



Shopping for products in a virtual world: Why haptics and visuals are equally important in shaping consumer perceptions and attitudes



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ABSTRACT

Although touchscreens are quickly becoming the primary means of accessing content online, research into influences of touch interfaces on online consumer perceptions and behaviors is at present limited. This study investigated whether varying the degree of interface touch (i.e., ‘direct’ touchscreen vs. ‘indirect’ mouse) elicits differences in perceived psychological ownership and endowment of chosen products – taking into account potential moderating roles of object interactivity (i.e., static 2D vs. rotating 360° 3D product images) and autotelic “Need For Touch” [NFT], as well as additional effects on online shopping enjoyment. Findings from an online grocery shopping experiment confirm a meaningful interaction between touchscreen interfaces and high interactivity images in increasing ownership feelings and subsequent product valuations across food product types. Results showed no evidence for a main effect of interface touch nor moderating role of autotelic NFT on perceived psychological ownership. However, both interface touch and object interactivity predicted online shopping enjoyment independent of product category, with individuals – especially those high in autotelic NFT – experiencing greater enjoyment within the touchscreen and high interactivity conditions respectively.

1. Introduction

Internet user penetration is at a record high, with over half of the global population forecasted to have access to the World Wide Web in a few years’ time (Statista, 2015c). Paralleling this growth is an increase in e-commerce activities, as well as steady shift in the dominant computer interface modality used (Statista, 2016a, 2016b, 2016c). Namely, ‘direct touch’ interfaces such as touchscreen laptops and touchscreen tablets – as opposed to ‘indirect touch’ alternatives with a touchpad or mouse – are quickly becoming the primary means of accessing content online (Brasel & Gips, 2014, 2015). One-and-a-half billion individuals are projected to use a tablet worldwide whereas more than half of all mobile phone users are expected to own a smartphone by the year 2019 (Statista, 2015a, 2015b). Notably, recent figures pinpoint smartphones as the leading driver of e-commerce traffic globally, with online grocery shopping representing the vastest expanding sector across many markets (Morgan Stanley Research, 2016; Nielsen, 2015; PostNord, 2015; Salesforce Commerce Cloud, 2016). In spite of evidence indicating that changes in interfaces dramatically alter how accessed content is perceived, research into the influence of touch interfaces on online consumer behavior is at present limited (Brasel & Gips, 2014, 2015; Rokeby 1998).

Therefore, the aim of the current research was twofold. Firstly, we investigated in an online grocery shopping experiment whether varying interface touch elicits differences in subjective ownership feelings and endowment of chosen products – also taking into account influences on affective user experience. Additionally, the study examined whether product presentation formats (*object interactivity*) and individual differences in autotelic “Need For Touch” act as moderators of the relationship between interface touch and perceived psychological ownership. On the basis of earlier research (Brasel & Gips, 2014; Lee, Kim, & Fiore, 2010; Overmars & Poels, 2015; Peck, Barger, & Webb, 2013; Schlosser, 2003), we hypothesized that haptic and visual elements would be important in molding cognitive as well as affective consumer responses towards virtual products and the online shopping experience, respectively.

1.1. Touch and product valuations: Psychological ownership and the ‘endowment effect’

Cue utilization theory posits that within a decision-making context, individuals regularly infer required information from readily available product cues in order to arrive at an overall evaluation of (or *attitude* towards) a product – the latter being an important determinant of

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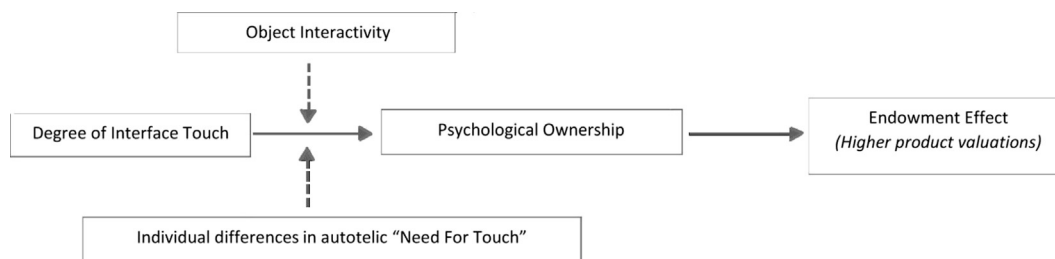


Fig. 1. Theoretical framework of the main research objectives. Full arrows indicate a mediating role whereas dashed arrows denote a moderating effect.

congruent behaviors such as prospective choice (Ajzen, 1991; Burnkrant, 1978; Liefeld, Heslop, Papadopoulos, & Wall, 1996; Montano & Kasprzyk, 2015; Olson, 1978; Richardson, Dick, & Jain, 1994). Importantly, a recent study suggests that the interface medium (i.e., ‘direct’ vs. ‘indirect touch’ interface) through which consumers explore products in an online shopping environment may additionally shape product evaluations, and thus represents an aspect as essential to the product experience as the accessed content itself (Brasel & Gips, 2014)¹.

During instances of purchase, touch plays a pivotal role in fulfilling both utilitarian and hedonic consumer motives (see Peck, 2010). However, it is known that the sensory experience of ‘touch’ carries with it more indirect and implicit effects: Merely touching a product increases feelings of psychological ownership, with imagined touch found to be equipotent in eliciting ownership feelings as actual touch (Peck & Barger, 2008; Peck & Shu, 2009; Peck et al., 2013). In turn, subjective ownership feelings generate strong endowment effects – a phenomena that causes consumers to higher value products they perceive to own, as depicted by a greater monetary amount demanded by an individual to forego an item (Willingness to Accept; WTA) compared to acquiring it (Willingness to Pay; WTP) (Peck & Shu, 2009; Reb & Connolly, 2007; Shu & Peck, 2011; Thaler, 1980). Indeed, psychological ownership has consistently been demonstrated to be a significant mediator of product valuations (Brasel & Gips, 2014; Peck & Shu, 2009; Shu & Peck, 2011). As interacting with an object on a touchscreen is more analogous to directly touching the object itself, direct touch interfaces may very well induce greater feelings of psychological ownership and higher subsequent product valuations compared to its indirect touch counterparts.

1.2. Touch and psychological ownership: Moderation by Object interactivity and autotelic “Need for Touch”

Prior research indicates that the effect of interface touch on psychological ownership may be susceptible to moderation by a number of factors (Brasel & Gips, 2014). One potential factor is the interactivity of displayed products (*object interactivity*) – defined as the ability of a user to directly manipulate an object within a virtual world (Schlosser, 2003). Highly interactive virtual product representations that simulate real-world actions – made possible with advanced presentation technologies such as user-driven 3D rotations – have been found to enhance the vividness of product and product use images in working memory (Schlosser, 2003). Imagery vividness, in turn, functions as a key driver of perceived ownership (Peck et al., 2013). In addition, individual differences in “Need For Touch” [NFT] – or preference for the extraction and utilization of haptic information – may evoke different responses to the presence of touch stimuli (Peck & Childers, 2003a). The NFT is a multidimensional construct with two domains that vary in the underlying motivations to touch: Instrumental and Autotelic NFT (Peck & Childers, 2003a). Consumers with a high autotelic NFT have an increased tendency to extract haptic information for the mere experience

of pleasure and subsequently utilize this information in final product judgements (Peck & Childers, 2003a). Accordingly, prior findings revealed high autotelic NFT consumers to respond more positively to the presence of touch elements and consequently form more favorable attitudes towards a product, irrespective of whether those haptic aspects provide any product-related information (Peck & Wiggins, 2006). However, whether this touch-induced appreciation in product evaluation could be facilitated through an increase in psychological ownership merits further investigation.

1.3. Statement of hypotheses

In the present study, we build on prior research by making use of an increasingly popular online supermarket setting to investigate the effects of varying interface touch on perceived psychological ownership and consequent endowment of virtual food products. Also, within the same theoretical framework, we further explored potential moderating factors of the relationship between interface touch and psychological ownership: Object interactivity and autotelic NFT [Fig. 1]. We conducted an online grocery shopping experiment in which participants had to browse through and choose preferred products under differing interface touch (‘direct’ touchscreen vs. ‘indirect’ mouse), object interactivity (static 2D [*low interactivity*] vs. rotating 360° 3D [*high interactivity*] product images), and product conditions (‘Unox’ sausage vs. ‘Optimel’ dairy drink). In order to additionally gauge consumer attitudes towards the online shopping experience itself, online shopping enjoyment was also incorporated as a dependent variable.

In line with Brasel and Gips (2014), due to the more congruent nature of touchscreen interfaces with physical touch, it was hypothesized that a direct touch interface would lead to higher psychological ownership of chosen products and thus greater endowment effects relative to an indirect touch interface. Furthermore, the effect of interface touch on psychological ownership was expected to be stronger for highly interactively displayed products and high autotelic NFT individuals. Finally, manipulations of interface touch and object interactivity aspects were predicted to confer differing degrees of online shopping enjoyment.

2. Methodology

2.1. Participants

50 students (64% Female) aged between 18 and 36 years ($M = 24.34$; $SD = 3.29$) took part in the research at Wageningen University, The Netherlands. The study sample encompassed a diverse educational (16% undergraduate and 84% postgraduate: 78% Master; 6% PhD) and cultural background (72% Western and 28% Eastern). Participants were recruited through the means of posters displayed in university buildings and social media platforms. After giving written informed consent and completing two test sessions (amounting to a maximum of 60 min), individuals were compensated with a 10 Euro gift card.

¹ Abbreviations: Need for Touch [NFT]; Restricted Maximum Likelihood [REML]; Willingness to Accept price [WTA]; Willingness to Pay price [WTP].

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