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Look but Don't Touch! The Impact of Interpersonal Haptic Blocking on Compensatory Touch and Purchase Behavior

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Abstract

This research investigates situations in which frontline employees deliberately restrict customers' access to touch products on display (active interpersonal haptic blocking), and how this understudied form of sensory blocking may increase customers' downstream purchasing. While previous research examines the benefits of increased product touch, we temporarily *block* touch for specific products in display areas and then investigate the subsequent impact on customer behavior. Through four studies, including a retail field experiment, we find that when an employee asks a customer not to touch a product on display, this initiates a serial mediation process which: (1) engenders feelings of psychological reactance that result in (2) increased compensatory touching of subsequently encountered products to counterbalance a loss of sensory freedom, and (3) increased spending and purchasing once the customer leaves the reactance-inducing encounter. Effects are moderated by socioeconomic status (SES) and need for touch (NFT) whereby psychological reactance was significantly stronger for high SES customers with a moderate or high NFT when actively blocked. Results also demonstrate that active interpersonal haptic blocking does not result in more negative attitudes toward retailers, thus retailers might consider implementing this counterintuitive practice to encourage downstream sales.

Keywords: sensory marketing, psychological reactance, haptic blocking, employee-customer interactions, frontline marketing, field experiment

While estimates of worldwide online retail sales vary, the upper estimate of total online sales for 2019 is 14.1%, and this figure is expected to rise (Statista 2019). Despite the growing popularity of online shopping, over 85% of customer purchases still occur in physical retail stores. The dominant reason that customers prefer to shop in stores is "to see, touch, feel, and try out items" (Skrovana 2017). This strong customer felt desire to physically handle merchandise creates potential strategies for retailers. In some instances, the role of the retail employee is to *encourage* product touch. For example, Apple directs their frontline employees to strategically tilt the screens of laptops to 70 degrees so that customers must physically adjust – and therefore touch – the screens in order to view them comfortably (Gallo 2012). But what would happen if frontline employees strategically *discouraged* product touch in store display areas?

To address this question, we conducted an intuition study in which we asked retail customers to imagine such a situation, and indicate how they would likely behave in response. Results[1] reveal that if employees deliberately blocked customers from touching a product (which we term "active interpersonal haptic blocking"), then customers assume they would leave the store without touching or buying any products. Thus, it is possible that retail managers do not train their employees to restrict customer touch when displaying products because they share these beliefs. Our research questions these assumptions, and considers the alternative possibility that a boomerang effect could occur after employees deliberately block customer touch. We suggest that after such interactions, customers would be *more* likely to touch other products in an attempt to regain their haptic freedom, and this would result in *increased* purchasing and spending. We address this compelling and counterintuitive proposition in our research.

[1]N= 117, 64.96% male, M_{age} = 34.05. Results indicate that the mean response for how likely participants would be to purchase the blocked product was 2.52 (on a 1 to 7 scale). Using a one-way t-test, we determined that this was significantly lower than the midpoint ($t(116) = -9.24$, $p < .0001$). Results for how likely they would be to touch other products reflected a similar pattern ($M = 2.67$; $t(116) = -7.13$, $p < .0001$).

Customer-focused haptics research investigates how individuals use information gained via their hands (i.e., product softness, texture, quality) while shopping. Past research in haptics has investigated topics such as reactions to products touched by others (Argo, Dahl, and Morales 2006), the individual trait need for touch (NFT; Peck and Childers 2003a), and the effect of accidental interpersonal touch (Martin 2012). Additionally, the sense of touch has been found to increase feelings of ownership (Peck and Shu 2009), increase confidence in product judgments (Peck and Childers 2003b), result in more positive product evaluations (McCabe and Nowlis 2003; Peck and Wiggins 2006) and lead to an increase in unplanned purchasing (Peck and Childers 2006). However, research has yet to investigate the impact of haptic blocking, or deliberately *restricting* customers from touching displayed products. Being able to touch is generally described as very important to customers; consequently, depriving customers from freely handling products is likely to have significant psychological and behavioral consequences.

Our findings demonstrate that when a frontline employee deliberately asks a customer not to touch products on display (active interpersonal haptic blocking), this: (1) engenders the customer's feelings of psychological reactance, which results in (2) *increased* downstream product touching as a compensatory behavior to reestablish sensory freedom, and this process is followed by (3) *increased* purchasing and spending throughout the remainder of the shopping experience. We provide evidence that socioeconomic status and NFT moderate our effects. Moreover, we find that interpersonal haptic blocking does not have negative implications for retailers; consequently, we suggest that retailers might consider implementing this employee-driven sensory marketing practice. Our research establishes an important connection between sensory blocking and actual customer spending beyond hypothetical decision-making studied in previous work (McCabe and Nowlis 2003; Peck and Childers 2003a; Peck and Wiggins 2006).

Additionally, we conducted a field study in a live shopping environment with a global retailer in which we tracked the downstream effects of active interpersonal haptic blocking on the number of items customers purchased, and the amount of money they spent with the retailer. We contribute to the literature by isolating and then investigating the relationship between frontline sensory marketing tactics and psychological reactance, which has yet to be empirically explored. Ours is also among the first research to study frontline employees as active haptic blocking agents, and thus, contributes an innovative "sensory sales technique" to theory and practice.

Theoretical Background

Psychological Reactance

Psychological reactance was introduced by Brehm (1966) and has since been applied to a variety of contexts. Psychological reactance is defined as "a motivational state directed toward the re-establishment of the threatened or eliminated freedom, and should manifest itself in increased desire to engage in the relevant behavior" (Brehm 1966, pg. 15-16). Researchers have examined the relationship between reactance and loyalty programs (Wendlandt and Schrader 2007), product liking (Rummel et al. 2000), retail limits (Lessne and Notarantonio 1988), recommendations (Zemack-Rugar, Fitzsimons, and Lehmann 2007), effort-reward congruity (Kivetz 2005), and many more areas within the marketing and psychology literature.

According to Brehm (1966), psychological reactance can only occur if a threatened freedom is considered important to a person, and if they have the ability and expect to control the outcomes. For example, consider customer expectations upon entering a store. Whether they are shopping for a specific item or just browsing, customers generally expect to interact with merchandise. As customers shop, it becomes important for them to freely touch and examine products. It is, however, the retailer that has control over this environment, and designs it to

maximize sales. A retail environment is a showroom for merchandise, built to maximize product exposure and sales. In this environment there will be products that are kept out of customer reach while other products may be freely handled. If customers expect the freedom to touch and are unable to handle the displayed merchandise, their haptic freedom is threatened. We predict this process will generate psychological reactance.

Once psychological reactance has been engendered, prior research suggests that the threatened freedom becomes more attractive to the person (Lessne and Notarantonio 1988), and they are more likely to engage in behaviors that attempt to reestablish their threatened or eliminated freedom (Brehm 1966; Brehm and Brehm 1981; Hellman and McMillin 1997; Wortman and Brehm 1975). Considering our shopping scenario, we predict that once a customer is blocked from touching products on display, their threatened freedom (i.e., ability to touch) will become more attractive, and they will experience an increased desire to touch and interact with merchandise encountered after they leave the store display area.

Interpersonal Haptic Blocking

We define haptic blocking as the limitation of a customer's use of haptic perception. It is a form of sensory blocking (Krishna 2012), which refers to the systematic prevention of a particular sensory ability. While retailers use multiple types of haptic blocking, such as display cases and restrictive product packaging, we focus on the role of interpersonal haptic blocking. Interpersonal haptic blocking is the deliberate limitation of a customer's use of haptic perception by a frontline employee. This can occur passively via an employee-led product demonstration or more actively via a "do not touch" or "shop by looking only" instruction provided by a frontline employee stationed near a store display area. This research will focus on the active form of interpersonal haptic blocking.

Restricting customers' access to touch products is not a new practice, as it is regularly implemented in many retail businesses. It is most commonly implemented by jewelers, cutlery stores, and electronics retailers. These retailers typically allow customers to touch the product only after it has been removed from a touch-restricting display case. Retail employees also restrict touch by demonstrating the use of products by wearing them (e.g. jewels or clothing), or by performing product demonstrations (e.g. electronics or kitchen utensils; passive interpersonal haptic blocking). However, outside of studies on glass display cases and product packaging (Peck and Childers 2003b), we know very little as to how haptic blocking psychologically affects customers. Consequently, the purpose of this research is to demonstrate the powerful effects of active interpersonal haptic blocking above and beyond other forms of haptic blocking typically used by retailers to showcase their products, such as display cases.

We maintain that active interpersonal haptic blocking, or instances when frontline employees actively limit a customer's use of haptic perception for displayed products, will generate a heightened level of reactance over other forms of haptic blocking. Reactance is strongest when the threat to freedom feels personally directed (Brehm 1966; Fitzsimons 2000), which is explained by the perceived personal nature of the "do not touch" request as compared with a display case that restricts touch, but is perceived to apply to everyone in the store. Thus, we hypothesize:

H_{1a}: Active interpersonal haptic blocking results in greater psychological reactance as compared to a display case.

H_{1b}: Active interpersonal haptic blocking results in greater psychological reactance as compared to no barriers to touch.

Compensatory Touching

It should be clarified, that when an individual experiences psychological reactance, they can not acquire just any freedom, only the freedom that was threatened or taken away (i.e. touching) can be used to restore the customer's perceived freedom (Brehm 1989). We expect that customers who experience active interpersonal haptic blocking and its resulting feelings of psychological reactance will feel a greater desire to touch. Thus, when customers are permitted to touch again, we predict their subsequent product touching will be intensified so that they may indulge their need to restore this specific freedom.

We term this intensified touching "compensatory touching" because it occurs when customers feel driven to offset or counterbalance their initial loss of freedom by touching products more than usual after a period of blocked touch. This theorizing is in line with previous research which demonstrated that negative feelings can motivate compensatory behavior in customers; particularly when they are coping with feelings of self-discrepancy (Mandel et al. 2017). In these circumstances, consumers aim to signal symbolic mastery in the domain of the self-discrepancy to enact a sense of self-completion (Rucker and Galinsky 2013). For instance, when consumers were placed in an uncomfortable, physically confining space, they expressed increased variety-seeking behavior in an attempt to symbolically assert their freedom (Levav and Zhu 2009). In our case, we propose that when a frontline employee actively blocks a customer's ability to touch a displayed product, this triggers feelings of self-discrepancy. As a result, customers will cope by subsequently engaging in motivated compensatory touching in order to reestablish their haptic freedom, and thus achieve a sense of self-completion. Furthermore, we propose that this process will be explained by psychological reactance. Hence, we hypothesize:

H_{2a}: Active interpersonal haptic blocking increases downstream compensatory touching.

H_{2b}: Psychological reactance mediates the relationship between active interpersonal haptic blocking and compensatory touching.

Additionally, research has shown that touching products facilitates a sense of ownership and can increase: the likelihood to purchase (Citrin et al. 2003; Peck and Childers 2006), impulsive buying of (Peck and Childers 2006), and willingness to pay for the product (Liu, Batra, and Wang 2017; Peck, Barger, and Webb 2013; Peck and Shu 2009). Thus we anticipate that compensatory touching following active interpersonal haptic blocking leads to an increased likelihood to purchase. Based on this predicted series of events, we hypothesize a serial mediation process as follows:

H_3: Active interpersonal haptic blocking results in increased feelings of psychological reactance, which triggers a greater desire to touch, and results in a greater likelihood to purchase subsequently encountered products after customers have left the reactance-inducing situation.

Finally, we propose this process will ultimately result in increased spending and purchasing. We therefore hypothesize:

H_4: Active interpersonal haptic blocking results in increased spending and purchasing of subsequently encountered products after customers have left the reactance-inducing situation.

Overview of Studies

We test our predictions in a series of four studies. In study 1, we investigate different types of haptic blocking (active interpersonal and a display case), as well as a control condition in which individuals can choose whether or not to touch a displayed product, and we measure the effects on psychological reactance (H_{1a-b}), compensatory touch (H_{2a}), and the mediating role of

psychological reactance (H_{2b}). In study 2, we test the proposed serial mediation process whereby active interpersonal haptic blocking results in greater psychological reactance, a greater desire to touch and ultimately, a greater likelihood to purchase subsequently encountered products as compared with other forms of haptic blocking and no barriers to touch (H_3). Study 3 examines the role of active interpersonal haptic blocking on actual downstream spending and purchasing of subsequently encountered products (H_4) via a retail field experiment. Finally, in study 4, we test potential moderators of our effects by investigating consumer socioeconomic status (SES) and the individual difference trait, need for touch (NFT: Peck and Childers 2003a). We show that consumers of high SES and moderate to high NFT are likely to experience greater psychological reactance following active interpersonal haptic blocking than other consumers. In addition, results demonstrate that active interpersonal haptic blocking does not result in more negative attitudes toward retailers, so we conclude with implications for retail firms that could take advantage of this counterintuitive sensory marketing practice.

Study 1

The purpose of study 1 is to establish the underlying process in a controlled laboratory environment, whereby active interpersonal haptic blocking motivates compensatory touching. In this study, participants were initially blocked from touching a displayed product either by an employee (active interpersonal haptic blocking) or by a display case. Upon leaving the display area, participants encountered other products that they could freely handle in order to simulate a shopping experience somewhat like a department store where customers can move from one shopping area to another. In order to increase the generalizability of our findings, we include a large variety of products for participants to touch following our initial haptic blocking manipulation which is in line with wide product assortments offered in typical retail

environments. However, given the variety and number of products available for participants to touch, we needed to ensure an objective measure of compensatory touching. Therefore, we videotaped participants touching the products so that an independent coder could watch the videos to ascertain how many times the products were touched. This objective count serves as our dependent variable for compensatory touching. Additionally, we increase the generalizability of our findings by including a control condition to replicate how customers typically shop at unrestricted retailers, choosing whether or not to touch the product on display.

Two hundred fifty undergraduate students from a large North American university (36% female, M_{age} = 20.89) were randomly assigned to one of three haptic blocking conditions (active interpersonal haptic blocking, display case haptic blocking, control) in a one-factor between-subjects experimental design[2]. All participants received class credit for their participation.

Method

Participants were told that they would be completing a number of different product evaluation studies at various stations throughout a large laboratory room, and were asked to leave their backpacks and cell phones at their initial station so that their hands would be free to complete the studies. Individually, participants were called to the first station at the back of the room that functioned as our store display area. This space was separated so that other study participants could not see or hear the manipulation. In the active interpersonal condition, a book was laying on a table and a lab assistant stated: "Evaluate the product and let me know when you are finished. Do not touch." In the display case condition, participants saw the book in a large clear plexiglass box and a lab assistant stated: "Evaluate the product and let me know when you

[2] Conditions were randomized as participants enrolled in lab sessions that lasted one hour and took place every hour between 9 AM and 5 PM across eight days. The first condition was the active interpersonal haptic blocking, the next hour was the display case, and the third hour was the control. This order was repeated, with the first session the next day being the condition that followed the last completed condition for the prior day.

are finished." In the control condition, the book was laying on a table and participants received the same instructions as in the display case condition, thus they were free to touch or not touch the book.

After completing the evaluation task, participants were led to station two at the front of the laboratory, where they indicated how likely they would be to purchase the book (1 = not at all likely; 7 = very likely), a measure in line with our product evaluation cover story. Participants then completed a fourteen-item psychological reactance scale (adapted from Fitzsimons and Lehman 2004; see appendix A). These items were combined to form a psychological reactance index ($\alpha = .93$).

Once the participant had completed the psychological reactance scale, they were sent to a third station where they were asked to read and follow the instructions provided. Specifically, participants were told that the Marketing department had partnered with the University Bookstore to gain a better understanding of the products that students liked and were interested in purchasing, and thus a sampling of those products had been provided for students to evaluate. Specifically, students were told to "feel free to engage with the product, use it, try it on, or interact with the product by any means necessary in order to provide an accurate assessment of each product," thus they could choose to touch or not touch any or all of the products. This station was separated from the rest of the laboratory by two room dividers that allowed the participant to view the products privately, and also allowed our team to unobtrusively set up a small video camera that captured the participant's hand movements. Additionally, because employees rarely follow customers in the retail environment, but instead allow them to shop at their own pace, the lab assistant stayed behind at the second station. Consistent with our cover story, the products on the table were currently sold in the bookstore or had been sold by the

bookstore within the past semester. They included: a binder, football, hat, plaid blanket, folder, stuffed animal, koosh ball, water bottle, pencils, and a university blanket.

Once participants finished their evaluation, they completed a survey in which they evaluated the University Bookstore products. Specifically, participants were asked to indicate their attitude towards the products via a six-item seven-point likert scale: dislike-like, bad-good, negative-positive, unfavorable-favorable, unattractive-attractive, and unlikely to purchase-likely to purchase. The first five items were combined to form an index of attitude towards each product (α's = .94-.97). Participants then indicated their age and gender. Ten participants were removed because their data could not be paired across the four separate parts of the study (each station was treated like a new study and we attempted to match data via participants' lab identification number). One participant in the active interpersonal haptic blocking condition was removed because the time spent touching the products was more than 10 standard deviations above the mean, leaving 239 participants in the subsequent analysis.

Results and Discussion

The measures collected as part of the product evaluation cover stories included: how likely study participants were to buy the initially displayed and haptically blocked product (the book) and the subsequently encountered University Bookstore products, as well as their attitude toward each product from the University Bookstore. The impact of haptic blocking on the likelihood to purchase the book ($F(2, 236) = 2.20$, $p = .114$) and participants' attitudes towards all of the University Bookstore products (F's < 1.80, p's >.168), were not significantly different across conditions and will not be discussed further. We will discuss purchase intentions for the University Bookstore products later in this study.

Effects of haptic blocking on psychological reactance. In an attempt to establish that psychological reactance mediates the relationship between haptic blocking and compensatory touching, we tested the impact of haptic blocking on the psychological reactance mediator. A one-way ANOVA in support of $H_{1a\text{-}b}$, shows a significant main effect of haptic blocking on psychological reactance ($F(2, 236) = 3.58$, $p = .029$). When the haptic blocking was active interpersonal, this resulted in significantly higher levels of psychological reactance ($M = 3.33$) in comparison to both the display case ($M = 2.92$; $F(1, 236) = 4.60$, $p = .033$) and the control condition ($M = 2.88$; $F(1, 236) = 5.98$, $p = .015$). The difference between the display case and control conditions was not significant ($F < 1$).

Effects of haptic blocking on compensatory touching. In support of H_{2a}, a one-way ANOVA indicated a main effect of haptic blocking on the total number of product touches ($F(2, 236) = 4.15$, $p = .017$). Post hoc tests indicate that when haptic blocking was active interpersonal, this resulted in significantly more touches after the ability to touch was restored ($M = 16.53$) in comparison to both the display case condition ($M = 11.81$; ($F(1, 236) = 5.01$, $p = .026$) and the control condition ($M = 11.01$; $F(1, 236) = 7.20$, $p = .008$). The difference between the display case and control conditions was not significant ($F < 1$).

Additionally, because compensatory touching was recorded, we were able to measure how long participants spent touching products. We would expect that in addition to touching more products, participants would have spent more time touching products in order to regain their haptic freedom. We ran a one-way ANOVA of touch on time spent touching and found a significant main effect ($F(2, 236) = 5.31$, $p = .006$). Post hoc tests indicate that when haptic blocking was active interpersonal, this resulted in significantly more time (measured in seconds) spent touching after the ability to touch was restored ($M = 29.22$) in comparison to both the

display case condition (M = 18.48; (F(1, 236) = 6.80, p = .01) and the control condition (M = 17.20; F(1, 236) = 8.94, p = .003). The difference between the display case and control conditions was not significant (F < 1).

Mediation analysis of haptic blocking on compensatory touching. Next, we ran a series of mediation models using PROCESS (Model 4; Hayes 2018). In the first series of mediation models we compared haptic blocking for the active interpersonal condition with the display case condition on compensatory touching via psychological reactance. We find a significant indirect effect of haptic blocking through psychological reactance on total number of product touches, indicating full mediation and in support of H_{2b} (see table 1).

INSERT TABLE 1 ABOUT HERE

In the second series of mediation models, we compare haptic blocking for the active interpersonal condition with the control condition on psychological reactance for the dependent variable. We find a significant indirect effect of haptic blocking through psychological reactance on total number of product touches, indicating partial mediation (see table 1).

In the third series of mediation models, we compare haptic blocking for the display case with the control condition on psychological reactance for the dependent variable of interest. No significant indirect effects were found for total number of product touches. Thus, we find additional support for H_{2b}, which predicts that psychological reactance mediates the relationship between active interpersonal haptic blocking and compensatory touching.

Discussion. Overall, we find that when a frontline employee actively blocks a customer's ability to touch a displayed product (active interpersonal haptic blocking), this: (1) engenders the customer's feelings of psychological reactance ($H_{1a\text{-}b}$), which results in (2) an increase in downstream product touching (number of product touches) in comparison with both the display

case and control condition (H_{2a}). We also found that psychological reactance mediated the effects of active interpersonal haptic blocking on subsequent compensatory touching (H_{2b}). We suggest this increase in product touching serves as a compensatory behavior to reestablish the customer's sensory freedom once they leave the reactance-inducing situation.

Thus, it would appear that when an employee actively blocks a customer's ability to touch a retailer's displayed products, this can have a significant positive impact on downstream compensatory touch behaviors. However, this process only occurs with active interpersonal haptic blocking versus other forms of haptic blocking such as the display case. Additionally, in this study we asked participants to indicate how likely they would be to purchase the University Bookstore items as this would serve as a proxy for downstream purchase behavior in a field environment. Somewhat surprisingly, the impact of haptic blocking on likelihood to purchase the products was not significant ($F's < 1.45$, $p's > .24$). There are many possibilities for why this occurred. It is likely that since all products were readily available at the bookstore, students already owned many of them and thus had no interest in purchasing them again.

A post-test supports this postulation, and confirms that many study participants already owned half of the University Bookstore products with the majority owning the binder (74%), hat (69%), folder (82%), water bottle (81%), and pencils (88%). It is also possible that while some products invite touch, they are not products that our study participants felt strongly about, nor were they interested in purchasing. Results from our cover story measures confirmed that across conditions, attitudes toward the remaining products (koosh ball, stuffed animal, both blankets, and the football) were not significantly different (F's < 1, p's > .47), nor were purchase intentions for these products (F's < 1.29, p's > .28). Given these possibilities, our next study examines the downstream effects of active interpersonal haptic blocking on purchase intentions

for a product that our undergraduate student participants were more likely to consider purchasing (a blender).

Study 2

Thus far we have established that active interpersonal haptic blocking resulted in greater feelings of psychological reactance ($H_{1a\text{-}b}$) and greater compensatory product touching once participants have left the reactance-inducing situation (H_{2a}), and that psychological reactance mediated these effects (H_{2b}). However, what we have posited but not yet shown, is our full proposed serial mediation process (H_3), such that active interpersonal haptic blocking leads to greater feelings of psychological reactance, which in turn leads to a greater desire to touch products once customers leave the reactance inducing situation, and the process ends with a greater likelihood to purchase subsequently encountered products. Therefore, the purpose of study 2 is to test the proposed serial process in a controlled laboratory setting while testing two types of haptic blocking: active interpersonal haptic blocking and a display case, as well as a control condition.

Three hundred eleven undergraduate students from a large North American university (44% female, M_{age} = 20.63) were randomly assigned to one of three haptic blocking conditions (active interpersonal, display case haptic blocking, control) in a one-factor between-subjects experimental design. All participants received class credit upon completion of the study.

Method

In this study, participants were told that they would be completing a number of different studies in various rooms throughout the laboratory suite. Participants were asked to leave their backpacks and cell phones at their computer station as in study 1. Individually, participants were taken to the first room, down the hall from the computer lab where other study participants could

not see or hear what was taking place. Participants were randomly assigned to one of three haptic blocking conditions[3]. In the active interpersonal condition, a number of koosh balls were displayed on a table and a lab assistant stated: "In this study, a toy manufacturer is interested in consumer responses to product textures. Take a moment to examine the product. Do not touch the product. Let me know when you are finished." In the display case condition, participants saw the koosh balls in a large clear plexiglass box and a lab assistant stated: "In this study, a toy manufacturer is interested in consumer responses to product textures. Take a moment to examine the product and let me know when you are finished." In the control condition, the koosh balls were displayed on a table and a lab assistant gave them the same instructions as in the display case condition (thus they were free to touch or not touch the koosh balls). Recall that our intention is to understand the downstream effects of active interpersonal haptic blocking, not effects related to the initially blocked product. Therefore, koosh balls were selected as the display stimuli because they are highly tactile products with a rich, visually observable texture. The "visual preview model" (Klatzky, Lederman and Matula 1993) finds that individuals use vision to assess haptic properties which may or may not direct them to explore more fully with their hands. With a koosh ball, texture can be visually assessed without touch. This product is also a product that our study participants were not interested in purchasing, as evidenced from study 1.

After completing the evaluation task, participants indicated how likely they would be to purchase the koosh balls (1 = not at all likely; 7 = very likely). Participants then completed the same psychological reactance scale as in study 1. These items were combined to form a psychological reactance index ($\alpha = .90$).

[3] Randomization took place in the same manner as described in study 1.

Once completed, participants were taken to a second room where they were told they would now be completing a different study on blenders. Specifically, participants were told: "In this study, a blender company is interested in college students' opinions of product design, specifically the shape of the pitcher, the feel of the buttons, the weight of the base, etc. Now spend some time examining these blenders. Take special note of their features and their overall 'look and feel.' Feel free to touch or physically handle these blenders so that you can form an accurate evaluation of their product design." Participants were then allowed to freely examine the three blenders. Unlike in study 1, we were unable to count the number of times participants touched the blenders as our lab's ceiling-mounted cameras were not operational when the study was conducted and a video camera could not be discreetly hidden near the blender examination area. Therefore, our measure of compensatory touching was the participant's *desire to touch* the three blenders.

Once participants finished evaluating the blenders, they returned to the computer lab where they were asked to evaluate the three blenders they had just seen. Specifically, participants were asked to indicate how attractive they found each blender (1 = not at all attractive, 7 = very attractive). These three ratings were combined to form an attractiveness index ($\alpha = .72$). Additionally, participants were asked to indicate their agreement with the following statement: "I wanted to touch this blender" (1 = strongly disagree, 7 = strongly agree). These three ratings were combined to form a desire to touch index ($\alpha = .91$; a proxy for compensatory touching). Participants also indicated how likely they would be to purchase the blenders (1 = not at all likely to purchase, 7 = very likely to purchase), these three ratings were combined to form a purchase likelihood index ($\alpha = .81$). Lastly, participants indicated their age and gender.

Results and Discussion

The measures collected as part of the cover stories included the likelihood participants were to buy the initially displayed and haptically blocked products (koosh balls), and the attractiveness of the subsequently encountered blenders. The impact of haptic blocking on the likelihood to purchase the koosh balls ($F(2, 308) = 1.14$, $p = .32$), and the attractiveness of the blenders ($F < 1$), were not significant and will not be discussed further.

Serial mediation analysis. Recall that the purpose of this study was to test the proposed serial mediation process (H_3). We therefore looked at the impact of haptic blocking on our dependent variable of purchase likelihood and found a significant main effect ($F(2, 308) = 3.87$, $p = .022$). Likelihood to purchase the blenders was significantly greater in the active interpersonal condition ($M = 4.66$) than in the display case or control condition ($M_{display\ case} = 4.28$, $M_{control} = 4.18$; ($F(2, 308) = 3.80$, $p = .052$, ($F(2, 308) = 7.17$, $p = .008$; respectively). The difference between display case and control condition was not significant ($F < 1$).

Having established that haptic blocking impacts purchase likelihood in the hypothesized manner, we ran a series of serial mediation models using PROCESS (Model 6; Hayes 2018) to test H_3. First, we compared haptic blocking for the active interpersonal condition with the display case condition on psychological reactance and desire to touch for the likelihood to purchase the blenders and find a significant indirect effect, indicating full mediation (see table 1; see figure 1).

INSERT FIGURE 1 ABOUT HERE

In the second series of serial mediation models, we compare haptic blocking for the active interpersonal condition with the control condition on psychological reactance and desire to touch for purchase likelihood. We find a significant indirect effect of haptic blocking through psychological reactance and desire to touch on likelihood to purchase, indicating full mediation (see table 1, figure 2).

INSERT FIGURE 2 ABOUT HERE

In the third series of serial mediation models, we compare haptic blocking for the display case with the control condition on psychological reactance and desire to touch for purchase likelihood. No significant indirect effects we found. Thus, we find support for H_3, our proposed serial mediation model.

Discussion. Overall, as predicted, we find that when a frontline employee actively blocks a customer's ability to touch a displayed product (active interpersonal haptic blocking), this: (1) engenders the customer's feelings of psychological reactance, which results in (2) an increase in desire to touch subsequently encountered products (compensatory touching), and (3) an increase in likelihood to purchase those products downstream upon exiting the reactance-inducing situation. While study 2 provides support for our dependent variable of purchase intentions via our full serial mediation process (H_3), it is not without limitations. In an attempt to create a realistic manipulation in studies 1 and 2, we may have inadvertently made haptics more salient in the "do not touch" instructions associated with the active interpersonal condition. We therefore address this issue in study 3 by not mentioning touch to study participants (i.e., they examined products "by looking only" in the active interpersonal haptic blocking condition). Study 3 also measures actual purchasing in the field in a test of H_4.

Study 3

In our third study we test the effects of active interpersonal haptic blocking in a field retail environment during regular business hours, with thousands of products and a large number of customers present. Testing our predictions in a live store environment where actual consumer behavior takes place offers a realistic test of downstream spending and purchasing, while also providing a degree of ecological validity that cannot be gained in a controlled lab environment

(Gneezy 2017; Morales, Amir, and Lee 2017). Specifically, we test H_4, our prediction that active interpersonal haptic blocking increases downstream spending and purchasing.

Method

Our experiment consisted of a one-factor between-subjects experimental design, in which we manipulated haptic blocking to investigate its impact on customer spending and purchasing. One hundred and twenty-five customers at a large global home goods department store (76% female, ages ranged from 18-65 with 63.3% aged 41 and over) were randomly assigned to active interpersonal haptic blocking or touch conditions. Data collection took place during a weekend, with the order of conditions counterbalanced using an ABBA design, in which the active interpersonal haptic blocking condition preceded the touch condition on Saturday and with the order reversed on Sunday. Depending on their condition, customers either took part in a product evaluation in which they could not touch the displayed product (active interpersonal haptic blocking), or they took part in a "hands on" product evaluation in which they used their hands to examine the displayed product (touch condition).

Next, customers answered survey questions related to the product evaluation, and then they freely shopped throughout the remainder of the store. Finally, customers answered additional survey questions following their checkout with the retailer. The retailer (which wished to remain anonymous) operates 422 nearly identical stores across 50 countries around the world, with annual sales of more than $40 billion. The particular retail store featured in our experiment has a total floor size of 78,740 square feet, and a layout similar to other stores around the world. The store offers over 8,500 different products for sale, and product selection is comparable across stores in the retail chain. Upon completing the experiment, customers were given a store coupon worth two-dollars as compensation.

A team of research assistants recruited customers across two days as they entered the store. All recruitment took place at the entrance, before the customer began shopping. Customers were told that researchers at the local university were conducting a study to learn more about customer opinions of the store experience. If the shopper agreed to take part in the study, they would need to stop at two other stations throughout the store where they would be asked additional questions. Customers were then given a study identification number that was recorded and tracked at each station in the store. They were also provided with a map of the store, with notations as to where they needed to stop and answer questions and were instructed to shop as they normally would in between and after these required check points. When the customer arrived at each station, a confederate, dressed as a frontline employee, proctored sections of the questionnaire. At the first station (the store entrance), customers indicated their familiarity with the store ("How familiar are you with this store?" 1 = unfamiliar; 7 = familiar). Customers then proceeded through the store at their normal shopping pace, and were stopped midway through the store, at the second station, where they completed the experimental manipulation.

The manipulation took place in a display area inside the home furnishing department, which showcased a large-scale customizable closet system. We chose the product because it was attractive and had a sleek design that should encourage touch (based on Klatzky and Peck 2012), including glossy doors, and a number of easily movable features such as drawers and smooth-sliding racks. Customers in the active interpersonal haptic blocking condition were provided with the cover story that the closet system was for display-only. A confederate dressed as a store employee asked the customer to examine the product by "looking only" and led them through the closet system's features. In this study we utilized the terminology "looking only" as a subtler and more realistic way of the letting the customer know not to touch without expressly mentioning

haptics. Conversely, customers in the touch condition were provided with the cover story that the closet system was for a hands-on product examination. The confederate asked the customer to examine the product by touching and led them through the closet system's features. The confederate ensured the manipulations followed the same process and averaged the same amount of time (about two minutes).

After the product examination was complete, customers were asked to respond to questions about the featured product in line with the cover story. All customers successfully followed the instructions and were directed to continue shopping as they normally would, with a reminder to stop at the final station located just past the store checkout area. While this closet system appeared desirable to touch, we did not believe that the product examination would impact purchase of this particular product because of the high price and significant pre-purchase involvement associated with the customizable closet system. Rather, as in our previous studies, we were interested in the impact that active interpersonal haptic blocking of a displayed product would have on subsequent compensatory product touching and downstream purchasing after leaving the product display area.

Upon exiting the store checkout, customers responded to demographic questions and two objective measures were collected from each customer. Based on procedures followed by prior retail field research (Lichtenstein, Ridgway and Netemeyer 1993; Ramanthan and Dhar 2010), assistants who were blind to our hypotheses photographed customers' store receipts and recorded the total number of items purchased and the total amount spent during the visit. These measures were later transcribed and combined with respective survey data using the participant ID number. After completing the survey, customers were given a two-dollar store coupon as compensation. Every customer recruited for the study exited the checkout and then stopped at our post-checkout

research station. No customers left the store immediately following our manipulation, and thus none abandoned the study.

Results and Discussion

Initial analysis revealed two outlying cases ($2,477.68 and $2,926.58), which fell more than three standard deviations above the mean for total amount spent (M = $98.86, SD = $179.79). Because extreme observations have the potential to skew results (Clark 1989), we considered these cases to understand the nature of these customers' large purchases. Upon review of their store receipts, the purchases (kitchen cabinetry and dining room furniture) likely represent natural variability in our data due to the nature of our field data collection. Since these outlying cases represent extreme observations, we followed the procedure outlined by Clark (1989) and removed them from our sample so as to provide a more conservative test for our manipulations. Additionally, three individuals abandoned the survey after recruitment and thus were removed from the sample. All analysis moving forward is based on the responses of 120 customers. To ensure there were no store-based differences between the two experimental groups, we examined store familiarity and found no significant differences between the groups ($M_{\text{Active Interpersonal Haptic Blocking}} = 5.65$, $M_{\text{Touch}} = 5.88$; $F(1, 118) = 1.90$, $p = .17$).

Effect of haptics on spending and purchasing. Upon examination of customers' receipts, no study participants purchased the displayed and haptically blocked product (the customized closet system). It is important to note that we were not testing whether the customer purchased the product featured in our manipulation. Instead, we were interested in discovering how interacting with the closet system via touch or active interpersonal haptic blocking could impact a customer's downstream buying behavior once they had completed the experimental manipulation and were free to use their sense of touch again. Next, analysis of the receipt data

revealed that 15 out of the one hundred and twenty-five customers recruited for the study did not purchase any items, with 12 customers in the touch condition and 3 in the interpersonal haptic blocking condition spending zero dollars. To test whether active interpersonal haptic blocking leads to increased downstream purchasing and spending, a series of one-way ANOVAs with total number of items purchased and total amount spent as the dependent variables revealed significant main effects. Customers purchased significantly more items after the employee blocked them from touching the displayed product (M = 10.47) than when they could touch (M = 7.52; $F(1, 118) = 4.36$ $p = .039$). Further, customers spent significantly more when the employee blocked them from touching the displayed product (M = \$132.63) versus when they could touch (M = \$53.40; $F(1, 118) = 6.76$, $p = .011$). However, we discovered that the data is skewed even when the outliers are removed, we therefore ran ANOVAs using log-transformed data as recommended for data that is not normally distributed (Danaher, Mullarkey, and Essegaier 2006). The log-transformed results for number of items purchased ($F(1,118) = 6.71$, $p = 0.011$) and customer spend ($F(1,118) = 9.02$, $p = 0.003$) holds, providing support for H_4.

Discussion. Our field study shows that customers who experienced active interpersonal haptic blocking at a mid-store product display area later purchased significantly more items, and spent significantly more than customers who could freely use their hands to examine the displayed product, in support of H_4. Due to limitations surrounding the privacy of customers in the field study, we were unable to track product touching in the store, which is why we tested our proposed process in more controlled laboratory settings. However, our findings are notable, as they were recorded with real customers who spent actual currency with a major retailer during their everyday shopping.

Our studies thus far have demonstrated that active interpersonal haptic blocking leads to significantly more psychological reactance, compensatory touching, and purchasing, but we have yet to explore moderators of such effects. While we believe that customers will likely experience psychological reactance after experiencing active interpersonal haptic blocking, there are certain situations in which psychological reactance is likely to be heightened. For instance, we propose that customers with a high socioeconomic status (SES) will experience pronounced reactance as compared to those with a low SES. Recently, research has begun examining the concept of consumer entitlement (Boyd and Helms 2005; Butori 2010; Zboja, Laird, and Bouchet 2016), born from the concept of psychological entitlement. The American Psychiatric Association (APA; 1994) indicates that entitlement includes an individual's expectation of special treatment and compliance with their wishes. From a consumer standpoint, this means that entitled consumers are more likely to feel that they are special to the firm (Boyd and Helms 2005) and therefore, deserve special treatment.

Perhaps less surprising is the link between SES and feelings of entitlement. Research has established that entitlement is not equally distributed across social strata, but rather higher social class is associated with increased entitlement (Piff 2014). This evidence suggests that SES may be a moderator of our previously demonstrated interpersonal haptic blocking effects, and we test this possibility in study 4. We propose that asking such a customer to refrain from touching a displayed product will conflict with their feelings of entitlement, and this process is likely to heighten their psychological reactance (as a large component of psychological reactance is the expectation of freedom to touch).

Study 4

Study 4 focuses on the front end of our serial mediation model in order to test the moderating variable of SES on our mediator of psychological reactance. Specifically, we examine instances in which high (low) SES customers may touch freely or are blocked from touching displayed products in retail stores. Additionally, trait need for touch (NFT; Peck and Childers 2003a) is included in this study as an independent variable, as it is theoretically related to haptic blocking and could moderate our effects. NFT is an individual difference variable that measures preference for haptic exploration. Those higher in NFT both enjoy touching products to a greater degree than those low in NFT, and also need to touch products in order to evaluate the tactile aspects of the product. Because high NFT customers are particularly motived to touch, and expect to be able to touch, restricting their touch should result in increased psychological reactance. Study four also provides managerial insights regarding the potentially negative aspects of implementing active interpersonal haptic blocking by measuring its effects on customers' attitudes toward employees and retailers. Two hundred and eleven MTurk members (37% female, M_{age} = 34.60) were assigned to conditions in a 2 (haptics: active interpersonal haptic blocking, touch) x 2 (SES: low, high) x need for touch (continuous) between-subjects design. Participants received payment for their time.

Method

Participants were informed that they would be reading a retail shopping scenario in which they were to imagine themselves in the role of the shopper. Next, participants were asked to disclose their current income before taxes. To ensure equal cell sizes, we set a quota for both levels of SES in our survey tool, and participants that indicated an income of less than $75,000 annually were assigned to the low SES condition and those indicating an income greater than or equal to $75,000 were assigned to the high SES condition (consistent with Brumbaugh and Rosa

2009). Participants were then randomly assigned to a haptics condition. For the active interpersonal haptic blocking condition, participants were asked to imagine shopping at a mass market store and when they reached for a displayed item, the employee asked them not to touch. In the touch condition, participants were asked to imagine that when they reached for the displayed item, the employee told them to feel free to touch the merchandise (for the entire scenario see appendix B; adapted from Ward and Dahl 2014).

Participants then responded to questions that measured our variables of interest. Specifically, participants indicated their agreement with four items that described their attitude towards the employee: "The employee comment makes me feel frustrated/annoyed/irritated/angry," (1 = strongly disagree; 7 = strongly agree) which were combined to form a negative attitude towards the employee index ($\alpha = .95$). We also collected the same four items regarding attitude towards the retailer ($\alpha = .97$). Participants were then asked to complete measures that measured retribution in an attempt to determine whether customers are likely to act out their negative feelings towards the employee or retailer. Specifically, retribution towards the employee (retailer) was assessed via agreement (1 = strongly disagree; 7 = strongly agree) with the following two items: "I would do something to enact revenge based on the way the employee (retailer) treated me" and "I would do something to get back at the employee (retailer) based on the way I was treated." These two items were combined to form a retribution towards the employee index ($r = .94$) and a retribution towards the retailer index ($r = .95$).

Following this, all participants completed the fourteen-item psychological reactance scale ($\alpha = .95$; the same items as in previous studies), and then completed the twelve-item NFT scale which was combined to form a NFT index ($\alpha = .93$; see appendix C). Lastly, participants indicated their age and gender.

Results and Discussion

Effects of haptics, SES, and NFT on psychological reactance. The main purpose of study 4 was to test SES as a potential moderator of the effects of interpersonal haptic blocking on psychological reactance. In addition, we tested the potentially moderating effects of NFT on psychological reactance, as it theoretically related to haptic blocking. We ran a haptic blocking by SES by NFT ANOVA on psychological reactance using PROCESS (model 3; Hayes 2018) and found a significant main effect of SES (B = -2.68, t = -2.93, p = .004). Individuals higher in SES exhibited significant more psychological reactance than those lower in SES. The main effects of haptics (B = -2.81, t = -1.42, p = .16) and NFT (B = -.29, t = -1.09, p = .28) were not significant. Additionally, we found a significant two-way interaction between SES and NFT (B = .71, t = 3.90, p = .0001) such that those higher in SES and higher in NFT were especially likely to exhibit psychological reactance. We also see a marginally significant two-way interaction between haptics and NFT (B = .74, t = 1.84, p = .07) as haptic blocking combined with high NFT exhibited more psychological reactance. The interaction between SES and haptics was not significant (B = 2.25, t = 1.62, p = .11).

However, the previous results are qualified by a significant three-way interaction (B = -.6206, t = -2.24, p = .027, 95% CI [-1.1681, -.0731). Results indicate that when participants were in the active interpersonal haptic blocking condition and NFT is high or moderate, the difference between low and high SES was significant, with high SES participants experiencing significantly more psychological reactance (B = 1.5705, t = 5.12, p < .0001, B = .7851, t = 3.45, p = .001; respectively). When NFT is low, the difference between low and high SES was not significant (t = -.30, p = .76; see figure 3a). Additionally, when participants were in the touch condition, the difference between low and high SES was not significantly different regardless of NFT (t_{high} =

.22, p = .83, $t_{moderate}$ = -.08, p = .94, t_{low} = -.36, p = .72, figure 3b). In summary, only participants of a high SES, who had a moderate to high NFT, and were in the active interpersonal condition, experienced increased levels of psychological reactance (see table 2 for full results).

INSERT FIGURES 3a, 3b ABOUT HERE

INSERT TABLE 2 ABOUT HERE

Effects of haptics, SES, and NFT on attitudes towards the employee and retailer. Another goal of study 4 was to uncover managerial insights regarding the potentially negative aspects of implementing active interpersonal haptic blocking by measuring its effects on customers' attitudes toward employees and retailers. We ran a haptic blocking by SES by NFT ANOVA on attitudes towards the employee using PROCESS (model 3; Hayes 2018) and found a significant main effect of haptics (B = 7.11, t = 2.61, p = .01) indicating that haptic blocking compared to the touch condition decreases attitude towards the employee. There was a significant main effect of NFT (B = 1.33, t = 3.68, p = .0003) with those higher in NFT indicating more negative attitudes towards the employee. The main effect of SES (B = 2.21, t = 1.76, p = .08) was marginally significant and suggests that lower SES are more likely to indicate negative attitudes towards the employee.

Additionally, we see three significant two-way interactions. There was a significant two-way interaction between SES and haptics (B = -4.43, t = -2.32, p = .02) where low SES in the haptic blocking condition resulted in a more negative attitude compared to other conditions. There was also a significant two-way interaction between SES and NFT (B = -.53, t = -2.13, p = .03) such that high NFT individuals with lower SES indicated more negative attitudes towards the employee. The last two-way interaction between haptics and NFT was also significant with

higher NFT individuals indicating especially negative attitudes when they were in the haptic blocking condition (B = -2.00, t = -3.63, p = .0004, table 2).

However, these results are qualified by a significant three-way interaction (B = 1.0103, t = 2.66, p = .009, 95% CI [.2600, 1.7605]). Results indicate that when participants were in the active interpersonal haptic blocking condition and NFT is high, the difference between low and high SES is significant (B = -.9834, t = -2.34, p = .02), with low SES participants experiencing significantly more negative attitudes towards the employee that blocked their touch. When NFT is moderate or low, the difference between low and high SES is not significant (t = -1.26, p = .21, t = .62, p = .54; respectively, figure 4a). Additionally, when participants were in the touch condition, the difference between low and high SES was not significantly different regardless of NFT (t_{high} = 1.43, p = .15, $t_{moderate}$ = .44, p = .66, t_{low} = -.96, p = .34, figure 4b). In other words, only participants of a low SES, who had a high NFT, and were in the active interpersonal haptic blocking condition, experienced more negative attitudes towards the employee.

INSERT FIGURES 4a, 4b ABOUT HERE

Next, using PROCESS (model 3), we tested whether haptics, SES, and NFT impact negative attitudes towards the retailer. All main effects and interactions were not significant (t's = -1.51 to 1.50, *p's* > .13, table 2). Thus, it would appear that any negative feelings participants experienced were directed solely at the employee who issued the "do not touch" request.

Effects of haptics, SES, and NFT on retribution towards the employee and retailer. Given that participants indicated some degree of negative attitude towards the employee, it is possible that customers may lash out against the employee or the retailer. Therefore, we tested whether haptics, SES, and NFT impacted retribution towards the employee and the retailer. All main effects and interactions were not significant for both retribution towards the employee (t's = -

1.42 to 1.29, *p's* > .16) and retribution towards the retailer (t's = -1.35 to 1.40, *p's* > .16, see table 2).

Post-test. To support the generalizability of our SES results across the population sampled in studies 1 and 2, we conducted a post-test with our undergraduate student study participants (N = 105, 55% female, M_{age} = 20.16). Results revealed that 91% of our undergraduate student participants reported a family income of over $75,000 per year. Further, 95% of our undergraduate student participants reported receiving some sort of financial support from their families, with 67% reporting full financial support from their families[4]. Thus, we conclude that the majority of our study 1 and 2 participants are dependents of high SES individuals, and are therefore likely to respond in kind with that demographic group.

General Discussion

While previous research has focused on what happens when customers are encouraged to touch products, we focus on what happens after customers are *blocked* from touching products. More specifically, we aim to understand what happens after frontline employees temporarily block customers from freely handling displayed products via a "do not touch" or "shop by looking only" instruction. The combined results from multiple laboratory experiments and our field study demonstrate that active interpersonal haptic blocking can have a powerful impact on increasing psychological reactance in customers. We find that active interpersonal haptic blocking initiates a process that significantly impacts downstream touching, and spending and purchasing of subsequently encountered products after the customer exits the frontline employee exchange and their haptic freedom is restored.

[4] In addition, 64% of study participants (or their families) pay out-of-state tuition, which was more than two and a half times the rate for in-state tuition at the time of the study.

In addition, results are moderated by SES and NFT, whereby psychological reactance was significantly stronger for high SES customers with a moderate or high NFT. Yet, this increase in psychological reactance did not influence attitude toward the retailer or retribution against the employee or the retailer. The only negative effects were found in attitude towards the employee. Customers that were haptically blocked (as compared to those that were allowed to touch) indicated a more negative attitude towards the employee, especially if they were low in SES and high in NFT. However, even these individuals did not rate the retailer more negatively, and did not express any desire for retribution against the employee or the store. Our findings make a notable contribution, as previous research has yet to examine the relationship between haptic blocking and subsequent psychological reactance, or the unexpected relationship between psychological reactance and downstream sales. Our findings should prove useful to marketing scholars and retail managers alike.

Theoretical Implications

Our research contributes to the growing body of sensory marketing literature by demonstrating how customers' responses to active interpersonal haptic blocking can impact psychological reactance and later purchasing behavior. While prior research has demonstrated that displays which *encourage* touch can lead to increased decisions to purchase those specific items on display (Peck and Childers 2006; Peck and Wiggins 2006), our studies offer evidence as to why frontline employees who actively *block* touch can significantly impact downstream purchasing for products beyond those in the initial display area due to customers' increased feelings of psychological reactance. As such, our research broadens the literature on sensory marketing by examining haptic blocking situations beyond the glass display cases discussed in prior haptics research. In addition, our research adds to knowledge on frontline marketing by

investigating how frontline employees can strategically influence customers' in-store sensory experiences, and how these employee behaviors can significantly impact downstream sales. Not surprisingly, customers respond more negatively to being blocked from touch by an employee, but this does not extend to the retailer. As far as we know, this is the first study to examine the links between sensory blocking and psychological reactance, which adds to the growing literature streams in each of these areas. Previous research has focused on the *immediate* impact of psychological reactance and therefore, has not examined what happens after the individual leaves the psychological reactance-inducing situation. We remedy this gap in the literature by investigating the downstream effects of psychological reactance in a retail environment.

Our research also links sensory marketing with frontline employee-customer interactions, thus adding to the growing body of literature on innovations at the organizational frontline, an area still largely underexplored (Singh et al. 2017). Finally, because we tracked objective product touching, purchasing, and spending following periods of haptic blocking, our research broadens dependent variables previously considered in the haptics marketing literature beyond hypothetical purchase decisions (Peck and Childers 2003a) and attitudes toward persuasion (Peck and Wiggins 2006). In this way, our work answers the call for research that examines the effects of touch on actual buying behavior (Peck and Childers 2006), as well as a call for enhanced realism in the study of consumer behavior (Morales, Amir, and Lee 2017).

Managerial Implications

Restricting customers' access to touch products is not a new practice. A retail environment is multi-sensory in nature and is built to maximize a customer's exposure to merchandise in order to facilitate sales. Product exposure in a retail environment is a well thought out mix of various aspects, sensory and other. Every detail matters, so retailers

strategically dictate changes in lighting levels, ambient scents and sounds, how a customer can move through the store, and what products customers are permitted to handle in order to create specific store experiences that will entice them to make purchases (Biswas et al. 2017; Hagtvedt and Brasel 2016; Hirschman and Holbrook 1982; Zeithaml 1988). Furthermore, retailers develop scripts detailing how frontline employees should interact with their customers to create personal interactions with specific outcomes. These scripts could be quite detailed, directing employees on where to greet customers, what to say, what to wear, and how merchandise should be handled during the exchange (Giebelhausen et al. 2014; Sirianni et al. 2013; Solomon et al. 1985; Surprenant and Solomon 1987). Our research adds to knowledge in this area by examining the strategic role of frontline employees in driving customers' in-store sensory experiences, which is an understudied element in a retailer's sensory marketing strategy.

This research has important implications for marketing managers who aim to use sensory marketing tactics to impact customers' in-store purchasing behavior. In contrast to retail practices which encourage unrestricted touching such as those of Microsoft, Brookstone, and toy retailer FAO Schwarz, our findings suggest that retail employees that make strategic use of active interpersonal haptic blocking can powerfully impact customers' downstream purchasing. Moreover, we suggest that interpersonal haptic blocking can be considered a "sensory sales technique" because it can significantly enhance downstream product sales for products encountered after the initial displayed and haptically blocked product. That is, retailers should consider training their employees to strategically employ active interpersonal haptic blocking when showcasing merchandise for customers. Moreover, we find that SES and NFT moderate our effects, in that psychological reactance was significantly stronger for high SES customers with a moderate or high NFT. Our findings also demonstrate that active interpersonal haptic

blocking does not result in more negative attitudes toward retailers, so we suggest that retail firms should consider implementing this counterintuitive practice to drive downstream sales.

For retailers considering this practice, we suggest that store areas in which customers are encouraged to freely touch merchandise should directly follow store display areas in which employees restrict customers' ability to touch. While not tested, it is likely that the downstream effects of compensatory touching would be stronger for stores with larger product assortments where customers will spend more time shopping, touching, and ultimately buying. We also suggest that the displayed product can be one in which few customers are expected to purchase. In our field study, we used an expensive closet system which very few purchase. Yet, this still presumably led to an increase in psychological reactance which resulted in compensatory touching and increased spending and purchasing. Similarly, having store employees politely ask shoppers not to touch a decoy product being displayed, which most customers do not intend to purchase, may make this technique more effective.

In addition, our findings suggest that psychological reactance effects were strongest for high SES customers who may feel an enhanced sense of entitlement and thus, would be more prone to experiencing psychological reactance when haptically blocked by an employee. Our research also suggests that interpersonal haptic blocking may be especially effective for customers higher in need for touch. These individuals who have a preference for haptic information have greater reactance when interpersonal haptic blocking occurs. Theoretically, this is what we would expect. Retailers implementing interpersonal haptic blocking should consider the potential negative aspects of this "sensory sales technique." Results from study 4 revealed that active interpersonal haptic blocking can result in more negative attitudes toward the employee who blocked them from touching, yet these negative attitudes did not carry over to the

retailer. We also expect that in our study 4, where this was measured, the effect is likely to appear stronger than it may appear in practice. In our shopping scenario, the customer is actively reaching for a product when the employee blocks their access. A more subtle manipulation, as in our field study where the front line employee asked shoppers to "examine by looking only" before the customer is in the process of reaching out to touch, may result in less negative attitudes toward the employee. We also found that customers did not indicate that they would retaliate against the employee who blocked their touch, nor would they retaliate against the retailer, so this suggests that any negative attitudes that arise are likely minor in nature and that the psychological reactance engendered does not harbor blame or lasting negative feelings. One potential explanation for the finding that the employee who blocked customer touch is to blame by some customers, but not all that much, is that psychological reactance is not an angry emotion. Rather it is a temporary state in which a specific freedom is threatened and thus, that specific freedom is made all the more attractive to regain. So in a sense, there is less blame generated. Instead, we suggest that customers feel an intensified need to regain that lost haptic freedom once they leave the reactance-inducing situation.

We note that while psychological reactance significantly increases with active interpersonal haptic blocking, for consumers of moderate and low NFT, it is below 4.5 on a 7-point scale. In other words, the psychological reactance is not extreme for most customers, so we would not expect especially negative reactions. We suggest that employees who engage in haptic blocking should be trained to expect and handle minor customer negativity that could arise from the practice. In addition, interpersonal haptic blocking might provoke customers to exit the store without making a subsequent purchase, but findings from our field study suggest that this might only occur in a minority of customers. Despite any potential negative aspects to the practice, our

findings provide evidence as to why more traditional retailers could benefit from a "request not to touch" or a subtler "shop by looking only" approach to displaying specific products.

Limitations and Future Research Directions

Although our research provides substantial evidence of the effects of psychological reactance via active interpersonal haptic blocking, we recognize a key limitation that must be considered when generalizing our results. While our field study provided a rich test of the effects of active interpersonal haptic blocking on actual downstream purchasing, we acknowledge its shortcomings. Due to privacy concerns on the part of our retail partner company and ethical reasons, we were unable to follow study participants as they freely shopped in order to track their product touching outside of the store's manipulated display area. Therefore, we were unable to test a serial mediation process linking all of our variables together in the field study. We suggest future researchers find creative ways to collect retail field data throughout customers' initial sensory blocking experience and then again during their subsequent compensatory touching experiences to overcome this limitation. Relatedly, we were unable to track customer spending outside of our focal retail store, so we suggest that future research extend investigations of interpersonal haptic blocking to neighboring retailers – particularly if their product assortment is comparable. Finally, we were unable to test an exhaustive list of retailers in study 4 so we suggest that future researchers test additional retailers to increase the generalizability of our effects.

While we investigated the impact of active interpersonal haptic blocking on reactance and compensatory touching behavior, another avenue of research might examine the role of passive interpersonal haptic blocking. Store demonstrations, in which employees describe and freely handle merchandise beyond the reach of groups of customers, are already popular among a

variety of retailers, and understanding their role on the purchase of products being demonstrated is an important area of future research.

We also call for additional research that investigates buying situations where customers are blocked or otherwise restricted from using senses other than touch. For instance, what compensatory behaviors might customers rely on to overcome shopping environments in which their senses of sight, hearing, smell, or taste are restricted? Also, does active interpersonal haptic blocking increase compensatory sensory behavior in any form, including enhanced smelling, hearing, or tasting? And would allowing customers the opportunity to vent about their psychological reactance attenuate the effects of active interpersonal haptic blocking? Furthermore, considering the broader implications of our work, future researchers should consider the downstream consequences of different types of sensory blocking. For instance, if a diner could see their dessert, but not taste it until after the meal had ended, might they eat more dessert later on as a compensatory behavior? Alternatively, if someone could see their cell phone, but not touch it (such as a student in a classroom), might they use it more after the period of restricted touch had ended?

More research is needed to delve more deeply into NFT and the responses of higher NFT individuals to being blocked from touch. An open question is whether high NFT customers would respond negatively to any type of haptic blocking, or if active interpersonal haptic blocking is especially problematic. While reactance stems from the expectation to engage in a behavior, there is evidence that even a display case blocking touch can increase the frustration and decrease the confidence in the decision for individuals higher in the NFT (Peck and Childers 2003a). Future research should explore the different types of haptic blocking and differential processes that may manifest, especially in relation to NFT.

We found that shoppers lower in SES, with a high NFT were more likely to indicate a negative attitude towards the employee who blocked their access to touch. While the more negative attitude of higher NFT individuals is not surprising, the negative attitude exhibited by low SES shoppers was not expected. While those high in SES may feel a heightened sense of entitlement, low SES customers may feel marginalized. As such, an employee blocking their access may feel more threatening, with the result being a more negative attitude towards the employee. Research suggests that when socioeconomic status is made salient, as we inadvertently did in our study 4 by using the SES question to screen participants, a threat may be exaggerated (Spencer and Castano 2007). Further research should explore the link between SES, employee behavior, and customer attitudes.

Although additional research is needed to further understand the nature of active interpersonal haptic blocking and its relationship with psychological reactance, our results suggest that when an employee temporarily blocks the customer from touching products, it can exert a powerful effect on customers' levels of psychological reactance, and subsequent shopping behavior. Despite its limitations, we argue that this article is fruitful in laying a foundation for future research in this area. We observed meaningful results on downstream product touching, purchasing, and spending by having confederate employees block customers' haptic interaction in both real world and more controlled laboratory settings, and it is our hope that other researchers will continue this line of inquiry.

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Table 1: Full Mediation Model Results

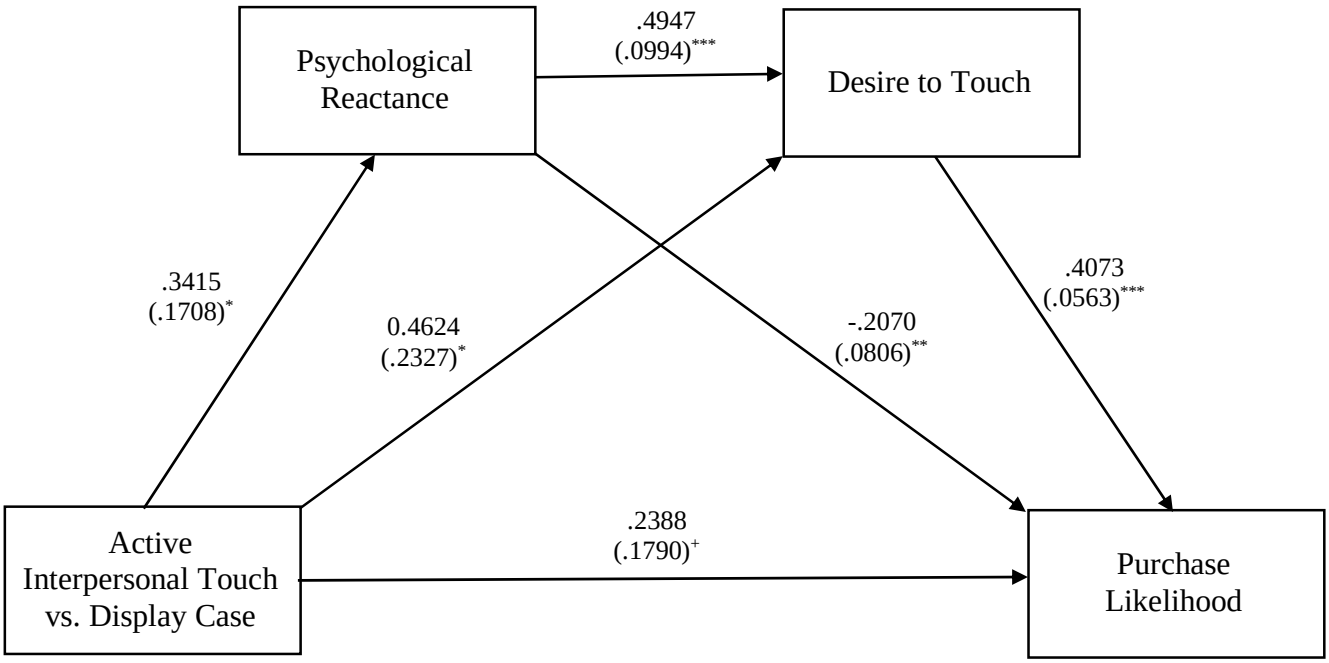
Study	PROCESS Model #	IV	DV	Mediator	Indirect Effect	Direct Effect
1	4	Active Interpersonal vs. Display Case	Compensatory Touching (# Product Touches)	Psychological Reactance	.0998 to 4.4525	-.9759 to 7.9079
1	4	Active Interpersonal vs. Control	Compensatory Touching (# Product Touches)	Psychological Reactance	.2695 to 4.6564	.2463 to 8.4462
2	6	Active Interpersonal vs. Display Case	Likelihood to Purchase	Psychological Reactance, Desire to Touch	.0036 to .1543	-.1144 to .5920
2	6	Active Interpersonal vs. Control	Likelihood to Purchase	Psychological Reactance, Desire to Touch	.0148 to .0948	-.0524 to .2690

Table 2 – Study 4: Full SES by Haptics by NFT Model Results

IV	DV	Coefficient	t-value	*p*-value
SES	Psychological Reactance	-2.68	-2.93	.004
Haptics		-2.81	-1.42	.16
NFT		-.29	-1.09	.28
SES x Haptics		2.25	1.62	.11
SES x NFT		.71	3.90	.0001
Haptics x NFT		.74	1.84	.07
SES x Haptics x NFT		-.62	-2.24	.03
SES	Negative Attitude Towards the Employee	2.21	1.76	.08
Haptics		7.11	2.61	.01
NFT		1.33	3.68	.0003
SES x Haptics		-4.43	-2.32	.02
SES x NFT		-.53	-2.13	.03
Haptics x NFT		-2.00	-3.63	.0004
SES x Haptics x NFT		1.01	2.66	.009
SES	Negative Attitude Towards the Retailer	-2.07	-1.51	.13
Haptics		.46	.15	.88
NFT		.05	.13	.90
SES x Haptics		.36	.17	.86
SES x NFT		.40	1.50	.14
Haptics x NFT		-.51	-.86	.39
SES x Haptics x NFT		-.01	-.03	.98
SES	Retribution Towards the Employee	-.06	-.04	.97
Haptics		3.83	1.29	.20
NFT		.27	.68	.50
SES x Haptics		-2.23	-1.07	.29
SES x NFT		.03	.10	.92
Haptics x NFT		-.86	-1.42	.16
SES x Haptics x NFT		.45	1.07	.29
SES	Retribution Towards the Retailer	-.02	-.02	.99
Haptics		4.38	1.40	.16
NFT		.20	.49	.63
SES x Haptics		-2.50	-1.15	.25
SES x NFT		.08	.28	.78
Haptics x NFT		-.85	-1.35	.18
SES x Haptics x NFT		.42	.97	.33

Fig. 1 – Study 2

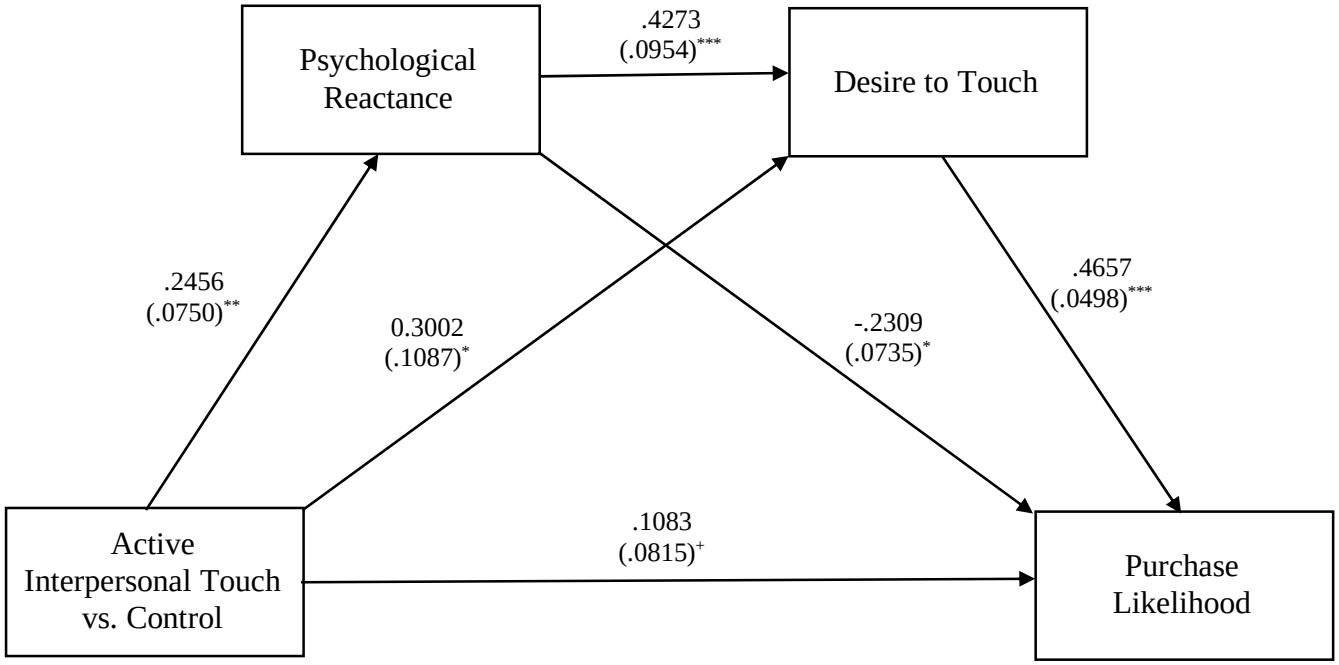
Serial Mediation Model 1: Active Interpersonal Haptic Blocking vs. Display Case



$^{***}p < .0001$ $^{**}p < .01$ $^{*}p < .05$ $^{+}p > .10$

Fig. 2 – Study 2

Serial Mediation Model 2: Active Interpersonal Haptic Blocking vs. Control



$^{***}p < .0001$ $^{**}p < .01$ $^{*}p < .05$ $^{+}p > .10$

Fig. 3a – Study 4

The Impact of SES and NFT on Psychological Reactance for Active Interpersonal Haptic Blocking

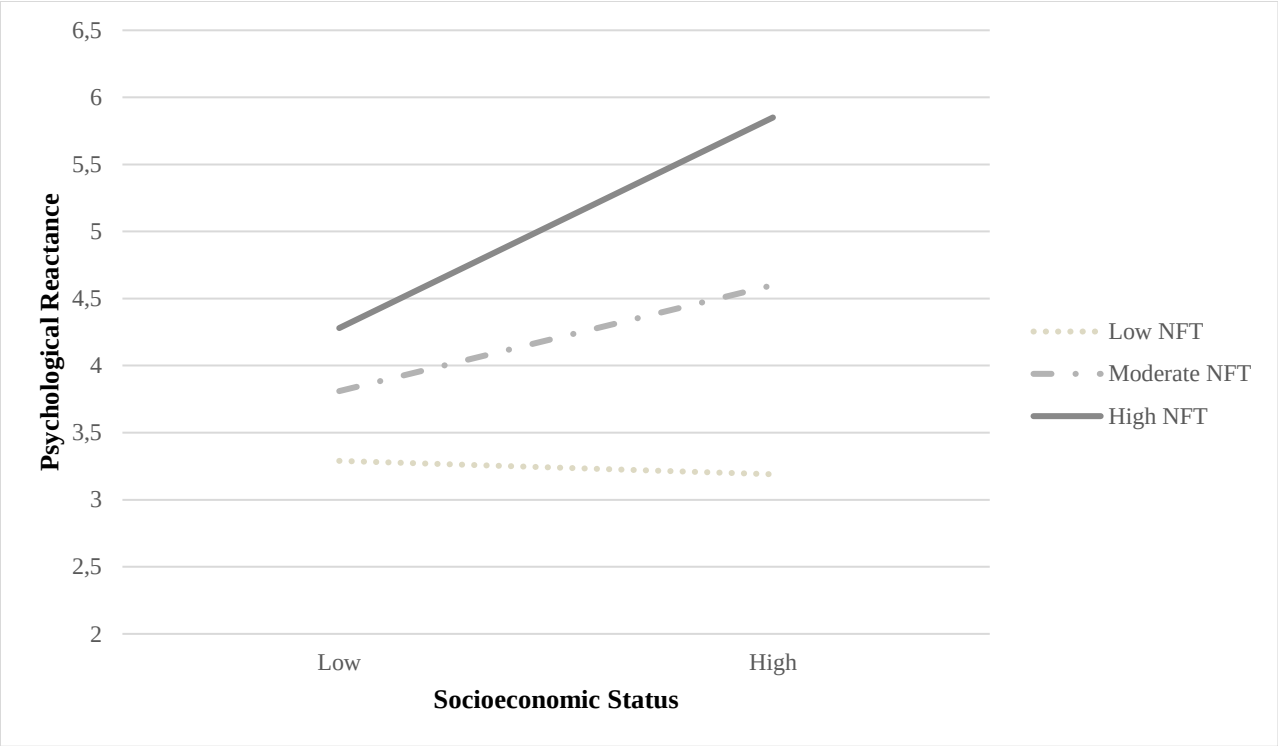


Fig. 3b – Study 4

The Impact of SES and NFT on Psychological Reactance for Touch

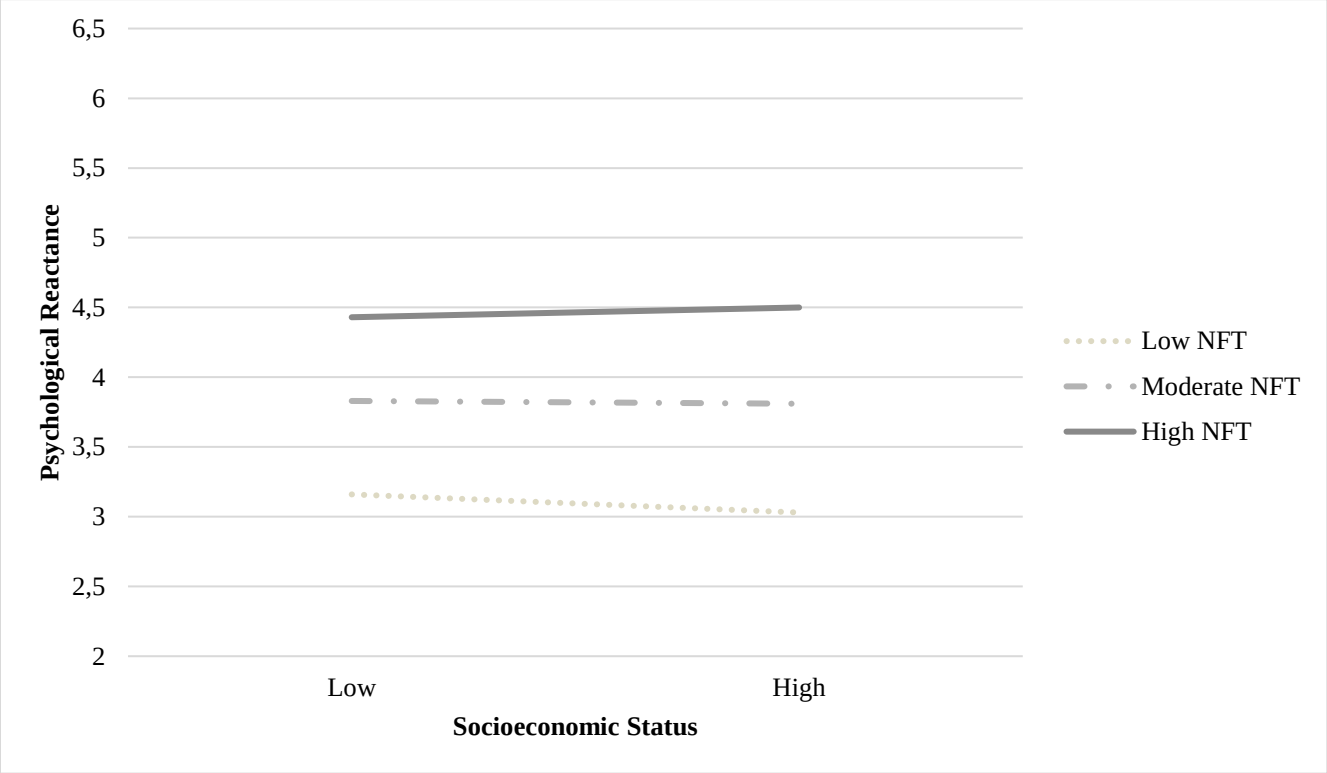


Fig. 4a – Study 4
The Impact of SES and NFT on Attitude Towards the Employee for Active Interpersonal Haptic Blocking

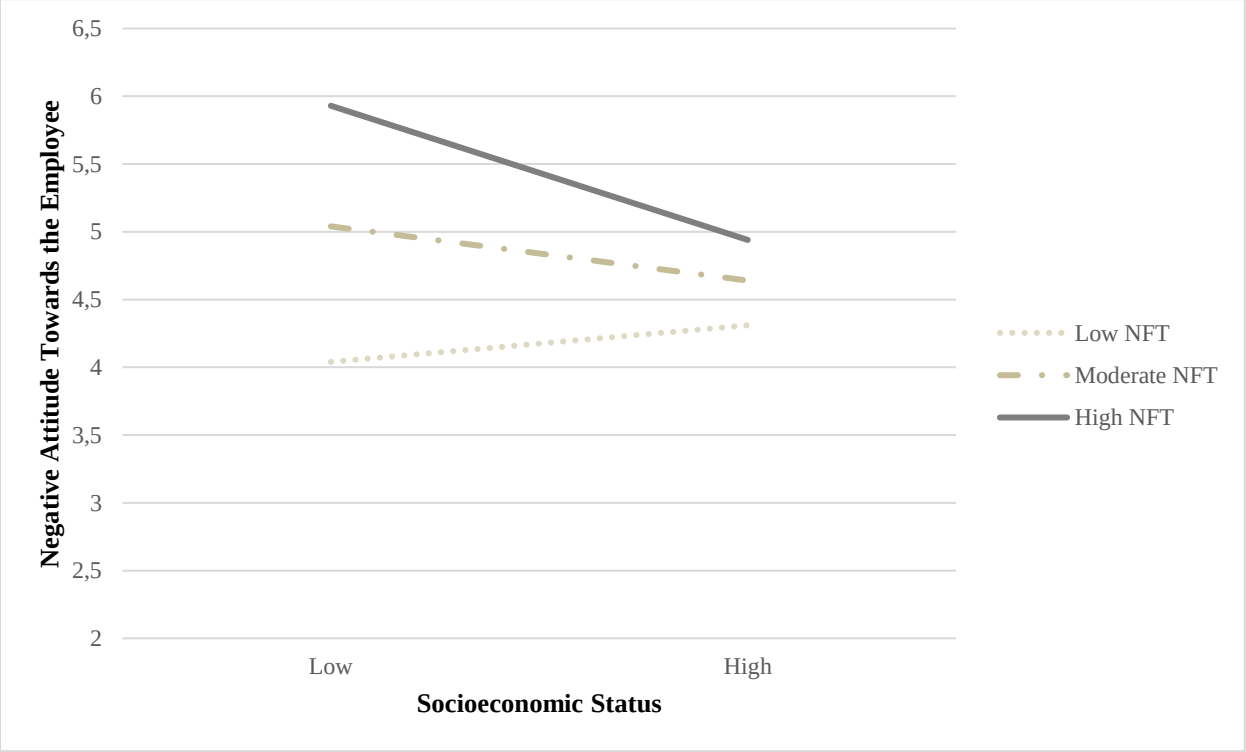
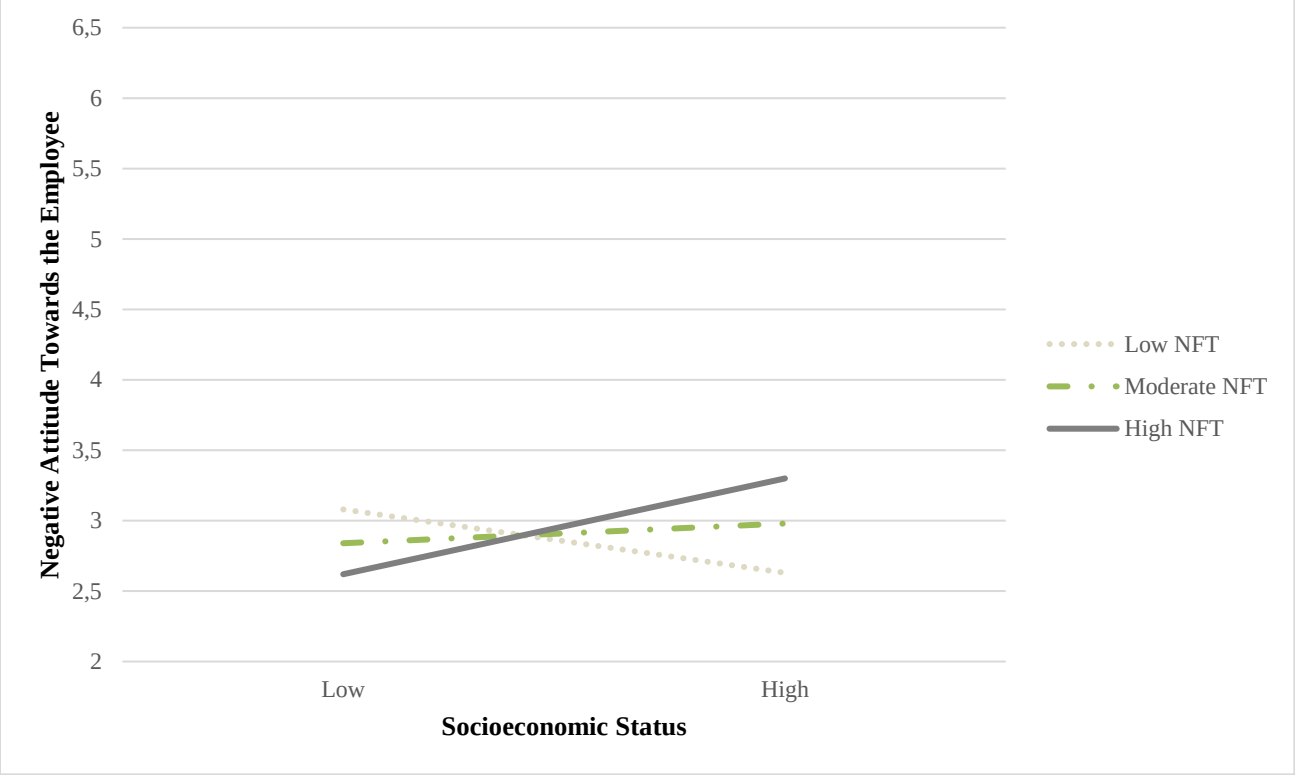


Fig. 4b – Study 4
The Impact of SES and NFT on Attitude Towards the Employee for Touch



Appendix A – Psychological Reactance Scale

(adapted from Fitzsimons and Lehman 2004)
(all items evaluated on a 7-point likert scale 1 = strongly disagree; 7 = strongly agree)

1. I become angry when my option to touch the product is restricted.
2. I become frustrated when I am unable to touch the product.
3. I am contented only when I can freely choose to touch the product.
4. The thought of being dependent on others to tell me about a product that I can't touch bothers me.
5. When touching a product is prohibited, I usually think "that's exactly what I am going to do."
6. Regulations on what I can touch in a retail store trigger a sense of resistance in me.
7. I find contradicting what retailers tell me I can touch stimulating.
8. It disappoints me to see others submitting to retailers' rules as to whether or not we can touch their products.
9. When a retailer forces me to do something, I feel like doing the opposite.
10. I resist the attempts of retailers to influence me.
11. I consider advice from salespeople to be an intrusion.
12. Advice and recommendations usually induce me to do just the opposite.
13. It irritates me when the salesperson points out things which are obvious to me.
14. It is important to me to be able to touch the product if I want to.

Appendix B – Study 4 Retail Scenarios

Touch

Imagine that you're out shopping for some new clothes. You decide to go to *your favorite* **mass-market brand store** (i.e. American Eagle, GAP, H&M, Eddie Bauer, J. Crew, Banana Republic, Michael Kors, The Buckle, Nike, Brooks Brothers, etc.) because you've always liked the clothing there. As you are browsing the store, something catches your eye.
A particular product looks very interesting, so you move closer to get a better look.

As you reach towards the display shelf, you encounter a salesperson who is stationed in front of the product. She greets you and asks you to please inform her if you are interested in the item and to, **"feel free to touch the merchandise."**

Take a moment to imagine your favorite mass-market brand store and how you would feel and respond if this happened to you.

Active Interpersonal Haptic Blocking

Imagine that you're out shopping for some new clothes. You decide to go to *your favorite* **mass-market brand store** (i.e. American Eagle, GAP, H&M, Eddie Bauer, JCrew, Banana Republic, Michael Kors, The Buckle, Nike, Brooks Brothers, etc.) because you've always liked the clothing there. As you are browsing the store, something catches your eye.
A particular product looks very interesting, so you move closer to get a better look.

As you reach towards the display shelf, you encounter a salesperson who is stationed in front of the product. She greets you and asks you to please inform her if you are interested in the item but, **"please do not touch."**

Take a moment to imagine your favorite mass-market brand store and how you would feel and respond if this happened to you.

Appendix C – Need for Touch Scale

(Peck and Childers 2003a)

(all items evaluated on a 7-point likert scale 1 = strongly disagree; 7 = strongly agree)

1. When walking through stores, I can't help touching all kinds of products.
2. Touching products can be fun.
3. I place more trust in products that can be touched before purchase.
4. I feel more comfortable purchasing a product after physically examining it.
5. When browsing in stores, it is important for me to handle all kinds of products.
6. If I can't touch a product in the store, I am reluctant to purchase the product.
7. I like to touch products even if I have no intention of buying them.
8. I feel more confident making a purchase after touching a product.
9. When browsing in stores, I like to touch lots of products.
10. The only way to make sure a product is worth buying is to actually touch it.
11. There are many products that I would only buy if I could handle them before purchase.
12. I find myself touching all kinds of products in stores.

*Graphical Abstract (for review)