

Tablets, Touchscreens, and Touchpads:
How Varying Touch Interfaces Trigger Psychological Ownership and Endowment

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Abstract:

As mouse-driven desktop computers give way to touchpad laptops and touchscreen tablets, the role of touch in online consumer behavior has become increasingly important. This work presents initial explorations into the effects of varying touch-based interfaces on consumers, and argues that research into the interfaces used to access content can be as important as research into the content itself. Two laboratory studies using a variety of touch technologies explore how touchscreen interfaces can increase perceived psychological ownership, and this in turn magnifies the endowment effect. Touch interfaces also interact with importance of product haptics and actual interface ownership in their effects on perceived product ownership, with stronger effects for products high in haptic importance and interfaces that are owned. Results highlight that perceptions of online products and marketing activities are filtered through the lens of the interfaces used to explore them, and touch-based devices like tablets can lead to higher product valuations when compared to traditional computers.

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As computer usage has shifted from desktop computers to laptops and tablets, interfaces have shifted from computer mice to touchpads and touchscreens. These interface changes may, in turn, generate changes in the response of consumers viewing identical content as digital interfaces fundamentally change the experience of the content they access (Rokeby 1998). Prior marketing work has explored how touching a product can increase the endowment effect, but interface touch remains unexplored. As touchpads and touchscreens rapidly become the primary means of computer interaction, touch interfaces may generate implied endowment, and ownership of the interface may transfer to viewed objects.

These issues are especially relevant as interfaces, as opposed to content, remain a rare focus of consumer research. Yet the shifting nature of interfaces is increasingly important in online consumer behavior. Industry research suggests over 8% of e-commerce website visits come from tablets, and the 2012 Black Friday weekend saw almost 20% of online sales from tablets and smartphones (IBM 2012). Consumers are migrating to touchscreen devices, but is all touch the same?

The purpose of this research is to explore the effects of touch interfaces in online consumer behavior. First, do varying levels of interface touch create varying levels of psychological ownership in online shopping scenarios, creating increased endowment? Second, what role does the importance of product haptics (i.e. “touchability”) play in the effects of touch interfaces? Finally, does touch interact with interface ownership on perceived product

ownership? Two studies using multiple touch interfaces highlight the role of interface touch and illustrate the importance of research into the interfaces used for accessing content.

Marketing Interfaces and the Rise of Touch

Touch in consumer behavior is a recent area of inquiry (Peck & Childers 2003; Jansson-Boyd 2011), and is used to obtain both non-haptic (a product is picked up to be smelled) and haptic (to gauge a product's weight or texture) information. Tactile cues have been explored in product selection and evaluation (Holbrook 1983; Marlow & Jansson-Boyd 2011), yet there remains concern that touch is underexplored (Peck 2010). Most traditional research on touch focuses on touch-imagery, interpersonal touch, or touching products (Krishna 2011); the role of touch in computer marketing interfaces is little explored.

Touch and Endowment

The endowment effect causes consumers to overvalue items they perceive they own (Franciosi, Kujal, Michelitsch, Smith, & Deng 1996), leading to a gap between what someone is willing to pay to acquire an item (WTP) and what they will accept to part with it (WTA: Kahneman, Knetsch, & Thaler, 1990). Ownership is a fluid concept, however, of which actual product ownership is only one type. Merely touching a product increases perceived ownership (Peck & Shu 2009), and touching is employed in social contexts to communicate temporary territorial ownership over public goods (Werner, Brown & Damron 1981). Even imagining touch can generate perceived ownership similar to actually touching an object (Peck, Barger & Webb 2013), and implied ownership feelings can create strong endowment effects (Pierce, Kostova &

Dirks 2003; Reb & Connolly 2007). Shu and Peck (2011) highlight that psychological ownership is a consistent mediator of product valuation, but is merely touching an object's image on an interface enough to generate psychological ownership?

Imagery processing cues mental simulation of product behavior (Schlosser 2003), and visual cues play a large role in mental simulation (Elder & Krishna 2012). In addition, object interactivity increases the vividness of mental product images (Schlosser 2006), and imagery vividness increases perceptions of ownership (Peck, Barger & Webb 2013). We propose that the act of reaching out to touch a product image is a more direct visual metaphor for choosing a product than indirect touch with a touchpad or mouse. Thus, we predict that touchscreens will generate increased endowment (reflected in a greater WTA price) when compared to indirect or non-touch interfaces, and that this relationship is mediated by psychological ownership.

Product Haptic Importance and Interface Ownership

Consumers respond differently to products that naturally elicit touch versus products that do not, and product dimensions such as smoothness and surface complexity affect a product's perceived "touchability" even without direct touch (Klatzky & Peck 2012). The perceived touchability of highly haptic products could increase the ease of mental simulation, which in turn would lead to higher feelings of ownership (Schlosser 2003). The relative importance of haptics varies across product categories (McCabe & Nowlis 2003), and tactile input is more important in product categories where haptics are diagnostic (Grohman, Spangenberg, & Sprott 2007). Thus, we predict that the relationship between the level of interface touch and psychological ownership is moderated by the importance of haptics for a product, where products high in haptic importance have a stronger relationship between touch and psychological ownership.

Endowment research has focused primarily on the role of product ownership. Yet in online contexts, consumers also have varying levels of interface ownership. For example, one might be using his/her own computer versus a public lab or library computer. But do interface ownership feelings transfer onto the products viewed through that interface? Research into this ‘ownership transfer’ is limited, but prior work suggests that mere association can cause endowment effects (Gawronski, Bodenhausen, & Becker 2007).

Ownership of touch interface devices may be especially salient due to perceived control and self-association. Due to the direct nature of touch, consumers may feel more direct control over touchscreen devices, and perceived control is a key precursor and driver of psychological ownership (Rudmin & Berry 1987). In addition, touch devices such as smartphones and tablets have a more direct association with a consumer’s extended self (Hein, O’Donohoe, & Ryan 2011), and this self-association is also a key precursor and driver of psychological ownership (Pierce, Kostova & Dierks 2003). In effect, selecting a product on an owned touch-interface device may be more analogous to touching the product itself when compared to a non-owned device. This suggests that owned direct touch interface devices such as tablets will generate stronger and more salient psychological ownership perceptions, and this increased ownership salience may transfer to explored products. Thus, we propose that interface ownership moderates the effect of touch on psychological ownership, where owned interfaces increase the effect of touch on perceived ownership.

---- INSERT FIGURE 1 AROUND HERE ----

In summary, we predict that direct touch interfaces such as touchscreens generate increased endowment when compared to other interfaces such as touchpads or mice, that this relationship is mediated by psychological ownership, and that the relationship between touch interface and psychological ownership is moderated by the importance of product haptics and interface ownership (see figure 1). To test these research questions, we conducted two studies. The first uses a multi-interface computer to explore levels of touch and product haptics, while the second uses laptops and tablets to further support the proposed framework while exploring interface ownership.

Study 1: Touch Interfaces and Product Haptics

To explore the effects of touch and product haptic importance on psychological ownership and the endowment effect, a 3 (touch interface: mouse vs. touchpad vs. touchscreen) by 2 (product haptic importance: sweatshirt vs. city tour) mixed design study was conducted. 56 students at an east coast university ($M_{\text{age}} = 19.5$, 55% female) completed the protocol, and were compensated with a \$10 Amazon giftcard. Each participant completed both product haptic importance conditions and 2 of the 3 interface conditions.

Material and Methods

After entering the lab and giving informed consent, participants were seated at the study desktop computer and randomly assigned one of two products. Importance of product haptics was manipulated by creating product assortments for college sweatshirts in the high-haptic condition, and New York City walking tours for the low-haptic condition (see the Appendix for example assortments). These two product categories were shown in an online pre-test with 175

Amazon MTurk respondents to differ in product haptic importance, with city tours low and sweatshirts high on a 5-measure 7-point Likert construct containing statements such as “it is important to feel and touch [product] when choosing it” and “touch is an important attribute in the use of [product],” ($M_{\text{tour}} = 2.06$ vs. $M_{\text{sweatshirt}} = 6.01$, difference paired- $t_{(171)} = 19.72$, $p < .001$, both also different from the scale midpoint at least $t_{(172)} > 15$, $p < .001$). Touch was manipulated by having three interfaces available on the study computer: mouse, wireless touchpad, and touchscreen. The alternative interfaces were not made salient; if the participant was in the mouse condition, for example, the touchpad was hidden and they were not informed that the monitor was touch-capable.

Participants were given a shopping scenario vignette, and then shown an assortment of sweatshirts or city tours. Within each assortment, they could select any product to open a page with more information, and could return to the assortment at any time. Once they had made their choice, they completed a survey battery. Endowment was measured in a manner similar to prior studies’ use of Willingness to Accept (Kahneman, Knetsch & Thaler 1990; Reb & Connolly 2007), by first asking them how much they would pay for the item (WTP), then informing the participant that someone else wanted to purchase it from them as the participant had purchased the last item of that type. They then answered how much they would accept to give up the item (WTA). Thus two measures of endowment were available, the direct WTA measure and a “normalized” ratio of WTA to WTP. This was followed by questions exploring the degree of psychological ownership generated (five measures such as “I feel like [product] is already mine,” and “I feel attached to my chosen [product]”, construct $\alpha = .89$).

After a fifteen-minute unrelated task, the participant completed the protocol for the other product on one of the other two interfaces. Order of product and interface pairs were randomized

across subjects and had no effect on results. After both protocols were completed, a final survey recorded individual difference measures of familiarity with touch interfaces along with touch interface usage and preferences; these measures had no effect on results so are not discussed further. The Need for Touch (Peck & Childers 2003b) question battery also was included as high and low NFT participants might respond differently.

Results

A repeated measures MANOVA using interface touch as the independent variable, product as the repeated measure, WTA and Psychological Ownership as dependent variables, and order as a covariate reveals a significant interface touch effect (Pillai's Trace $F = 3.95, p < .01$, partial $\eta^2 = .15$) and a significant product by interface touch interaction (Pillai's Trace $F = 3.21, p < .05$, partial $\eta^2 = .12$). Looking first at WTA, the effect of interface touch ($F_{(2,49)} = 3.48, p < .05$, partial $\eta^2 = .12$) is significant while the interaction of interface touch and product is only marginal ($F_{(2,49)} = 2.97, p < .10$). Pairwise comparison contrasts show that the touchscreen condition (\$67.70) is significantly higher on WTA than the mouse (\$47.30, Tukey HSD $p < .01$) or touchpad (\$44.15, HSD $p < .05$, see table 1). This pattern of results supports our assertion that increased interface touch leads to increased endowment.

---- INSERT TABLE 1 and FIGURE 2 HERE ----

For psychological ownership, the effect of interface touch ($F_{(2,49)} = 5.52, p < .01$, partial $\eta^2 = .21$) is revealed via planned contrasts. The touchscreen condition is significantly higher on psychological ownership than the mouse (Tukey HSD $p < .05$) or touchpad conditions (HSD $p < .05$, see table 1). This pattern of results supports our assertion that increased touch leads to increased psychological ownership. A significant interface touch by product interaction is also

revealed ($F_{(2,49)} = 3.81, p < .05$ partial $\eta^2 = .14$). For the high haptic importance sweatshirt, contrasts reveal that the touchscreen (5.6) generates more psychological ownership than the mouse (4.3, HSD $p < .01$) or touchpad (4.2, HSD $p < .01$). For the low haptic importance city tour, the effect is weaker, with the touchscreen (4.7) outperforming the mouse (4.1, HSD $p < .05$) but only marginally improving over the touchpad (4.3, HSD $p < .10$). This supports our assertion that the importance of product haptics moderates the relationship of interface touch on psychological ownership.

To explore whether psychological ownership mediates the effect of interface touch on WTA, bootstrap estimation with 10,000 resamples was employed (using *MEDIATE* due to the multilevel independent variable; Hayes & Preacher 2013), with the mouse condition as the baseline. For both sweatshirt and city tour conditions, the overall indirect effect of interface touch on WTA is significant, with a stronger effect for sweatshirts ($M = 3.67, SE = 1.51, 95\% CI = 1.07, 7.09$) compared to city tours ($M = 2.82, SE = 1.80, 95\% CI = 0.26, 7.59$). A similar pattern emerges on the Endowment Ratio measure, with significant indirect effects of touch through psychological ownership for both sweatshirts ($M = 0.07, SE = 0.03, 95\% CI = 0.02, 0.14$), and city tours ($M = 0.11, SE = 0.08, 95\% CI = 0.02, 0.39$). These results support that the effect of interface touch on product endowment is mediated by psychological ownership, consistent with Shu and Peck (2011).

When Need for Touch was included as a covariate, NFT had a significant effect on endowment for the high-haptic sweatshirt ($F_{(1,49)} = 1.75, p < .05$), but no effect on the low-haptic tour ($F_{(1,49)} = 1.06, ns$). A regression of NFT and two product interactivity dummies along with NFT-by-interactivity interactions for the sweatshirt condition reveals a significant NFT-by-touchscreen dummy interaction ($t = 4.42, p < .05$). Spotlight analysis of NFT at one standard

deviation from the mean reveal that at high levels of NFT, the touchscreen generates more endowment than the mouse (191% vs. 137%), but at low NFT levels the touchscreen and mouse difference is only directional (149% vs. 130%).

Discussion

Study 1 shows that touchscreen interfaces generate stronger levels of endowment when compared to touchpads and mice, and this effect is mediated by psychological ownership. This relationship between touch and psychological ownership is moderated by the importance of product haptics, where the touch-ownership link is stronger for products with high haptic importance. These results support our research propositions and highlight the importance of varying touch interfaces, yet questions remain. First, while a touchscreen desktop computer allowed for a clean test of the effects, tablets are a more common touchscreen interface. A second study could also test for the effects of interface ownership on the touch – endowment relationship, to explore whether the effect might differ on owned versus non-owned devices.

Study 2: Touch, Interface Ownership, and the Endowment Effect

Study 2 was a 2 (interface touch: tablet versus laptop computer) by 2 (interface ownership: owned versus not-owned) mixed design with a product replication (college sweatshirt and tent). A pre-test with 175 Amazon Mturk respondents on product haptic importance using a 5-measure 7-point Likert construct revealed that both products scored highly on haptic importance (6.33 and 5.89, both different from midpoint at $t_{(171)} = 22.25, p < .001$, difference between products *ns*). 63 students at an east coast university ($M_{\text{age}} = 20$, 59% female) completed the protocol in individual sessions and were compensated with a \$10 Amazon giftcard; screening

ensured no participants from Study 1 participated in Study 2. Participants were recruited so that half owned an iPad; these participants brought their iPad to the study while the other half brought their laptop computer. Note that differences among iPads were minimal, and almost all participant laptops were either MacBooks or standard Dell laptops available through the university, and all used touchpads and not touchscreens.

Material and Methods

After giving informed consent, participants were seated and randomly assigned to a protocol, either tablet or laptop first, and either sweatshirt or tent first. For subjects in the tablet owner condition, they used their own iPad and the laboratory's laptop; for subjects in the laptop owner condition, they used their own laptop and the laboratory's iPad. They were directed to the appropriate landing page for the product, which explained the choice vignette. The product assortment pages fit on both tablet and laptop screens without the need to scroll (see the Appendix). Similar to study 1, to learn more about a particular product, participants touched or clicked it, which opened a page with more specific product details. They could return to the main assortment at any time. Once the participant had chosen a product, they completed a survey similar to the one used in study 1 to record WTP, WTA, Endowment Ratio, and psychological ownership (psychological ownership construct $\alpha = .84$).

After an unrelated ten-minute task, the protocol was completed on the other interface for the other product. For example, if the participant first completed the sweatshirt assortment on the tablet, they then completed the tent assortment on the laptop; order of product and interface was randomized across participants and had no effect on results. Finally, participants were asked ownership salience questions about their owned tablet or laptop by asking the degree to which

their device was “a part of myself,” “an extension of myself,” and to what degree they were “emotionally attached to my [interface]” (construct $\alpha = .86$).

Results

A repeated measures MANOVA using interface touch and interface ownership as the independent variables, product as the repeated measure, WTA and Psychological Ownership as dependent variables, and order as a covariate, reveals a significant main effect of product (Pillai's Trace $F_{(2,55)} = 23.68, p < .001$), which is not surprising as the tents cost over five times as much as the sweatshirts (see table 2). There was also a main effect of interface touch (Pillai's Trace $F_{(2,55)} = 7.43, p < .01$, partial $\eta^2 = .16$), a main effect of interface ownership (Pillai's Trace $F_{(2,55)} = 3.65, p < .05$, partial $\eta^2 = .12$), and a significant interface touch by interface ownership interaction (Pillai's Trace $F_{(2,55)} = 4.52, p < .05$, partial $\eta^2 = .13$).

---- INSERT TABLE 2 and FIGURE 3 AROUND HERE ----

For WTA, the tent far outscores the sweatshirt (\$305.75 vs. \$61.38 $F_{(1,56)} = 43.52, p < .001$), which is to be expected as the WTP price displayed a similar ratio. The main effect of interface touch ($F_{(1,56)} = 5.54, p < .05$) results from the tablet having higher WTA than the laptop (\$213.25 vs. \$153.86), which supports our prediction of higher interface touch leading to higher endowment and reinforces the findings of study 1. Interface ownership also marginally affects WTA ($F_{(1,56)} = 3.66, p < .10$), with owned interfaces resulting in marginally higher WTA (\$195.32 vs. \$171.80).

For psychological ownership, there was a main effect of interface touch ($F_{(1,56)} = 6.59, p < .05$) where the iPad generated stronger implied ownership than the laptop (4.55 vs. 3.83), consistent with study 1. Also consistent with predictions, ownership salience was higher for tablets than laptops (5.3 vs. 4.4, paired $t_{(28)} = 2.34, p < .05$). There was also a marginal main effect of interface ownership where the owned interface generated more psychological ownership than the non-owned interface (4.42 vs. 3.95, $F_{(1,56)} = 3.75, p < .10$). Finally, there was a significant interface touch by interface ownership interaction ($F_{(1,56)} = 4.86, p < .05$), where the difference in psychological ownership between the owned and not owned conditions was greater for the tablet (4.84 vs. 4.20, $t_{(28)} = 2.61, p < .05$) than the laptop (3.77 vs. 3.94, *ns*). This pattern of results is consistent with our predictions.

For sweatshirts, bootstrap estimation with 10,000 resamples (Hayes, 2012) confirmed that psychological ownership mediates the effect of interface touch on WTA (indirect effect $M = 4.92, SE = 2.10, 95\% CI = 1.76, 10.57$). In addition, interface ownership moderates this effect with a strong indirect relationship when the interface is owned ($M = 8.01, SE = 3.31, 95\% CI = 2.60, 15.79$) but a much weaker indirect effect when the interface is not owned ($M = 2.02, SE = 2.53, 95\% CI = -2.48, 7.86$). A similar pattern emerges for the tent data, where a bootstrap estimation with 10,000 resamples reveals the significant mediation of psychological ownership on the relationship between interface touch and WTA ($M = 17.63, SE = 10.29, 95\% CI = 3.44, 42.77$); this indirect effect is stronger in the owned ($M = 19.61, SE = 10.02, 95\% CI = 5.01, 44.29$) versus not owned condition ($M = 13.91, SE = 11.06, 95\% CI = 0.06, 43.23$). These results reinforce that the positive effect of interface touch on endowment is mediated through psychological ownership, and interface ownership moderates this relationship.

Discussion

Reinforcing the findings of study 1, study 2 shows that touchscreens generate stronger levels of endowment when compared to indirect touch on a touchpad, and this relationship is mediated by perceived psychological ownership. The relationship between touch interface and psychological ownership is further moderated by ownership of the interface, where the touch-endowment link is stronger on owned devices, and the salience of ownership is stronger for the touchscreen tablet over the touchpad laptop. These results illuminate that interfaces shape consumer reactions to identical content, and raise new areas for future research.

General Discussion

Across two studies, touchscreens create stronger psychological ownership over chosen products in online shopping scenarios when compared to touchpads or mice, which increases the endowment effect and WTA for chosen products. This touchscreen effect is stronger for products with higher haptic importance, and is also stronger on interfaces the consumer owns. The size of endowment effects generated in these studies through interface touch rival those from prior work using real products and actual ownership manipulations (Saqib, Frolich, & Bruning 2010; Reb & Connolly 2007), highlighting the power of interface touch in shaping consumer behavior.

Our work extends the current literature in a number of ways. It represents an early exploration into the role of interfaces in shaping consumer behavior, and reinforces that marketing interfaces can generate effects to the same degree as content. From a methodological perspective, it suggests that researchers conducting computer-based research should record the interface used in study protocols in addition to stimuli response. This work also adds to the literature on consumer touch, showing that touch has relevant effects even when it is not on the

product, interpersonal, or imagined. Indeed, even though interface touch is nondiagnostic, it can still generate psychological ownership. We also highlight that touchscreens and touchpads generate different effects, suggesting that touch is a multi-dimensional construct and direct versus indirect touch may yield consistent differences.

Future Directions

One area for future exploration is the role of interface texture in product evaluations. Touchscreens are smooth and glasslike, and may feel different than the products under study. Can this create dissonance, for example, if one is exploring cashmere sweaters? Textural dissonance may make haptic dimensions of a product more salient, and might increase counter-argumentation, and future work might directly manipulate product-touchscreen textural match. In addition, texture is merely one aspect of haptics; some haptic dimensions might be easier to imagine than others, creating different levels of automatic mental simulation. Future research might explore varying product haptic imaginability, and what role this plays in online product exploration.














Study 2 highlights that interface ownership transfers psychological ownership onto products being explored. Changing perceived ownership could also change locus of control in a customer service encounter. This suggests that service interactions on tablets may be quite different from interactions on a traditional computer, and research exploring these differences could yield actionable insight. Future work might also explore how touch-based tablets are changing behavior in retail environments. Restaurants are exploring tablets as ordering systems, and tablets are becoming common in product showrooms (Ungerleider 2012). Would implied

psychological ownership generated by touch interfaces also apply in traditional retail environments where numerous markers of ownership are present?

Finally, our work highlights that interfaces have strong effects on consumer behavior even when content is held constant. Touch is merely one interface dimension that can be studied. With the current decoupling of content and delivery vehicle, everything from screen size to resolution to interactivity can affect how consumers respond to marketing content. Marketing interfaces have the potential to serve as a strong prime within consumer behavior, changing goal salience and preference functions across a number of important consumer dimensions.

Appendix A:

Sample Tent Webpages

TENT ASSORTMENT (click a tent to see more details)			
			REI Habitat   A home-away-from-home, the REI Habitat 4 tent is a spacious and easy-to-use campground tent. <ul style="list-style-type: none"> • If your activities center around the campsite, the Habitat 4 provides a comfortable daytime private refuge and a nighttime shelter from the wind, the rain and the critters • Rectangular floor plan with end-to-end symmetry makes it easy to arrange sleeping bags and gear and provides organizational efficiency and comfort • Combination of pole clips, pole sleeves and color coding facilitate a quick and easy setup • Advanced frame design maximizes headroom, interior volume and strength • Huge door with 4 zipper sliders provides multiple entry configurations that can be personalized for both children and adults; door tucks away into an adjacent pocket • Seam-sealed polyester fly provides a waterproof, durable and sag-free cover; seam-sealed, cut-in floor provides a taut pitch and waterproof protection • Roll-up side panels mated to interior bug-proof mesh panels enhance allow you to control ventilation • Multiple interior storage options are provided by various combinations of mesh side pockets and hang loops located throughout the tent
			
			
			
Click Here to Go Back to the Tent Collection			Or Click on the Product Image to Choose This Tent

Sample Tour Webpages

New York City Tour Collection (click a tour to see more details)			
 Beautiful Brooklyn Tour	 Chinatown Soup Dumpling Tour	 Discover the Cloisters	Queens Midnight Street Food Crawl   Go beyond the tourist safety zone and have your most memorable eating experience in New York City - Come on the Roosevelt Avenue Midnight Street Food Crawl. Just as the moon starts to rise, trek down Roosevelt Avenue from Jackson Heights to Corona and you'll see the street scene undergo a dramatic transformation. The avenue comes ALIVE with activity and the flavors emerge as the most unapologetic in NYC. These Ecuadorian, Colombian, Dominican, and Mexican food stops aren't in Frommer's or Zagats, and they're not in any tourism guides, they aren't even on Chowhound, Yelp, or Tripadvisor. Only on the Midnight Crawl will you experience the full, true Roosevelt Avenue street food scene. With me, you'll be able to navigate the best bites and meet the people who run the trucks and carts. Most of the time, it will seem less like you are on a 'food tour', and more like you are going with a reporter investigating the scene. This is an area that is constantly under fire from developers, real estate investors, and the law - come see why.
 Queens: Taste the World	 Brooklyn's Beaches and Boardwalks	 Wall Street Tour	
 Photographing New York City	 Theater Lovers Adventure	 Queens: Midnight Street Food Crawl	
 Brooklyn Bridge Sunset Tour	 Community Gardens and Greenmarkets	 Times Square Tour	
Click Here to Go Back to the Tour Collection			Or Click on the Tour Images to Choose This Tour

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Figure 1

Proposed Conceptual Framework

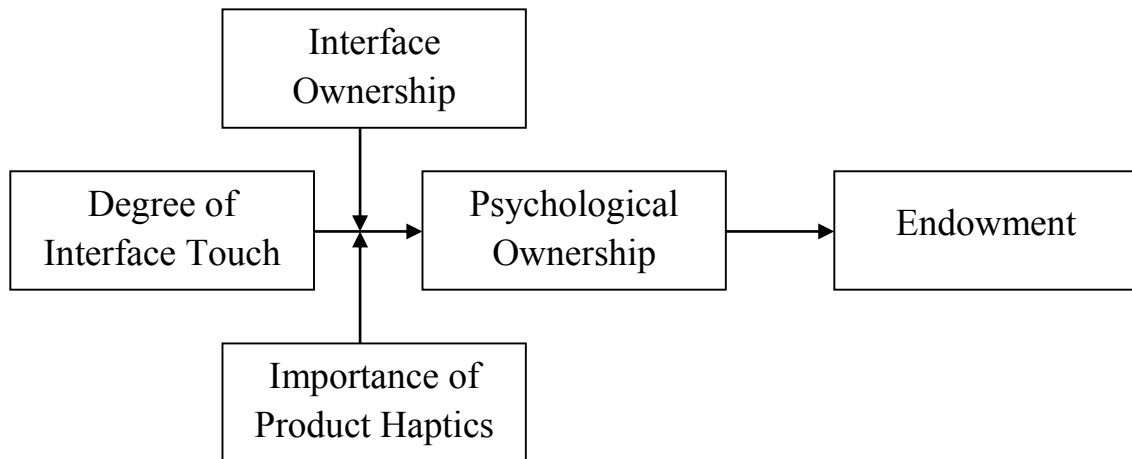
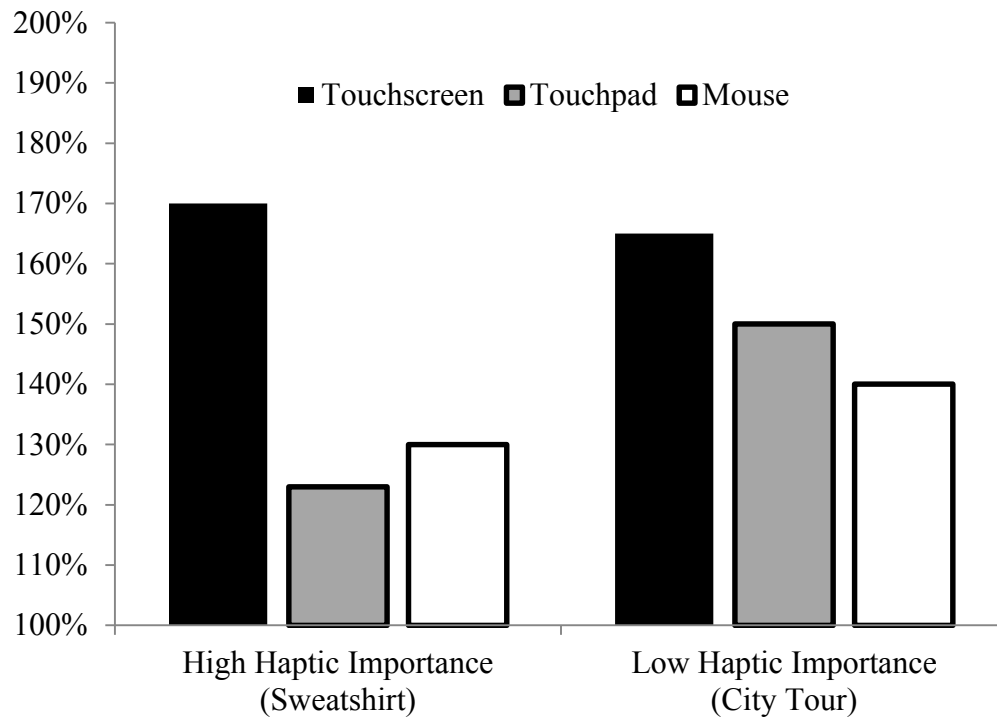


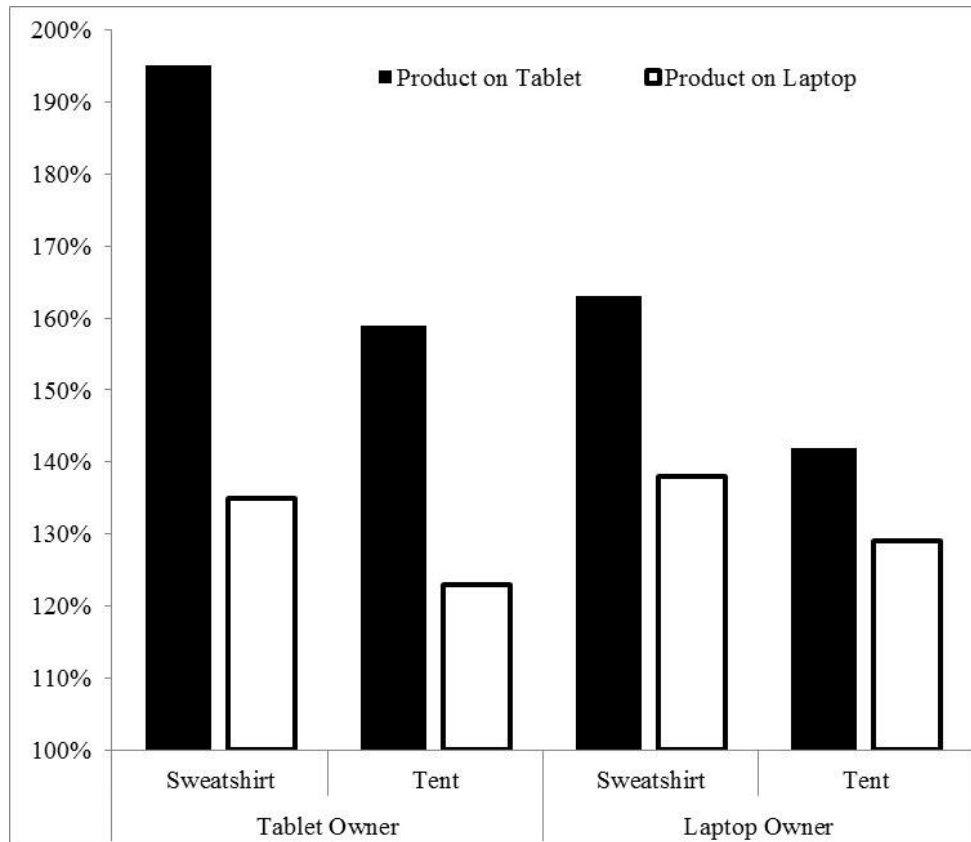
Figure 2
Study 1 Endowment Effect



Note: Endowment Effect illustrated here as the ratio of a consumer's Willingness to Accept price to give up an item to the price they reported as Willing to Pay to acquire it, to normalize across products.

Figure 3

Study2: Touch Interfaces and the Endowment Effect



Note: Endowment Effect illustrated here as the ratio of a consumer's Willingness to Accept price to give up an item to the price they reported as Willing to Pay to acquire it, to normalize across products.

Table 1**Study 1 Interface Touch, Product Haptic Importance, and Endowment**

Sweatshirt (product high in haptic importance)				
	<u>Psychological Ownership</u>	<u>Willingness to Pay</u>	<u>Willingness to Accept</u>	<u>Endowment Ratio</u>
Touchscreen	5.6 ^a	43.4	72.8 ^a	168% ^a
Touchpad	4.2	38.6	46.7	121%
Mouse	4.3	36.2	47.3	131%
City Tour (product low in haptic importance)				
	<u>Psychological Ownership</u>	<u>Willingness to Pay</u>	<u>Willingness to Accept</u>	<u>Endowment Ratio</u>
Touchscreen	4.7 ^c	38.1	62.6 ^b	164% ^b
Touchpad	4.3	31.5	47.9	152%
Mouse	4.1	29.3	41.0	140%

Note: WTP and WTA in dollars, Psychological Ownership is a 5 Likert item construct ranging from 1 to 7. a) different from other two cells in column with both at $p < .01$, b) different from other two cells with both at least $p < .05$, c) different from Mouse at least $p < .05$ and marginal from touchpad $p < .10$

Table 2**Study 2: Interface Touch, Interface Ownership, and Endowment**

		Sweatshirt			
		<u>Psychological Ownership</u>	<u>Willingness to Pay</u>	<u>Willingness to Accept</u>	<u>Endowment Ratio</u>
Touchscreen (iPad)	owned	4.9	43.0	83.3	194%
	not owned	4.2	39.1	64.7	165%
Touchpad (Laptop)	owned	3.9	35.5	49.0	138%
	not owned	3.6	36.3	48.5	134%

		Tent			
		<u>Psychological Ownership</u>	<u>Willingness to Pay</u>	<u>Willingness to Accept</u>	<u>Endowment Ratio</u>
Touchscreen (iPad)	owned	4.7	240	379	158%
	not owned	4.3	227	326	144%
Touchpad (Laptop)	owned	4.0	217	270	124%
	not owned	3.8	202	248	123%

Note: WTP and WTA in dollars, Psychological Ownership is a 5 Likert item construct ranging from 1 to 7.