I just could not resist the pressure of a good salesperson.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being able to wait for sales and looking for information about the item has really helped me get good deals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have often found it useful to complain about unsatisfactory products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's hard for me to know whether or not something is a good buy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To me, there's not much point in trying too hard to discover differences in the quality of products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Usually I make an effort to be sure that I don't end up with a "lemon".	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find that there's no point to shopping around because prices are nearly the same everywhere.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I buy something unsatisfactory, I usually keep it because complaining doesn't help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I can't understand how I end up buying the kinds of things that I do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am vulnerable to rip-offs, no matter how hard I try to prevent them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Phase 1 Losing Touch Phase 1 Interview Guide

This interview guide will allow for flexibility within the interviews due to its semi-structured design. These questions will be used as a guide to initiate discussion with participants on certain topics.

1.0 Pre-Interview Guide

- Introduction
- Thank participant for coming
- Explain the nature of the interview and go through the consent form with participant, including permission to tape the interview
- Have participant sign **and return consent form prior to interview**
- Ask participant if they have any further questions
- Start the recording of the interview

2.0 Basic Interview Guide

Purchase of grocery items:

- Where do you shop for groceries?
- How often do you shop for your groceries right now?
 - (In-store, online, combination of both)
- In what way has this changed?
- How would you describe a typical shopping trip to the grocery store right now?
- For example, when you walk into a grocery store, what is the first thing you?
- Do you usually get a shopping cart or a small basket to shop for your items?
- Do you go through a sanitation process?
- How do you pick your fruit and vegetables, etc?
- Now what about bread, how do you pick that out?
- How about your pantry staples, what process do you go through to pick them out?
- And now we are going to discuss the dairy and egg aisle, how do you go about picking those items?
- And now let's look at the check-out process, how do you go about purchasing your groceries?
- Do you like (prefer) to see items up close before you purchase them?
- If you are not able to see the item up close, how do you select the item?
- Do you like (prefer) to touch items before you purchase them?
- If you are not able to touch the item up close, how do you select the item?
- Do you believe your shopping experiences have changed over the last year shopping for groceries? If so, how do you feel they have changed?
- In what ways has it changed?

Purchase of non-grocery items:

- Where do you shop for non-grocery items such as clothing or furniture?
- How often do you shop for your non-grocery items right now?
- (In-store, online, combination of both)
- In what way has this changed?
- How would you describe a typical shopping trip to the store right now?
- For example, when you walk into a retail space to shop for clothing or furniture, what is the first thing you?
- Do you usually get a shopping cart or a small basket to shop for your items?
- Do you go through a sanitation process?
- Please take me through the process when looking for clothing.
- Now what about furniture, what does the process look like?
- And now let's look at the check-out process, how do you go about purchasing non-grocery items?
- Do you like (prefer) to see items up close before you purchase them?
- If you are not able to see the item up close, how do you select the item?
- Do you like (prefer) to touch items before you purchase them?
- If you are not able to touch the item up close, how do you select the item?
- Do you believe your shopping experiences have changed over the last year when shopping for non-grocery items such as clothing or furniture? If so, how do you feel they have changed?
- In what ways has it changed?

Follow-up questions in regards to touch (or any other senses)

- Do you feel you need to touch grocery items before you purchase them?
- How about non-grocery items, like clothing or furniture, do you feel the need to touch them before making a purchase?
- What is more important to you, to see an item or to see and touch an item?
- If you can't touch an item, what do you do?
- Do you find it fun to touch items or is it more about the purchase decision?

3.0 Closing

- Thank participant for the discussion, sharing their thoughts, and giving their time
- Ask participant if they have any further questions
- Ask participant if it would be okay to contact them for any further clarification if necessary
- Thank participant once again

Phase 1A Need for Touch Now and Then Survey

The first part of this study is focused on your CURRENT habits. So, as you answer this series of questions, please reflect on your CURRENT behavior.

When walking through stores, I can't help touching all kinds of products.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Touching products can be fun.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I place more trust in products that can be touched before purchase.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I feel more comfortable purchasing a product after physically examining it.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

When browsing in stores, it is important for me to handle all kinds of products.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree

- Somewhat disagree
- Disagree
- Strongly disagree

If I can't touch a product in the store, I am reluctant to purchase the product.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I like to touch products even if I have no intention of buying them.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I feel more confident making a purchase after touching a product.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

When browsing in stores, I like to touch lots of products.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

The only way to make sure a product is worth buying is to actually touch it.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree

- Disagree
- Strongly disagree

There are many products that I would only buy if I could handle them before purchase.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I find myself touching all kinds of products in stores

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

The second part of this study is focused on your habits during the PEAK OF the COVID-19 PANDEMIC (about APRIL 2020). So, as you answer this next series of questions, please reflect on your behavior AT THE TIME OF THE COVID-19 PANDEMIC PEAK.

When walking through stores, I couldn't help touching all kinds of products.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Touching products was fun.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I placed more trust in products that could be touched before purchase.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I felt more comfortable purchasing a product after physically examining it.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

When browsing in stores, it was important for me to handle all kinds of products.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

If I couldn't touch a product in the store, I was reluctant to purchase the product.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I liked to touch products even if I had no intention of buying them.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I felt more confident making a purchase after touching a product.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

When browsing in stores, I liked to touch lots of products.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

The only way to make sure a product was worth buying was to actually touch it.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

There are many products that I would only buy if I could handle them before purchase.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I found myself touching all kinds of products in stores

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Interview Guide 2 & 2A

1.0 Pre-Interview Guide

Introduction and Thank You

Thank you for agreeing to speak with me today and allowing me to observe your shopping habits. As you know, I'm interested in the sensory aspects of the shopping experience. By that I mean, what people look at, what we pay attention to as we shop; what we see, hear, taste, touch, and smell. I also would like to get an idea of what it's like to shop during a pandemic and if things stayed the same or if they changed in any way.

Option A: Explain the nature of the interview and go through the consent form with the participant, including permission to tape the interview.

Have participant sign and return consent form prior to interview.

Ask the participant if they have any further questions.

Option B: (If Consent Form has been signed and returned prior to interview).

You have read and signed the consent form. Thank you for returning the form to me. Before we begin, I'd like to see if you have any additional questions.

Ask for permission to begin recording

With your permission, I am going to begin recording the interview via Zoom.

If Yes, start the recording of the interview.

If No, ask for alternate ways to record the interview with the participant.

2.0 Basic Interview Guide - Open the Interview Session

Q1: Introductory Question: Thank you again for allowing me to observe you shopping. Can you tell me what are some of the reasons that you shop at (Name Store Participant Was Observed At)?

Key Interview Questions

Content - Look to gauge behavior based on the initial semi-structured interview and in-store observation

Q3 Probe 1:

- During our initial interview you stated, (*Excerpt from Initial Interviews*) “I feel that I'm already a little bit desensitized to the point where I'm starting like to touch things like I used to.”
- So, I'd love to learn more, how do you feel about that statement?
- Talk to me about being desensitized to touch during a pandemic.

Q3 Probe 2:

- While shopping for (Name Product), you used a plastic bag to pick up your fruits and vegetables.
- Is this something you have always done?
- If yes, can you tell me about that?
- If no, when did you begin to use bags to pick up items?
- Now we are going to look at your shopping habits in relation to picking up products.
- When you were shopping for (Name Product or Product Category) to access the product you picked up the item (Name Number of Times).
- So, we previously talked about you feeling desensitized when it came to touching items in the store, so I'd like to spend some time here to get a better understanding of the motivations.

Content: Shopping Experience Now Versus Then

- Q4 Probe 1: In our initial interview, you stated that “I'm used to being a little bit more like inspired by my grocery shopping, and that changed a lot during the pandemic.”
- How do you feel about shopping now?
- Do you feel comfortable shopping in (Name Store where observation took place) now?
- Think back about six months, were you comfortable shopping in-store then?

Q4 Probe 2: You shopped for approximately XX minutes, and I observed you Name

Behavior (Example: humming and singing quietly).

- Can you tell me about that?
- Do you enjoy shopping?
- If yes, talk to me about that, what makes shopping fun?
- If no, what could make shopping more enjoyable?

Content: The Need for Touch While Shopping

Q5 Probe 1:

- The last time I interviewed you, you said, “I think that at the beginning of the pandemic should grocery shopping was a stressful experience where I didn't want to touch things. I kept my phone in my pocket. I had my hand sanitizer out and I had my gloves on. I touched as little as possible.”
- So, thinking back to your last shopping experience when we were together, is this still an accurate description of how you feel?

Q5 Probe 2:

- So, again this a quote from our initial interview, “I like to touch everything and like feel it. I like, need to touch things. One of my favorite things to do is go to Target and just touch things. I'm the kind of person like that like touches the clothes as I walk by it, or I'll stop, and I'll pick things up.”
- Do you still find this statement to be true?
- Ok, so let's dissect this a little more.
- During my observation you, (State behavior), I'd love to learn more about that, can you talk me through it?

3.0 Closing

- Thank participant for the discussion, sharing their thoughts, and giving their time.
- You have provided me with a wealth of information today. I truly appreciate your insights and time. Are there any final thoughts you'd like to share? Anything I may have missed?
- Ask participant if they have any further thoughts that would like to share or any additional questions they may have
- Ask participant if it would be okay to contact them for any further clarification, if necessary, in the future
- Thank participant once again
- Thank you again for your time and dedication, this project would not be possible without it. Have a wonderful day and I'll be in touch soon? Take care and be safe.

Phase 2B Survey

The first part of this study is focused on your CURRENT shopping experiences as of December 2021. So, as you answer this series of questions, please reflect on your CURRENT behavior.

- ☐ Click Here to Continue

When walking through stores, I can't help touching all kinds of products.

- ☐ Strongly disagree (-3)
- ☐ Disagree (-2)
- ☐ Somewhat disagree (-1)
- ☐ Neither agree nor disagree (0)
- ☐ Somewhat agree (1)
- ☐ Agree (2)
- ☐ Strongly agree (3)

Touching products can be fun.

- ☐ Strongly disagree (-3)
- ☐ Disagree (-2)
- ☐ Somewhat disagree (-1)
- ☐ Neither agree nor disagree (0)
- ☐ Somewhat agree (1)
- ☐ Agree (2)
- ☐ Strongly agree (3)

I place more trust in products that can be touched before purchase.

- ☐ Strongly disagree (-3)
- ☐ Disagree (-2)
- ☐ Somewhat disagree (-1)
- ☐ Neither agree nor disagree (0)
- ☐ Somewhat agree (1)
- ☐ Agree (2)
- ☐ Strongly agree (3)

I feel more comfortable purchasing a product after physically examining it.

- Strongly disagree (-3)
- Disagree (-2)
- Somewhat disagree (-1)
- Neither agree nor disagree (0)
- Somewhat agree (1)
- Agree (2)
- Strongly agree (3)

When browsing in stores, it is important for me to handle all kinds of products.

- Strongly disagree (-3)
- Disagree (-2)
- Somewhat disagree (-1)
- Neither agree nor disagree (0)
- Somewhat agree (1)
- Agree (2)
- Strongly agree (3)

If I can't touch a product in the store, I am reluctant to purchase the product.

- Strongly disagree (-3)
- Disagree (-2)
- Somewhat disagree (-1)
- Neither agree nor disagree (0)
- Somewhat agree (1)
- Agree (2)
- Strongly agree (3)

I like to touch products even if I have no intention of buying them.

- Strongly disagree (-3)
- Disagree (-2)
- Somewhat disagree (-1)
- Neither agree nor disagree (0)
- Somewhat agree (1)
- Agree (2)
- Strongly agree (3)

I feel more confident making a purchase after touching a product.

- ☐ Strongly disagree (-3)
- ☐ Disagree (-2)
- ☐ Somewhat disagree (-1)
- ☐ Neither agree nor disagree (0)
- ☐ Somewhat agree (1)
- ☐ Agree (2)
- ☐ Strongly agree (3)

When browsing in stores, I like to touch lots of products.

- ☐ Strongly disagree (-3)
- ☐ Disagree (-2)
- ☐ Somewhat disagree (-1)
- ☐ Neither agree nor disagree (0)
- ☐ Somewhat agree (1)
- ☐ Agree (2)
- ☐ Strongly agree (3)

The only way to make sure a product is worth buying is to actually touch it.

- ☐ Strongly disagree (-3)
- ☐ Disagree (-2)
- ☐ Somewhat disagree (-1)
- ☐ Neither agree nor disagree (0)
- ☐ Somewhat agree (1)
- ☐ Agree (2)
- ☐ Strongly agree (3)

There are many products that I would only buy if I could handle them before purchase.

- ☐ Strongly disagree (-3)
- ☐ Disagree (-2)
- ☐ Somewhat disagree (-1)
- ☐ Neither agree nor disagree (0)
- ☐ Somewhat agree (1)
- ☐ Agree (2)

- Strongly agree (3)

I find myself touching all kinds of products in stores

- Strongly disagree (3)
- Disagree (-2)
- Somewhat disagree (-1)
- Neither agree nor disagree (0)
- Somewhat agree (1)
- Agree (2)
- Strongly agree (3)

This next set of questions has to do with your personality. Please indicate the degree to which each statement represents the kind of person you are.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
If it happens that I buy an unsatisfactory item, I try to do something about it.	○	○	○	○	○
Sometimes when I don't know much about a product, I might as well decide which brand to buy just by flipping a coin.	○	○	○	○	○
Usually when I plan to buy something I can find the best deal.	○	○	○	○	○

Making good buys depends on how hard I look.

○

○

○

○

○

There have been times when I just could not resist the pressure of a good salesperson.

○

○

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○

Being able to wait for sales and looking for information about the item has really helped me get good deals.

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I have often found it useful to complain about unsatisfactory products.

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It's hard for me to know whether or not something is a good buy. (4)

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To me, there's not much point in trying too hard to discover differences in the quality of products. (3)

○

○

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Usually, I
make an effort
to be sure that
I don't end up
with a
"lemon." (17)

○

○

○

○

○

I find that
there's no
point to
shopping
around
because prices
are nearly the
same
everywhere.
(19)

○

○

○

○

○

When I buy
something
unsatisfactory,
I usually keep
it because
complaining
doesn't help.
(22)

○

○

○

○

○

Sometimes I
can't
understand
how I end up
buying the
kinds of things
that I do. (1)

○

○

○

○

○

I am
vulnerable to
rip-offs, no
matter how
hard I try to
prevent them.
(23)

○

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○

On the whole, how would you describe your feelings and thoughts about the COVID-19 pandemic?

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I have felt as if something serious was going to happen unexpectedly with the COVID-19 pandemic. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt that I am unable to control the important things in my life because of the COVID-19 pandemic. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt stressed about the COVID-19 pandemic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I have been confident about my ability to handle my personal problems related to the COVID-19 pandemic.

○

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I have felt optimistic that things are going well with the COVID-19 pandemic.

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I have felt unable to cope with the things I have to do to monitor for a possible infection.

○

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I have felt that I can control the difficulties that could appear in my life as a result of the infection.

○

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○

I have felt that I have everything under control in relation to the COVID-19 pandemic.

☐ ☐ ☐ ☐ ☐ ☐ ☐

I have been upset that things related to the COVID-19 pandemic are out of my control.

☐ ☐ ☐ ☐ ☐ ☐ ☐

I have felt overwhelmed during the COVID-19 pandemic.

☐ ☐ ☐ ☐ ☐ ☐ ☐

You have now reached the final section of the survey which will focus on demographic information.

What gender do you identify as?

- ☐ Male (1)
- ☐ Female (2)
- ☐ Nonbinary / 3rd Gender (3)
- ☐ Prefer Not to Answer (4)

What is your ethnicity?

- ☐ Hispanic (1)
- ☐ Non-Hispanic (2)
- ☐ Prefer Not to Answer (3)

How would you best describe yourself?

- ☐ African American or Black (3)
- ☐ American Indian or Alaska Native (1)
- ☐ Asian (2)
- ☐ Caucasian or White (5)
- ☐ Native Hawaiian or Other Pacific Islander (12)
- ☐ Not Listed - Please Specify (15) _____
- ☐ Prefer Not to Answer (14)

What best describes your marital status?

- ☐ Single, never married (1)
- ☐ Married or domestic partnership (2)
- ☐ Widowed (3)
- ☐ Divorced (4)
- ☐ Separated (5)
- ☐ Prefer Not to Answer (6)

What is your age?

- ▼ Under the age of 19 (163) ... Prefer Not to Answer (166)

What state do you currently reside in?

- ▼ Alabama (1) ... Wyoming (101)

What best describes where you live?

- ☐ Urban (1)
- ☐ Rural (2)
- ☐ Suburban (3)

Thinking about your political views how would you describe yourself?

- ☐ Extremely Conservative (63)
- ☐ Moderately Conservative (64)
- ☐ Slightly Conservative (65)
- ☐ Slightly Liberal (67)
- ☐ Moderately Liberal (68)
- ☐ Extremely Liberal (69)

○ Prefer Not to Answer (70)

What best describes your education level?

▼ Some High School (7) ... Prefer Not to Answer (8)

What best describes your professional experience level?

▼ Entry-Level (1) ... Prefer Not to Answer (5)

What best describes your household income during the past 12-months?

▼ Less than \$25,000 (1) ... Prefer Not to Answer (9)

We thank you for your time spent taking this survey.

Your response has been recorded.

Metaverse Experiment Instructions

The experiment will take place in 3 phases.

Phase 1: Part 1 Survey at Computer Station

Phase 2: Metaverse Experience at Oculus Station

Phase 3: Part 2 Survey at Computer Station

A Japanese Maple Tree pop-up card (JMTPC) is the stimulus for Study 2
Clorox wipes will be available to students at Computer and Oculus Stations.

Direction

Greet participant and provide a 4-digit randomized ID number.

Proceed to Computer Station for completion of Part 1, which includes consent for and a brief survey. (Approximately 2 minutes to complete).

Place origami Japanese Maple Tree next to computer with correlating sign for touch/no touch manipulation.

- Ask if participant has any questions before proceeding to Oculus Station.
- Guide participant to the Oculus Station
- Notify participant that VR headsets are cleaned before and after each use with Clorox wipes.
- Ask participant to notify you if at any time they experience nausea, discomfort, eye strain, or disorientation and immediately discontinue using the virtual reality device. In addition, if they have or could be prone to seizures, to please not use the device unless they have consulted a doctor before doing so.
- Confirm participant would like to proceed to immersive experience.
- **NO PRODUCT ENCOUNTER**
 - Origami Japanese Maple Tree should be placed next to computer with explicit instructions to look but not physically engage with manipulation.
 - Participants will be given verbal and written instructions to vividly imagine touching the physical Japanese Maple Tree for 60 seconds.
 - After completion of Phase 1 Survey, proceed to Oculus Station:

- Ask the participant if they would prefer to sit or stand during the immersive experience and create a virtual grid accordingly.
- Ensure the grid size is approximately the same size.
- Sitting Grid Size:
- Standing Grid Size:
- Sanitize the headset and give to the participant.
- Have Clorox wipes available for participants if they would prefer to sanitize the device again before putting it on.
- Ask the participant how the experience was and Include feedback in the Experiment Notes.
- Proceed to Computer Station for the last component of the study, Phase 3.
- The study is complete.

● **PRODUCT ENCOUNTER**

- Origami Japanese Maple Tree should be placed next to computer with explicit instructions to physically engage with the manipulation.
- Participants will be given verbal and written instructions to haptically engage with the Japanese Maple Tree for 20 seconds.
- Instructions
- For the next 20 seconds please pick up and open the origami Japanese Maple Tree in front of you, examining the entire card. At the end of the 30 seconds place the card back on the table.
- Ask the participant if they would prefer to sit or stand during the immersive experience and create a virtual grid accordingly.
- Please ensure grid size is approximately the same size.
- Sitting Grid Size:
- Standing Grid Size:
- Sanitize headset and give to participant taking the JMTPC from them and placing on the table in front of them.
- Have Clorox wipes available for participant if they would prefer to sanitize device again before putting it on.

- Ask participant how the experience was and Include feedback in Experiment Notes.
- Collect Oculus device from participant and proceed to Computer Station for the last component of the study, Phase 3.
- The study is complete.

No Touch Manipulation Instructions

To be read by the research assistant.

For the next 20 seconds please look at the origami Japanese Maple Tree, taking in any important details you may find relevant.

Touch Manipulation

To be read by the research assistant.

For the next 20 seconds please pick up and open the origami Japanese Maple Tree in front of you, examining the entire card. At the end of the 20 seconds place the card back on the table.

Sense & Sense-Ability Survey

4 Digit Code Please enter your 4-digit code to continue.

State Anxiety

This set of questions focuses on your current state of being after the VR experience you just had. How do you feel right now?

	Not at All (1)	Somewhat (2)	Moderately So (3)	Very Much So (4)
I feel calm. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am tense. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel upset. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am relaxed. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel content. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am worried. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Transportation Scale

Now we would like to know about the VR experience you just had.

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I could picture myself in the immersive experience. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was mentally involved in the immersive experience. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wanted the experience to continue. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The immersive experience affected me emotionally. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While in the immersive experience, I had a vivid image of myself. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Inv Based on your experience, please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
The experience helped me to forget about the day's problems. (1)	0	0	0	0	0	0	0
The experience totally absorbed me. (2)	0	0	0	0	0	0	0
The experience was like "getting away from it all." (3)	0	0	0	0	0	0	0
The experience makes me feel like I'm in another world. (4)	0	0	0	0	0	0	0
I could get so involved that I would forget everything else. (5)	0	0	0	0	0	0	0

ENTERTAINMENT / FRUSTRATION
How would you describe the experience?

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
The experience was entertaining. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was enjoyable. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was pleasing. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was exciting. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was confusing. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was irritating. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was uncomfortable. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was disturbing. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The narration was enjoyable. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was valuable. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was useful. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience was important. (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Brand Attitude

The next set of questions focuses on Inner State featured in the experience. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I like Inner State. (39)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel positive toward Inner State. (40)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that Inner State is a good brand. (42)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Haptic Engagement

We now have a few more questions about elements within the immersive experience. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
This Japanese Maple Tree invited me to touch it. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Touching the Japanese Maple Tree would feel good. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The stars invited me to touch them. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Touching the stars would feel good. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The floating orb invited me to touch it. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Touching
the floating
orb would
feel good.
(6)

☐

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Maple Tree Statement

This section is about a physical object from the immersive environment, the Japanese Maple Tree as shown here.

Maple Tree Touch We have an origami Japanese Maple Tree here today. Please answer the following questions.

	Yes (1)	No (2)
Did you see the origami Japanese Maple Tree before your immersive experience? (1)	<input type="radio"/>	<input type="radio"/>
Did you touch the origami Japanese Maple Tree before your immersive experience? (2)	<input type="radio"/>	<input type="radio"/>
Would you like to take an origami Japanese Maple Tree with you? (3)	<input type="radio"/>	<input type="radio"/>

Demo Statement

The following section of the survey focuses on demographic information.

Gender What gender do you identify as?

- ☐ Male (1)
- ☐ Female (2)
- ☐ Nonbinary / 3rd Gender (3)
- ☐ Prefer Not to Answer (4)

Ethnicity What is your ethnicity?

- ☐ Hispanic (1)
- ☐ Non Hispanic (2)
- ☐ Prefer Not to Answer (3)

Race How would you best describe yourself?

- ☐ African American or Black (1)

- ☐ American Indian or Alaska Native (2)
- ☐ Asian (3)
- ☐ Caucasian or White (4)
- ☐ Native Hawaiian or Other Pacific Islander (5)
- ☐ Not Listed - Please Specify (6) _____
- ☐ Prefer Not to Answer (7)

Marital Status What best describes your marital status?

- ☐ Single (1)
- ☐ Married or domestic partnership (2)
- ☐ Widowed (3)
- ☐ Divorced (4)
- ☐ Separated (5)
- ☐ Prefer Not to Answer (6)

Age What is your age?

- ▼ Under the age of 19 (18) ... Prefer Not to Answer (0)

NFT

Thank you for your feedback on the experience. The final section focuses on your personality. Please indicate the extent to which you agree or disagree with the following statements.

Q91 In the next series of questions we will be asking you about your perceptions of ownership. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree (1)	Agree (2)	Somewhat agree (3)	Neither Agree nor Disagree (4)	Somewhat agree (5)	Agree (6)	Strongly Agree (7)
Owing things gives me a sense of confidence. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Owning things gives me a sense of pride. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Owning gives me a greater sense of accomplishment. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to own things so that I can do whatever I want with them. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to own things so I can access them anytime. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to own things so that I don't have to borrow or rent. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I behave more responsibly with things I own. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I prefer to own things because I take good care of things that I own. (8)

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I value things I own more. (9)

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Q7A I like to touch products even if I have no intention of buying them.

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

Q4I I feel more comfortable purchasing a product after physically examining it.

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

Q8I I feel more confident making a purchase after touching a product.

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

Q12A I find myself touching all kinds of products in stores.

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

Q3I I place more trust in products that can be touched before purchase.

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

Q6I If I can't touch a product in the store, I am reluctant to purchase the product.

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

Q10I The only way to make sure a product is worth buying is to actually touch it.

- ☐ Strongly agree (1)
- ☐ Agree (2)
- ☐ Somewhat agree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat disagree (5)

- Disagree (6)
- Strongly disagree (7)

Q11I There are many products that I would only buy if I could handle them before purchase.

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

Q2A Touching products can be fun.

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

Q9A When browsing in stores, I like to touch lots of products.

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

Q5A When browsing in stores, it is important for me to handle all kinds of products.

- Strongly agree (1)
- Agree (2)
- Somewhat agree (3)
- Neither agree nor disagree (4)

- ☐ Somewhat disagree (5)
- ☐ Disagree (6)
- ☐ Strongly disagree (7)

Q1A When walking through stores, I can't help touching all kinds of products.

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

Debrief

We appreciate your insights, we are interested in people's experiences of immersive environments and your responses are very much valued.

This study featured a specific brand in an immersive environment but our research will generate insights about consumers' perceptions and reactions more generally.

Please feel free to share any insights or comments with the researchers.

APPENDIX C: MEDIATION REGRESSION RESULTS

Mediation Results with Involvement as IV and Brand Attitude as DV

	coeff	se	t	p	LLCI	ULCI
Constant	5.1938	0.1911	27.1748	0.0000	4.8157	5.572
Condition	0.3607	0.2693	1.3395	0.1827	-0.1721	0.8935

Note: $R^2 = .0137$ $MSE = 2.3744$ $F(1, 129) = 1.7944$ $p = .1827$

Mediation Results with Frustration as IV and Brand Attitude as DV

	coeff	se	t	p	LLCI	ULCI
Constant	2.5654	0.1765	14.5354	0.0000	2.2162	2.9146
Condition	0.0634	0.2487	0.2550	0.7991	-0.4286	0.5554

Note: $R^2 = .0005$ $MSE = 2.0247$ $F(1, 129) = .0650$ $p = .7991$

Mediation Results with Entertainment Value as IV and Brand Attitude as DV

	coeff	se	t	p	LLCI	ULCI
Constant	5.4423	0.1393	39.0801	0.0000	5.1668	5.7178
Condition	0.2869	0.1962	1.4621	0.1461	-0.1013	0.6750

Note: $R^2 = .0163$ $MSE = 1.2606$ $F(1, 129) = 2.1377$ $p = .1461$