

“Be Careless with That!”

Availability of Product Upgrades Increases Cavalier Behavior toward Possessions

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*ABSTRACT*

Consumers are often faced with the opportunity to purchase a new, enhanced product, such as a new phone, even though the product they currently own is still fully functional. The authors propose that consumers act more recklessly with their current products when in the presence of appealing, though not yet attained, product upgrades (not just mere replacements). Carelessness and neglect toward currently owned products stem from a desire to justify the attainment of upgrades without appearing wasteful. A series of studies with actual owners of a wide range of different goods (e.g., durable, consumable, functional, and hedonic products) and evidence from a real-world dataset of lost Apple iPhones demonstrate how the availability of product upgrades increases cavalier behavior toward possessions. Moreover, the authors demonstrate that product neglect in the presence of attractive upgrades can occur without deliberate intentions. Finally, theoretical and managerial implications of these findings are discussed.

Keywords: carelessness, product upgrade, ownership, justification

In a strange series of events, a consumer microwaves his cell phone instead of a burrito, a lab worker drops his mobile into a vat of toxic sludge, and a commuter throws her phone into the backseat of a departing taxi. Oops! As becomes clear at the end of this Virgin Mobile TV commercial, named “Happy Accidents,” these phone owners are all intent on “accidentally” destroying or losing their devices, thus necessitating an upgrade purchase. Is this simply a humorous advertisement, or can knowledge about the availability of product upgrades actually lead consumers to mistreat the products they own? We investigate this question by examining the potential for consumers to exhibit cavalier behavior toward current possessions when product upgrades are present, a novel topic in the consumer behavior literature.

Building on previous research investigating product upgrade decisions (Bayus 1991; Cripps and Meyer 1994; Heath and Fennema 1996; Jacoby, Berning, and Dietvorst 1977; Okada 2001, 2006), we propose that individuals become careless and negligent with their products when in the presence of appealing, though not yet attained, product upgrades. We label this phenomenon the “upgrade effect” and suggest that such careless tendencies are intended to promote the acquisition of upgrade products by helping consumers justify the new purchase. Our research is of particular relevance to modern production systems, which have significantly increased the pace of product innovation and the introduction of newer products over the past decades (Urban and Hauser 1993). In today’s advanced economies, consumers are often faced with the opportunity to purchase an enhanced product (e.g., a new laptop or phone), even though the device they currently own is still fully functional. Because consumers keep track of the costs and benefits of their purchases over time (Gourville and Soman 1998; Heath and Fennema 1996; Prelec and Loewenstein 1998; Thaler 1980) and display a strong aversion to waste (Arkes 1996; Bolton and Alba 2012), “accidentally” damaging a product or running out of it quickly allows

them to write-off the residual value of the product and upgrade without recording a loss or appearing wasteful. Accordingly, we propose that motivated carelessness is driven by the need to justify the attainment of upgrade products, consistent with the notion that consumers have a strong desire to justify their decisions and base their choices on reasons (Hsee 1995; Okada 2005; Shafir, Simonson, and Tversky 1993).

We begin with a discussion of the literature on product upgrades and justification processes. Integrating these two streams of research, we propose a new conceptualization for understanding how consumers treat their own belongings in the presence of preferred product upgrades. Next, we report findings from eight studies examining the consequences of product upgrade availability. Finally, we discuss theoretical and practical implications of our work.

## *THEORETICAL FOUNDATIONS*

### *Product Upgrades and Carelessness*

In most instances, the purchase of a product is not a first time purchase experience in the product category (Cripps and Meyer 1994; Fernandez 2001). This is almost always the case for consumer goods that have become standard items in developed economies (e.g., phones, sunglasses, shampoo). Upgrades—new and enhanced products—are therefore quite common consumer purchases. When upgrading, a consumer who owns a product that is still functional purchases a new and improved version of what currently owned (Okada 2006, p. 92). We suggest that for product upgrades to induce carelessness it is indeed important that the upgrade product is an enhanced version of the current one (and not just a mere product replacement) and that consumers are interested in upgrading. In line with previous research on upgrades and new

products (Bertini, Ofek, and Ariely 2009; Jacoby, Berning, and Dietvorst 1977; Mukherjee and Hoyer 2001; Okada 2001, 2006), in our studies we examine a wide assortment of goods, such as durable (e.g., phones, mugs), consumable (e.g., shampoo, laundry softener), functional (e.g., eyeglasses, toothpaste), and hedonic (e.g., sunglasses, perfume) products. In the context of durable goods, such as phones for example, an upgrade may be a newer and improved *device* (e.g., a new Apple iPhone model with better camera); in the context of non-durable products, such as toothpaste or laundry detergent for example, an upgrade may instead be a newer and improved product *formula* (e.g., a new Colgate toothpaste with better whitening agent). In general, when consumers buy new products, they open “mental accounts” that allow them to keep track of the costs and benefits of these purchases over time (Gourville and Soman 1998; Heath and Fennema 1996; Prelec and Loewenstein 1998; Thaler 1980). During their ownership of a good, consumers mentally amortize the initial purchase price and, when considering an upgrade, determine whether they “got their money’s worth” on the last purchase (Heath and Fennema 1996). If the old product is still functional and not fully depreciated in the mental account, the decision to upgrade to a new product is painful, as the consumer must write off the remaining “mental book value” as a loss (Gourville and Soman 1998; Okada 2001). Thus, the pain associated with retiring a good before its mental account is fully amortized often hinders the upgrade purchase. Moreover, even when a product is at the end of its presumed life cycle, consumers still display a strong aversion to waste and unused utility when deciding whether to discard the product for good (Arkes 1996; Bolton and Alba 2012).

But what if a product became no longer functional, was damaged, or was used up *ante tempore*? In this case, consumers could purchase an upgrade before the expected time without appearing wasteful or experiencing guilt. Though consumers could simply wait for products they

own to degrade or deplete over time, knowledge about the presence of a desired upgrade is likely to make waiting less appealing. Acting carelessly, neglecting repair, or even consuming at a faster rate may all be alternative methods of facilitating the upgrade process. Here, we define carelessness toward owned products as a failure to give sufficient attention to avoiding damage and/or preserving the current state of the product. With specific regards to durable and non-durable products, indicators of carelessness are product neglect (e.g., not looking for the product in case of loss, neglecting repair), risky behaviors (e.g., endangering the product), and faster consumption rates (e.g., pouring more product than usual). To confirm our conceptualization and our intended operationalization of carelessness throughout the studies, we conducted a short pilot study (online appendix) demonstrating that carelessness for durable and non-durable products is indeed associated with these outcomes.

We propose that the upgrade effect can encourage carelessness and product neglect even without deliberate, careless intentions. This assertion is in line with previous research documenting the non-conscious nature of certain consumer behaviors and effects (Folkes, Martin, and Gupta 1993; Khan and Dhar 2006; Shiv, Carmon, and Ariely 2005). For example, Khan and Dhar (2006) show that consumers may be unaware of how their prior virtuous conduct influences their subsequent choices and that the processes underlying this “licensing effect” may be largely non-conscious. Similarly, Shiv, Carmon, and Ariely (2005) show that consumers are unaware about the extent to which marketing actions, such as pricing, alter the actual efficacy of products to which they are applied. With respect to the upgrade effect, if consumers act neglectful and careless as a means of subverting the mental conflict associated with upgrade purchases, they may in fact primarily do so without conscious deliberateness. Intentionally damaging or mistreating owned products are seemingly irrational behaviors. Purposefully

engaging in these behaviors may prevent a person from construing a damaged product as a loss-free write-off and instead encourage perceptions that one is wasteful. Indeed, consumers often willfully ignore information and strategically manage their cognitions to maintain a positive self-image when they are motivated to do so (Ehrich and Irwin 2005; Paharia, Vohs, and Deshpandé 2013). To empirically validate our claim about the non-deliberateness of the upgrade effect, we examine the extent to which people are conscious of these potential tendencies in a variety of ways (Studies 1B, 3A, 3B, and follow-up study).

To resolve conflicts and justify their choices, consumers often seek and construct reasons for doing so (Shafir, Simonson, and Tversky 1993). Similarly, we suggest, the upgrade effect is driven by the psychological process of need for justification.

### *The Need for Justification*

In general, replacement purchases can occur as a result of “forced” or “unforced” situations (Bayus 1988; Grewal, Mehta, and Kardes 2004). A product failure, for example, generates a forced purchase situation; by contrast, unforced situations include replacement of working units due to changes in style or personal preferences. Decisions made in unforced situations feature strong individual freedom of choice (“I *want* a new product”) and can appear less justifiable and more personally inconsistent than forced situations involving little freedom (“I *need* a new product”) (Baumeister and Tice 1984; Linder, Cooper, and Jones 1967).

In this research, we propose that consumers who are interested in upgrading are more likely to act carelessly with their current belongings in order to pass from an unforced (less justifiable) to a forced (more justifiable) replacement situation. The idea that consumers may desire a justification for upgrading is rooted in the general finding that people seek to base their

decisions on reasons (Hsee 1995; Kunda 1990; Shafir, Simonson, and Tversky 1993). Indeed, certain consumers rely more on reasons than other consumers, and certain decision contexts necessitate more attention to reasons than other contexts. On an individual level, people differ considerably in their actual tendencies to base their decisions on reason versus feelings (Hsee et al. 2015; Pham 1998). Specifically, the lay rationalism scale (Hsee et al. 2015) measures the degree to which individuals use reason rather than feelings to guide decisions (e.g., “When making decisions,” “I like to analyze financial costs and benefits and resist the influence of my feelings”) and is a proxy for individual-level differences in need for justification. As such, we expect people high in lay rationalism to rely on product damage as a justification to upgrade and to neglect their products in the absence of a legitimate justification more than people low in lay rationalism (those who base decisions relatively more on feelings).

On a situation level, the consumer behavior literature demonstrates that spending on hedonic products and luxury goods requires more justification than spending on utilitarian products and necessities (Dhar and Wertenbroch 2000; Keinan, Kivetz, and Netzer 2016; Kivetz and Simonson 2002; Okada 2005; Strahilevitz and Myers 1998; Xu and Schwarz 2009). For example, Okada (2005) shows that consumers are more likely to choose a dinner certificate (hedonic consumption) rather than a grocery certificate (utilitarian consumption) if the situation allows them to justify the choice. Similarly, Keinan, Kivetz, and Netzer (2016) find that consumers inflate the perceived value of minor functional features or other utilitarian aspects of luxury products to justify indulgent and seemingly superfluous purchases. This perspective would predict that motivated carelessness is more likely to occur for hedonic than for utilitarian products. In contrast, it is possible that consumers feel a strong need to justify attainment of any upgrade when that newer product is unnecessary. This justification could be accomplished

through deterioration of the currently owned product. Consistent with this idea, evidence in the domain of product disposition indicates that consumers sometimes use the malfunctioning of small and repairable aspects of products as an excuse to purchase entirely new products; for example, scratches on the lens of a watch may provide sufficient cause for the purchase of a new watch (Jacoby, Berning, and Dietvorst 1977). Because upgrading when the current product still works (or is not fully used up) is unnecessary, regardless of the specific utilitarian versus hedonic nature of the product, we expect to observe the upgrade effect for all types of products indiscriminately. Indeed, in a wide variety of experiments examining both utilitarian and hedonic products (i.e., 3A, 3B, 4), we do find directional trends suggesting that the upgrade effect is relatively stronger for hedonic products, but this product type distinction is not significant in the current data. Thus, carelessness in the face of upgrades operates for all products indiscriminately, consistent with the notion that upgrading prematurely is an “unforced” consumption situation, regardless of the product type.

### *Overview of the Present Research*

We test our hypotheses and theoretical framework, depicted in Figure 1, in a series of studies that employ different types of upgrading manipulations (e.g., the physical presence of a better product, writing tasks). Throughout our studies, we also investigate different indicators of carelessness toward owned products, such as product neglect (Studies 1A, 1B, and 4), risky behaviors (Study 2), and faster consumption rates for consumable goods (Studies 3A and 3B). Similar to prior research on product replacement and upgrade decisions (Chandler and Schwarz 2010; Jacoby, Berning, and Dietvorst 1977; Okada 2001, 2006), our studies are conducted with owners of widely diffused consumer goods (e.g., phones, mugs, shampoo, glasses) recruited

from a variety of populations (e.g., community participants, students, online respondents). We complement the laboratory experiments with evidence from a real-world dataset of lost Apple iPhones. When possible, we control for length of ownership, price paid, and remaining book value of the current products to rule out any effects of age, cost, and depreciation on possible carelessness. Importantly, demonstrating the upgrade effect controlling for these variables allows us to rule out alternative accounts, such as a rational perspective on ownership (i.e., carelessness is logical given an objective loss of market value of the product) or hedonic adaptation.<sup>1</sup> In the general discussion, we also explain how our studies address a potential alternative explanation involving shifts in consumers' reference points.

The first three studies examine carelessness with mobile phones in the face of upgrade options. Specifically, Study 1A examines an international dataset of about 3,000 lost Apple iPhones and demonstrates that consumers are less likely to look for their lost phone when a new model is available in the market. Study 1B conceptually replicates this finding in the lab with a proxy for product neglect. Then, a follow-up study (online appendix) uses an ad featuring other people engaging in seemingly carelessness practices with their phones to test whether people acknowledge the existence of an upgrade effect in others. Next, Study 2 tests a behavioral outcome of the upgrade effect in the lab. We endow participants with a mug to examine ownership in a controlled manner; we find that the presence of an appealing upgrade opportunity increases behavioral risk-taking with an owned product. Studies 3A and 3B extend the investigation to the domain of perishable and consumable goods and demonstrate that people consume their products at a faster rate when they are thinking of upgrading (but not just merely

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<sup>1</sup> Over extended periods of time, individuals exhibit an attenuation of positive affective reactions resulting from ongoing ownership and usage of a particular good (Frederick and Loewenstein 1999; Wang, Novemsky, and Dhar 2009), which might potentially drive carelessness.

substituting the current product). Moreover, these studies further examine the awareness of the upgrade effect and show that product neglect may be non-deliberate. Finally, Study 4 delves into the mechanisms underlying the upgrade effect. This study demonstrates the mediating role of need for justification by manipulating the extent to which upgrading is framed as justifiable or not and by examining individual-level differences in need for justification, as measured through lay rationalism (Hsee et al. 2015).

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Insert Figure 1 about here  
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## *RESEARCH DESIGN AND FINDINGS*

### *Study 1: Carelessness with Mobile Phones in the Face of Upgrade Options*

We begin our investigation of product neglect with field data on reported phone losses (Study 1A). Next, in Study 1B, we conceptually replicate the finding in a lab setting, controlling for a series of other potentially relevant factors, including acquisition methods and book value of the phone. In addition, in Study 1B and in the follow-up study (online appendix), we begin investigating the extent to which people are consciously aware of the effect of upgrades on their behaviors, an inquiry we further continue in Studies 3A and 3B.

*Reported Losses of Apple iPhones (Study 1A).* We test our hypotheses using reported phone losses as an ecologically valid measure of consumers' carelessness in the marketplace. Every Apple iPhone in the world has a unique code, known as the IMEI number. In case of loss, consumers can go online on the IMEI Detective website (<http://www.imeidetective.com/>) to report the loss and check if their phone has been found by others. In this context, *not* reporting a loss on the IMEI Detective website is a proxy for product neglect. We propose that fewer people

will go online and look for their phones using the IMEI number when a newer model is about to be released or is already available for purchase (i.e., when the need to justify upgrading is high). For example, we expect to observe fewer reported losses of the iPhone5S when the iPhone6 is about to be released or is already on the market. In contrast, we expect that consumers will be more eager to report the loss online using the IMEI number and to look for the lost device when a newer model is not available yet. Specifically, we predict that the number of reported phone losses will be negatively influenced by the availability of a newer model in the market, even controlling for the total number of iPhones sold.

*Datasets (Study IA).* We analyzed an international dataset of lost Apple iPhones provided by the company IMEI Detective. The dataset included a total of 2,840 lost phones in 119 countries. Each loss is recorded on a specific date ranging from September 2010 to January 2015. The models included in the dataset were the Apple iPhone 4, 4S, 5, 5C, and 5S. Phones were grouped by week and model. The focal outcome was the number of phones reported in a given week on the IMEI Detective website. For each model, we calculated the number of days to the release of the next model. For the official release dates of each model, we used information available on the Apple iPhone's official Wikipedia page (<http://en.wikipedia.org/wiki/IPhone>). For example, the iPhone6 was officially launched on September 19, 2014. Thus, for a lost iPhone5S reported on IMEI Detective on August 19, 2014 (i.e., a month before the release of the iPhone6), the number of days to the release of the next model would be 31. Similarly, for a lost iPhone5S reported on IMEI Detective on October 19, 2014 (i.e., a month after the release of the iPhone6), the number of days to the release of the next model in this case would be -30.

Because the actual trend of reported phone losses on IMEI may also be dictated by the actual number of phones sold during a specific period of time (e.g., we observe a decrease in the

number of iPhone4 reported on IMEI Detective because fewer iPhone4 are being sold), we control for total sales of Apple iPhones in the analysis. To this end, we purchased the information on global monthly iPhone sales per model from Counterpoint Research, a market research company specializing in technology. Counterpoint surveys distributors, mobile carriers and retailers, component suppliers, and major manufacturers worldwide. According to Counterpoint, this combination of sources allows triangulating iPhone sales with accuracy.

*Results (Study 1A).* We predicted the number of phones reported in a given week (dependent variable) as a function of the release date of the next model. We used an OLS regression with the number of days to the release of the next model and its square as the independent variables. As a control variable, we also included the number of Apple iPhones sold in any given month per model. Table 1 shows the regression results. As hypothesized, there were significant linear ( $\beta = 1.15$ ,  $t(567) = 9.14$ ,  $p < .001$ ) and quadratic effects ( $\beta = -.94$ ,  $t(567) = -10.44$ ,  $p < .001$ ) for the number of days to the release of the next model on number of phones reported lost in a given week. These coefficients show an initial increase of reported losses followed by a decrease before the release of the next iPhone. Importantly, these trends control for the number of Apple iPhones sold, also a significant predictor ( $\beta = .45$ ,  $t(567) = 6.08$ ,  $p < .001$ ). For illustrative purposes, Figure 2 (top) shows the trends for the iPhone5 and iPhone5S.

As a robustness check, we also conducted similar regressions for each iPhone model separately and found similar patterns of results. All the iPhone models show the same inverted U-shape trend, indicating that the number of reported lost phones systematically decreased close to the release date of the next model. In addition, we also performed a discontinuity analysis considering the release of the next model on the market as the cutoff point. As seen in Figure 2 (bottom), we detect a statistically significant discontinuity in the number of reported losses

before and after the release date of the next model ( $p = .001$ ). The detailed results of the discontinuity analysis are reported in the online appendix.

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Insert Table 1 and Figure 2 about here  
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*Study 1B.* The objective of this study is to replicate the findings of Study 1A in the lab with a proxy for product neglect, controlling for a series of other potentially relevant factors, including acquisition methods and book value. We expect that the availability of the new desired phone on the market and the interest in upgrading will lead to product neglect even when controlling for other variables. Importantly, accounting for the real depreciation of phones over time (which also captures the loss of value due to the launch of new models in the market) allows us to show that product neglect in the presence of upgrades occurs over and beyond a purely rational account (i.e., consumers are careless with their phones just because of the diminished objective value of their device once a newer model is available in the market). To construct a proxy for product neglect, we consider several types of carelessness indicators stemming from the literatures on upgrades, product disposition, and self-defeating choices. Specifically, we look at “repair neglect,” that is a measure of propensity to repair versus dispose of a product, directly inspired by existing measures of disposal intentions and probability of replacement (Okada 2001; Park and Mowen 2007; Shih and Jensen 2011; Trudel, Argo, and Meng 2016). Relatedly, we also measure “willingness to spend to repair” (reverse coded), motivated by existing measures of willingness to pay for upgrades (Okada 2006; Zhu, Chen, and Dasgupta 2008). Finally, we consider “intention to participate in a risky lottery with the product,” inspired by existing measures of self-defeating choices and irrational behaviors (Baumeister 2003). Together, these

items reflect neglect of one's currently owned product (e.g., an aversion to repair or running the risk to lose the current product).

To gain insight into the extent to which participants have conscious access about the factors influencing their product behaviors, we ask participants to elaborate on the potential factors contributing to how they treat their phones, following established methods for testing consciousness of effects (Folkes, Martin, and Gupta 1993; Khan and Dhar 2006; Shiv, Carmon, and Ariely 2005). If people consciously connect upgrading with carelessness, they should be able to state this explicitly. In contrast, if they do not recognize whether or how their preferences are affected by upgrades, they should not be able to accurately articulate the role of upgrades on how they treat their belongings.

*Method (Study 1B).* We recruited 602 mobile phone owners (45% female;  $M_{\text{age}} = 33$ , American) for a paid online survey through Amazon Mechanical Turk. First, participants responded to a series of questions on their current phones: 1. "What is the brand of your current phone?" (Open-ended answer); 2. "How much did you pay for it, approximately?" (Please indicate the number of \$); 3. "Did you buy your current phone or did someone else buy it for you?" (I bought it personally; It was an upgrade from the service provider; Someone else bought it for me (e.g., it is a present); I got it from my company); 4. "Do you have a warranty covering damage or loss on your current phone?" (Yes, No); 5. "How long have you had this specific phone for approximately?" (1 month, 3 months, 6 months, 9 months, 1 year, 1 year and a half, 2 years, 3 years). Based on mobile industry estimates of the depreciation of phones over time (Banks 2014; Hsiao 2013; Priceconomics 2012), which notably account for the loss of value due to the introduction of newer models, the answers for the length of ownership were converted to the respective remaining value of the phone as a percentage of the original value (i.e., 1 month =

96%, 3 months = 87.5%, 6 months = 75%, 9 months = 62.5%, 1 year = 50%, 1 year and a half = 40%, 2 years = 24%, 3 years = 25%).

Next, participants answered three questions assessing their level of carelessness for their current phones. To reduce potential demand effects, the three questions were phrased in opposite directions, with higher numbers indicating higher care for one item (willingness to pay for repair) and, vice versa, higher numbers indicating higher carelessness for the other two items. Specifically, participants answered the following questions: 1. “If your current phone was damaged, would you be more likely to repair it or to replace it?” (1 = More likely to repair it, 7 = More likely to replace it); 2. “Imagine your current phone was damaged and you were not able to use it, what is the most amount of money that you would pay to repair it rather than buying a new one?” (Please indicate the number of \$); 3. “Imagine there is lottery with a 25% probability of winning a new phone of your choice. To participate you would have to give up your current phone. Would you be interested in participating to this lottery?” (1 = Not interested at all, 7 = Extremely interested). Next, we asked participants to answer an open-ended question: “Which factors influence how you treat your phone?” Finally, participants responded to a series of questions about their future phones (we purposely asked these questions after collecting the open-ended comments on potential factors influencing behaviors not to prime respondents with thoughts of upgrades): 1. “How much are you looking forward to replacing your current phone?” (1 = Not at all, 7 = Very much); 2. “Will the new phone be included in some kind of upgrading plan with your provider?” (The new phone will be included in an upgrading plan (you will not pay extra for it); The new phone will only partly be included in an upgrading plan (you will have to pay part of it); The new phone will not be included in an upgrading plan (you will have to pay

for all of it); Other (please specify)); 3. “Is this model available on the market already?” (Yes, No, About to be released).

*Preliminary Analyses (Study 1B).* The average length of ownership for current phones was 15 months and the average price paid was \$195. In terms of brands, the most represented brands in the sample were Apple (34%), Samsung (31%), and LG (11%). The majority of participants purchased the device themselves (63%); about a fifth of participants received it as an upgrade from the service provider (21%), and smaller percentages received it from others (15%) or from their company (1%). The majority of respondents did not have a warranty on their phone (74%). An analysis of answers regarding the purchase of the next phone revealed that about 43% of participants indicated they would pay partially for their new phones, 31% would not pay for it (the phone would be included in an upgrading plan), 23% would pay entirely for it, and 3% mentioned other acquisition methods. About 58% of participants reported that the model they wanted to buy next was already available on the market. The rest of participants reported that the next model was either not available (39%) or upcoming (3%).

*Results (Study 1B).* First, we ran three regressions on each of the carelessness measures separately with availability of the new phone on the market as the independent variable and controlling for initial price paid and remaining book value of the phone. As fully reported in the online appendix, we find the predicted significant results for availability of the next phone on each dependent variable. Second, we computed a product neglect composite (with higher numbers indicating higher product neglect) by first standardizing and then averaging the three carelessness questions together (willingness to pay to repair is reverse coded in the composite). We then analyzed responses using a linear regression with product neglect as the dependent variable and the following independent variables: a dummy variable for availability of the new

phone on the market (coded as 1 for availability of the new phone on the market and 0 otherwise), price paid, remaining value of the phone, interest in upgrading, and a series of dummy variables for warranty, acquisition methods, and future upgrade methods.

Table 2 (top) shows the regression results. As expected, the analysis revealed the following significant effects: a positive effect of availability of the new phone on the market ( $\beta = .10$ ,  $t(580) = 2.82$ ,  $p = .005$ ), a positive effect of willingness to upgrade ( $\beta = .19$ ,  $t(580) = 5.23$ ,  $p < .001$ ), a negative effect of paid price ( $\beta = -.39$ ,  $t(580) = -10.60$ ,  $p < .001$ ), a negative effect of book value ( $\beta = -.16$ ,  $t(580) = -4.24$ ,  $p < .001$ ), and a positive effect for having to fully pay for the next phone ( $\beta = .10$ ,  $t(580) = 2.37$ ,  $p = .018$ ).<sup>2</sup> In sum, these results suggest that the availability of the new desired phone on the market and the interest in upgrading lead to product neglect even when controlling for a series of other relevant factors, such as price paid, acquisition method, and depreciation.<sup>3</sup> Importantly, the critical finding on availability of the new phone in the market, which indicates that the presence of an upgrade product increases current product neglect, is robust to the presence or absence of the other variables (Table 2, bottom).

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To examine consumer awareness about the upgrade effect, we coded the content of the open-ended question about the presumed factors influencing behaviors toward phones. As represented in Figure 3, the content analysis revealed the following most recurring categories:

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<sup>2</sup> Though we were not predicting a significant effect for “having to fully pay for the next phone,” this result is consistent with the notion that people who have to pay for the new device are more careless since the cost to upgrade (and thus the need to justify the purchase) is higher for them than for those who don’t have to pay to upgrade.

<sup>3</sup> We acknowledge that people may use subjective book values that differ from objective book values. To partially account for this heterogeneity in depreciation rates, we included two observed heterogeneity variables (income and age) and their interactions with both availability of the next phone and interest in upgrading in the same regression and found similarly significant results for the effect of availability of the next phone and interest in upgrading.

37% of comments mentioned price paid or opportunity cost (e.g., “How expensive it is,” “Money. I would not want to spend anything on a new phone or to fix this one”), 21% of comments mentioned the importance of the phone and wanting the device to last (e.g., “I want it to last so I treat it pretty carefully,” “It’s very important to me”), 20% of comments mentioned specific personality or environmental factors (e.g., “I’m generally careful with all my belongings,” “If I’m in a rush and whether I’m at home or not”), 9% of comments mentioned features of the phone itself (e.g., “Keeping it safe because the screen is fragile,” “It’s durability and build quality – it’s got Gorilla Glass so it’s pretty sturdy”), 7% of comments mentioned length of ownership (“How long I have had the phone”), 3% of comments mentioned nothing (e.g., “None that I am aware of”), 1% of comments mentioned upgrading to a new phone (“If I have an upgrade available,” “How close I am to getting a new one”), and lastly, 2% of comments listed other miscellaneous factors. In sum, only 1% of participants directly mentioned upgrading as one of the presumed factors influencing how they treat their phones, suggesting that people pay little attention to this factor. However, it is possible that participants may be reluctant to openly admit the role of upgrades. We conducted a follow-up study to address this limitation.

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Insert Figure 3 about here  
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*Follow-up Study.* To complement the findings of study 1B on the non-deliberateness of the effect and try to address potential social desirability concerns, we conducted a follow-up study (online appendix) using a real ad featuring consumers purposely mistreating their phones to upgrade. This follow-up study demonstrates that, even when explicitly presented with *other* consumers breaking products on purpose and using tricks to upgrade, the vast majority of people do not acknowledge the effect of upgrades.

*Discussion.* In conclusion, using real reported losses of Apple iPhones as a proxy for consumers' careless behavior, Study 1A shows that people are less likely to report the loss of an owned phone when an upgrade model is available in the market, even when controlling for the total number of phones sold. Study 1B replicates this finding, controlling for series of other relevant factors, including the real depreciation of the product. Despite the fact that the availability of the new desired phone on the market and the interest in upgrading lead to carelessness, the content analysis of presumed factors influencing behaviors in Study 1B and the follow-up study reveal that participants have little insight onto the effect of upgrades on how they treat their own products.

Although these data are correlational, the detected pattern of results is very consistent with the notion that the availability of product upgrades in the market induces product neglect. All the following studies demonstrate the effect of upgrades through an experimental approach, manipulating the presence of upgrades, and further delve into the deliberateness of the effect and the underlying mechanism of need for justification.

*Study 2: Behaviorally Endangering an Owned Product in the Presence of Preferred Options*

In Study 2, we design a controlled ownership test in the laboratory by gifting all participants with a free mug. We manipulate the physical availability of a preferred upgrade, displaying better mugs (*upgrade* condition) to some participants but not to others (*no-upgrade* condition). In this study, we test a behavioral measure of carelessness—the extent to which participants are willing to endanger an owned product by engaging in risky behavior with it. To this end, participants played an incentive-compatible game of Jenga, with their mug placed atop a tower of blocks. We predict that participants would choose to continue to play the game until

the tower collapses (consequently dropping the mug) more often in the presence of preferred product upgrades.

*Method.* We recruited 92 community and student respondents (42% female,  $M_{\text{age}} = 32$ ) who participated in a paid laboratory study at the Massachusetts Institute of Technology. After receiving a basic ceramic mug (retail value = \$1.00; picture in the online appendix) as a gift for them to keep, all participants were brought, one by one, into a room with a table and wooden Jenga blocks set up in a standard tower (54 blocks with 18 levels of three blocks each; picture in the online appendix). The experimenter placed the mug on top of the tower. Participants were randomly assigned to one of two conditions: *no-upgrade* versus *upgrade*. In the *no-upgrade* conditions, participants only saw their basic ceramic mug. In the *upgrade* condition, participants were shown three additional, nicer-looking mugs (average retail value = \$9.67; picture in the online appendix), which they inspected. We varied the appearance of upgrade mugs to account for potential differences in taste among participants. To better simulate a real market situation with upgrade options available for sale, we told participants, “You may have the opportunity to purchase one of these other mugs (whichever is your favorite) at a special price at the end of the study.”

All participants then played the game Jenga with the owned mug atop the block tower. In the game, players remove individual blocks from a preassembled tower of relatively small, wooden blocks while attempting to not collapse the tower. To encourage participants to keep playing, we offered them extra payment for each block removed (\$.05 each). Participants were instructed to inform the research assistants when they wanted to stop the game. To emphasize the risk of each decision to remove a block, participants were told they were not allowed to catch the mug if it fell and that they would not receive a new mug if theirs broke. Thus, the primary

dependent variable of interest was whether participants continued the game until the mug dropped. Once the game was over, the research assistant recorded whether or not the mug fell and the number of removed blocks. Then all participants were ushered into a computer room for a follow-up questionnaire. In this second part of the study, all participants rated the basic mug by answering: “How much do you like the mug?” (1 = Do not like at all, 9 = Like very much). In addition, participants in the *upgrade* condition were asked to pick their preferred upgrade mug (from the three upgrade mugs) and to rate it using the same liking question.

*Results.* Analysis of the liking rating revealed that the experimental manipulation of the preferred upgrade product was successful. While liking of the basic mug did not differ across conditions ( $M_{\text{upgrade}} = 4.76$  vs.  $M_{\text{no-upgrade}} = 4.85$ ,  $t(90) = .21$ , NS), participants in the *upgrade* condition liked the upgrade mugs significantly more than the basic mug ( $M_{\text{upgrade mug}} = 6.04$  vs.  $M_{\text{basic mug}} = 4.76$ ,  $t(45) = 3.25$ ,  $p = .002$ ).

The analysis of the main dependent variable—whether or not participants dropped the mug—revealed that participants in the *upgrade* condition dropped the mug during the game in 61% of the cases (28 dropping instances out of 46), in contrast to only 37% of cases (17 dropping instances out of 46) in the *no-upgrade* condition ( $\chi^2(1) = 5.26$ ,  $p = .022$ ). Thus, exposure to mug upgrades led individuals to become more behaviorally careless with their owned mugs. Out of all the dropped mugs, two were physically damaged, both in the *upgrade* condition. Interestingly, there was no difference between conditions in the number of blocks removed ( $M_{\text{upgrade}} = 12.83$ ,  $SD = 6.68$ , vs.  $M_{\text{no-upgrade}} = 12.89$ ,  $SD = 5.84$ ). Because dropping was more frequent in the *upgrade* condition, this result suggests that participants in the *upgrade* condition took larger risks by removing more critical blocks during the game than did control participants. Importantly, controlling for the number of blocks removed did not eliminate the

difference in dropping behavior between conditions ( $B = 1.05$ ,  $Wald = 5.37$ ,  $p = .021$ ). In addition, although the option to purchase was simply part of the cover story and no upgrade mugs were actually sold, at the end of the study, three participants in the upgrade condition spontaneously expressed interest in purchasing the nicer-looking mugs.

*Discussion.* Study 2 demonstrates that individuals are more willing to endanger an owned product in the physical presence of preferred upgrades. We find that participants are more likely to drop an owned mug while playing a Jenga game when they have previously been exposed to a set of better-looking mugs. A potential limitation of this study is the absence of a mere “replacement” condition—that is, a condition with other basic (rather than upgrade) mugs present on the table. In the next study, we try to address this limitation by considering mere product replacements. In addition, Studies 3A and 3B examine faster consumption rate as an indicator of carelessness for non-durable goods. Importantly, these studies consider both hedonic and functional products and further examine the awareness of the effect of upgrades on carelessness tendencies.

### *Study 3: Faster Rate of Consumption for Non-Durable Goods in the Face of Upgrade Options*

Prior research on the effects of supply on usage (Folkes, Martin, and Gupta 1993) demonstrates that consumers become more parsimonious and systematically curb their consumption rates of non-durable products as the amount of product available diminishes (e.g., consumers pour less shampoo if the bottle is half empty rather than full). Building on this research and using the same experimental paradigm, we test the impact of product upgrades on non-durable and consumable goods. Unlike the typical increase in conservation, we hypothesize

that consumers wanting to upgrade to a new non-durable might consume their current product at a faster pace than usual to hasten purchase of the newer product.

First, Study 3A replicates the effect of supply on usage (Folkes, Martin, and Gupta 1993) and demonstrates the upgrade effect for four non-durable products with varying degree of functionality. Study 3B again shows the upgrade effect for these same products in a purely between-subjects design and also examines the effect of mere replacements. In addition, we seek to further understand whether carelessness can occur without explicit awareness. To this end, we ask participants to compare their intended level of consumption with typical usage. If participants are unaware of the effect of upgrades on their behavior, they should report no differences between their current usage and their typical usage.

*Pretest.* Using the same measures employed in previous research on hedonic versus functional products (Dhar and Wertenbroch 2000; Okada 2005), we selected the following four non-durable products, varying respectively from highly utilitarian to highly hedonic: toothpaste, shampoo, laundry softener, and perfume (full pretest reported in the online appendix).

*Method (Study 3A).* We recruited 101 respondents (72% female,  $M_{\text{age}} = 23$ ), who participated in a paid laboratory study at Columbia Business School. Participants were randomly assigned to one of three between-subjects conditions (*full* vs. *quarter-full* vs. *quarter-full-upgrade*) for each of four non-durable products (shampoo, laundry softener, toothpaste, and perfume). Thus, product is a within-subjects factor in this design. All participants read the same study introduction: “In this study we will ask you to consider a variety of commonly used products, such as shampoo, laundry detergents, etc. Please read the following scenarios slowly and carefully. Try to imagine what you would be thinking and feeling if the situation was happening for real.” Subsequently, participants in the *full* condition saw a picture of a full bottle

and read, “Imagine you own the bottle of \_\_\_\_ depicted below. Your bottle of \_\_\_\_ is full.” Participants in the *quarter-full* condition saw a picture of a quarter-full bottle and read, “Imagine you own the bottle of \_\_\_\_ depicted below. Your bottle of \_\_\_\_ contains about one fourth of the product.” Finally, for participants in the *quarter-full-upgrade* condition the stimuli were the same as in the *quarter-full* condition, but the description further mentioned, “You have already decided that you want to upgrade to a different \_\_\_\_” (see online appendix for a visual representation of the stimuli employed).

Following Folkes, Ingrid, and Gupta (1993)’s procedures, we then measured participants’ intended product usage (the dependent measure) through product-specific visual aids. For example, in the case of shampoo, participants were asked, “Imagine you were washing your hair and the circles below represented the different amount of shampoo you may use for this shower. How much shampoo would you pour on the palm of your hand?” (From 1 to 7). In the case of laundry detergent, participants were asked, “Imagine you were doing laundry, how much softener would you pour for this load in the measuring cup represented below?” (From 1 to 14).

Finally, we measured how the selected amount compared to typical usage. For example, in the case of shampoo, respondents were asked, “Is the amount of shampoo you decided to use more or less than what you typically pour when washing your hair?” (1= Less than usual; 4 = Same as usual; 7 = More than usual).<sup>4</sup> Consistent with our hypothesis that people do not engage in carelessness deliberately, we do not expect to detect significant differences among conditions on this measure.

*Results (Study 3A).* Because the four usage questions were on different scales, we first standardized (z-scores) the answers for the analysis. We analyzed results using a mixed model

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<sup>4</sup> The sensitivity and understanding of this scale were pre-validated (test reported in the online appendix).

ANOVA with condition (*full* vs. *quarter-full* vs. *quarter-full-upgrade*) as the between-subjects factor and product-specific usage as the repeated measure. As shown in Figure 4 (top left), there was a significant effect of condition ( $F(2, 97) = 7.11, p < .001$ ). As a further check, we conducted the analysis including gender and age as covariates and found similarly significant results for the effect of condition. Pairwise comparisons revealed that participants' willingness to use the product was significantly lower in the *quarter-full* condition ( $M_{quarter-full} = -.30$ ) than in the *full* ( $M_{full} = .16, p = .003$ , Bonferroni adjusted), thus replicating Folkes, Ingrid, and Gupta's (1993) finding on parsimony. Importantly, participants' willingness to use the product was significantly higher in the *quarter-full upgrade* condition ( $M_{upgrade} = .10$ ) than in the *quarter-full* condition ( $M_{quarter-full} = -.30, p = .007$ , Bonferroni adjusted), thus demonstrating the predicted upgrade effect for non-durable goods. Finally, there was no significant difference between the *full* and *quarter-full-upgrade* conditions. Although the interaction between product type and condition was not significant ( $F(2, 97) = .95$ , NS), the rate of acceleration (i.e., the difference between the usage levels in the *quarter-full* vs. *quarter-full-upgrade* conditions) was directionally higher for the two hedonic products ( $M_{hedonic} = .54$ ) than for the two utilitarian ones ( $M_{utilitarian} = .23$ ).

Next, we performed the same mixed model ANOVA on current usage as compared to usual usage as the second dependent variable. Again, this measure tests whether participants are aware about reporting consumption levels different than usual. As expected, the effect of condition was non-significant ( $F(2, 97) = 1.25$ , NS) and, consistently, none of the pairwise comparisons revealed a significant difference between conditions (Figure 4, top right).

*Method (Study 3B)*. We recruited 302 respondents (66% female,  $M_{age} = 24$ ), who participated in a paid laboratory study at Columbia Business School and Harvard Business

School. To attain more than 50 people per condition for each product, we complemented the lab sample with 368 additional respondents (55% female;  $M_{age} = 38$ , American) recruited online through Amazon Mechanical Turk, leading to a total sample size of 670 individuals (about 56 per condition).<sup>5</sup>

Participants were randomly assigned to one of 12 conditions in a 3 (*quarter-full-replacement* vs. *quarter-full* vs. *quarter-full-upgrade*) x 4 (*shampoo* vs. *laundry softener* vs. *toothpaste* vs. *perfume*) between-subjects design. Instructions, stimuli, and questions were identical to Study 3A, though this time we tested a *quarter-full-replacement* condition (instead of the *full* condition). Specifically, the end of the description for participants in the *quarter-full-replacement* condition read, “You have already decided that you want to use the same \_\_\_\_ in the future.”

*Results (Study 3B).* After standardizing the four usage questions, we conducted an ANOVA with intended product usage as the dependent measure and condition (*quarter-full-replacement*, *quarter-full*, *quarter-full-upgrade*) and product type as factors. As predicted, the only significant effect was for condition ( $F(2, 658) = 5.84, p = .003$ ). As a further check, we also conducted the same analysis including gender and age as covariates and found similarly significant results for the effect of condition. Replicating the previously detected upgrade effect for non-durable goods, planned contrasts revealed that participants’ willingness to use the product was significantly higher in the *quarter-full-upgrade* condition ( $M_{upgrade} = .19$ ) than in the *quarter-full* condition ( $M_{quarter-full} = -.17; t(667) = 3.96, p < .001$ ), as also seen in Figure 4 (bottom left). Usage ratings in the *quarter-full-replacement* condition fell in between the *quarter-full* and *quarter-full-upgrade* conditions and were significantly lower than in the

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<sup>5</sup> We also conducted all the analyses on the two samples (lab and online) separately and found the same results.

*quarter-full-upgrade* condition ( $M_{upgrade} = .19$  vs.  $M_{replacement} = -.04$ ,  $t(667) = 2.40$ ,  $p = .016$ ) and non-significantly higher than ratings in the *quarter-full* condition ( $M_{replacement} = -.04$  vs.  $M_{quarter-full} = -.17$ ,  $t(667) = 1.39$ , NS).

As in Study 3A, although the interaction between condition and product type was not significant ( $F(6, 658) = 1.28$ , NS), the rate of acceleration (i.e., the difference between the usage levels in the *quarter-full* vs. *quarter-full-upgrade* conditions) was again directionally higher for the two hedonic products ( $M_{hedonic} = .44$ ) than for the two utilitarian ones ( $M_{utilitarian} = .23$ ).

Next, we performed the same ANOVA on current usage as compared to usual usage as the second dependent variable. As expected, the effect of condition was non-significant ( $F(2, 657) = 1.16$ , NS) and, consistently, none of the planned contrasts revealed a significant difference between conditions (Figure 4, bottom right).

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 Insert Figure 4 about here  
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*Discussion.* Studies 3A and 3B document carelessness in the domain of non-durable goods by examining the consumption rate at which consumers are willing to use their products. Results from both studies show that consumers accelerate the rate of consumption and become less parsimonious with their products when the thought of an upgrade (and not just a mere replacement) is salient. Importantly, these studies further demonstrate that carelessness can occur without deliberateness. Despite the results supporting an upgrade effect, participants did not acknowledge using more product than usual.

The next study delves into the underlying mechanisms of the upgrade effect by investigating the mediating process of justification and examining a moderating effect of individual differences in need for justification.

#### *Study 4: The Need to Justify Upgrades*

The main objective of this study is to test whether product neglect in the presence of upgrade cues stems from a need to justify the attainment of new, enhanced products. First, a pilot study demonstrates the premise that product damage (even if just aesthetic damage) does indeed operate as justification to upgrade (especially for lay rationalistic people) for both hedonic and utilitarian products. Second, as recommended for evaluating psychological processes that are easier to manipulate than to measure (Spencer, Zanna, and Fong 2005), such as need for justification (see Okada 2005 for a comparable approach), we provide evidence in favor of our proposed justification process through a “moderation-of-process design” by manipulating the extent to which upgrading is framed as justifiable (i.e., low need for justification) or not justifiable (i.e., high need for justification). Marketing research has highlighted how intended future plans for current products after upgrading (e.g., donating or recycling) impact consumers’ mental accounts and potentially mitigate their feelings of guilt (Dahl, Honea, and Manchanda 2003; Jacoby, Berning, and Dietvorst 1977; Okada 2001; Roster and Richins 2009). For example, Okada (2001) finds that giving away a reusable product as a gift attenuates the mental cost of the upgrade purchase. Accordingly, we predict that product neglect in the presence of upgrades will be substantially weakened when a reason to attain the new product without feeling guilty (i.e., giving the current one to someone else) is exogenously provided. Moreover, we expect that people who chronically experience a high need to justify and rationalize their decisions (i.e., individuals with high levels of lay rationalism) will be particularly sensitive to the justification manipulation. Again, we consider two types of products, eyeglasses (functional) and

sunglasses (hedonic) based on a pretest (online appendix). Finally, we manipulate upgrading cues through a writing task about either a currently owned product or a potential upgrade.

*Pilot Study (Justifying Product Upgrades in the Face of Damage).* In an online study with 958 American participants, we randomly assigned participants to one of 12 conditions in a 3 (*intact vs. minor-damage vs. major-damage* physical product state) x 2 (*functional vs. hedonic* product) x 2 (*self vs. other* framing) between-subjects design. Due to space limits, we briefly summarize the findings below and visually display the main results in Figure 5. The detailed analyses are fully reported in the online appendix.

Regardless of the product type and of the framing, participants were more willing to upgrade and felt more justified to upgrade when the product was damaged, even just lightly so, as compared to when the product was intact (Figure 5, top). In a multi-categorical independent variables mediation analysis, ratings of justifiability mediated willingness to upgrade (Figure 5, middle). As predicted, we also found two significant interactions with lay rationalism. Specifically, high lay rationalistic participants saw upgrading in the case of damage as more justifiable and appropriate than low lay rationalistic participants (Figure 5, bottom). The overall model of mediated moderation with willingness to upgrade as dependent variable, justifiability as mediator, and lay rationalism as moderator was also significant, suggesting that the mediating process of justifiability was particularly strong for lay rationalistic people who chronically experience a high need to rationalize and justify their decisions.

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Insert Figure 5 about here  
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*Method.* We recruited 325 owners of eyeglasses or sunglasses for a paid online survey (63% female;  $M_{\text{age}} = 39$ , American) through Amazon Mechanical Turk. Owners of both

eyeglasses and sunglasses (144 respondents) answered the survey for both products (and were randomly re-assigned to one condition for the second product), thus leading to a total of 469 observations.

First, all participants were asked to visualize their pair of glasses: “Think about a pair of eyeglasses [sunglasses] that you own and use often. Once you have a good picture of this in your mind, go to the next page.” Next, we randomly assigned participants to one of three between-subject conditions (*no-upgrade* vs. *upgrade* vs. *justification-to-upgrade*). In the *no-upgrade* condition, participants read: “Take a minute to write a couple of sentences in the space below about the characteristics of the eyeglasses [sunglasses] you thought about.” In the *upgrade* condition, participants read an additional sentence mentioning an upgrade product: “Imagine that you recently saw a new and enhanced pair of eyeglasses [sunglasses] at the store. You would like to buy this new pair. Take a minute to write a couple of sentences in the space below about the characteristics of this new pair of eyeglasses [sunglasses].” Finally, in the *justification-to-upgrade* condition, participants read the same statements as in the *upgrade* condition and, after the writing task, they read an additional sentence mentioning an exogenous justification: “Once you will buy the new pair of eyeglasses [sunglasses], you are planning on giving your current pair to someone else, such as a relative, a friend, or a person you care about.”

After completing the writing task, participants answered the same questions on carelessness (repair neglect), length of ownership, and price of the currently owned product from Study 1B. The answers for the length of ownership were converted to the respective numbers of months (i.e., “3 months” = 3; “6 months” = 6; “9 months” = 9; ...; “3 years” = 36). Finally, participants completed the six-item (Cronbach’s  $\alpha = .77$ ) lay rationalism scale (Hsee et al. 2015).

*Results.* The average number of words written by participants was comparable across conditions: 22 in the *no-upgrade* condition, 23 in the *upgrade* condition, and 22 in the *justification-to-upgrade* condition. We first examine the effect of the upgrade manipulation controlling for price, length of ownership, and product type, and then explore moderation with lay rationalism. An ANCOVA on product neglect as a dependent measure, with condition and product type as factors, their interaction, and price and length of ownership as covariates, revealed significant effects only for condition ( $F(2, 460) = 5.97, p = .003$ ), product type ( $F(1, 460) = 10.06, p = .002$ ),<sup>6</sup> and price ( $F(1, 460) = 18.03, p < .001$ ).<sup>7</sup> As hypothesized, planned contrasts revealed that product neglect was higher in the *upgrade* condition ( $M_{\text{upgrade}} = 5.89$ ) than in the *no-upgrade* ( $M_{\text{no-upgrade}} = 5.49, F(1, 308) = 3.95, p = .048$ ) and *justification-to-upgrade* ( $M_{\text{justification}} = 5.17, F(1, 305) = 12.9, p < .001$ ) conditions. There was no significant difference between the *no-upgrade* and *justification-to-upgrade* conditions ( $M_{\text{no-upgrade}} = 5.49$  vs.  $M_{\text{justification}} = 5.17, F(1, 308) = 2.19, \text{NS}$ ).

*Moderation.* Because again there was no interaction between conditions and product type, we collapsed the results for the two products (i.e., eyeglasses and sunglasses). To explore the moderating role of lay rationalism, responses were analyzed using an ANCOVA with product neglect as the dependent variable, a dummy variable for *no-upgrade* condition and a dummy variable for *justification-to-upgrade* condition as factors, the lay rationalism scale as covariate, and two-way interaction terms between each of the dummies and the lay rationalism scale. The analysis revealed significant effects only for the *no-upgrade* dummy ( $F(1, 463) = 3.91, p = .048$ ) and, most importantly, for the interaction between *justification-to-upgrade* condition and lay

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<sup>6</sup> On average, participants were more careless with the hedonic product than the functional one ( $M_{\text{sunglasses}} = 5.93$  vs.  $M_{\text{eyeglasses}} = 5.04$ , however, there was no significant interaction with the upgrade manipulation ( $F(2, 460) = .04, \text{NS}$ ).

<sup>7</sup> We also conducted the same analysis considering only respondents who completed the survey for one product only and found again a significant effect of condition ( $p = .001$ ).

rationalism ( $F(1, 463) = 4.19, p = .041$ ). To further explore the significant interaction between *justification-to-upgrade* condition and lay rationalism, we applied the Johnson-Neyman procedure (Spiller et al. 2013). We find a significant effect of condition on product neglect at and above 4.56 of the lay rationalism scale ( $B = -.48, SE = .25, t(307) = 1.97, p = .05$ ), but not for any level below this point (figure in online appendix). Thus, for highly lay rationalistic people, the upgrade cue produced greater product neglect than when the upgrade cue was combined with an exogenous justification to upgrade (i.e., passing the current product to someone else).

*Discussion.* In conclusion, this study provides evidence in favor of our proposed justification process and demonstrates that product neglect toward owned products is significantly mitigated in the presence of an exogenous justification to upgrade without appearing wasteful, such as donating the product to others. As hypothesized, this effect is particularly accentuated for those people who chronically experience a high need to rationalize their decisions (i.e., individuals with high levels of lay rationalism).

## GENERAL DISCUSSION

The present research documents the novel phenomenon of consumer carelessness toward owned products. The empirical evidence from both field data and laboratory studies demonstrate that consumers become careless with their current products when in the presence of desired product upgrades. At a process level, our investigation reveals that some forms of consumer carelessness are driven by the need to justify attainment of the upgrade product. The desire to acquire new products can motivate changes in how consumers treat the products they own,

changes that can occur without their knowledge and that may appear undesirable from a rational perspective on ownership.

Our theoretical framework (Figure 1) and findings contribute to a diverse set of literatures, including product upgrades (Bayus 1988, 1991; Mukherjee and Hoyer 2001; Okada 2001, 2006), ownership (Carmon and Ariely 2000; Strahilevitz and Loewenstein 1998; Thaler 1980), consumption rates (Ailawadi and Neslin 1998; Chandon and Wansink 2002), and mental accounting (Gourville and Soman 1998; Heath and Fennema 1996). In addition, this work advances prior research on cognitive processes that intensify consumers' reluctance to dispose of their possessions (Brough and Isaac 2012; Haws et al. 2012; Lastovicka and Fernandez 2005; Price, Arnould, and Curasi 2000; Roster and Richins 2009; Trudel, Argo, and Meng 2016) by focusing on how the connection with owned products can actually be weakened through exposure to upgrades. Finally, our findings inform previous research on justification processes, motivated reasoning, and guilt (Dahl, Honea, and Manchanda 2003; Hsee 1995; Hsee et al. 2015; Kivetz and Simonson 2002; Okada 2005; Shafir, Simonson, and Tversky 1993; Strahilevitz and Myers 1998) by demonstrating that carelessness toward owned products in the presence of upgrades is driven by a need to justify attainment of the upgrade.

### *Directions for Future Research*

The present research provides the seed for further investigation on the topic of carelessness. We consider future research directions pertaining to products characteristics, ownership processes, and carelessness. Finally, we discuss a potential alternative explanation.

*Product Characteristics.* With respect to products, a fruitful direction for further research pertains to the study of product domains that consumers perceive to be particularly meaningful

and symbolic. Indeed, more than a fifth of participants in Study 1B mentioned the importance of the phone as the main factor influencing how they treat their device. Products are perceived as symbolic to the extent that they are able to express the identity of the individual using them (Berger and Heath 2007; Escalas and Bettman 2005). Hence, future research could examine whether the perceived symbolism of products moderates the upgrade effect, such that consumers may exhibit carelessness primarily for those products that are less meaningful to the self. Certainly, consumers are more likely to recycle (rather than dispose of) a product if it is linked to their identity because placing an identity-linked product in the trash is symbolically similar to trashing a part of the self, a situation consumers want to avoid (Trudel, Argo, and Meng 2016).

In addition, the current research could be extended to examine the specific kinds of upgrades that are more likely to generate careless tendencies. For example, how new or enhanced does the product upgrade need to be to activate carelessness? Prior work has classified upgrades depending on the degree of similarity and novelty relative to the original product (Bertini, Ofek, and Ariely 2009; Okada 2006). Future research could directly manipulate such dimensions and investigate their impact on carelessness.

*Ownership Processes.* With respect to process-level factors involved in ownership, questions remain about the psychological power of upgrades for affecting both ownership biases and various forms of product care. Consumers become attached to products both through ownership (Kahneman, Knetsch, and Thaler 1990; Thaler 1980) and through the effort they invest in acquiring or constructing those products (Norton, Mochon, and Ariely 2012). The presence of preferred upgrades may influence the degree to which factors such as effort elicit increased valuation of belongings; conversely, the effort invested in current products may insulate consumers against the lure of upgrades. Furthermore, research on ownership processes

suggests that consumers anthropomorphize and see human schema in products (Aggarwal and McGill 2007). Future work could test whether the level of product anthropomorphism inhibits the emergence of product neglect even when in the presence of desired upgrades.

*Carelessness.* Finally, careless behavior itself is a topic that has received relatively little attention in the ownership literature. Future work addressing the scope of this behavior would thus be quite useful. For instance, under what circumstances do consumers engage in carelessness through passive omission behaviors (e.g., carrying a phone without a protective case) or through more active commission acts (e.g., causing damage by dropping or handling the product roughly)? Because consumers have a strong aversion to appearing wasteful (Arkes 1996), we would expect that omission is more common than commission behavior. This prediction is consistent with research on the omission bias, which suggests that harmful omissions are perceived as less blameworthy than corresponding commissions (Spranca, Minsk, and Baron 1991). Omission may help to remove the stigma associated with acting recklessly while at the same time promoting individual justification motives.

In addition, it would be interesting to explore the signaling dimension of carelessness and contribute to recent research examining alternative signals of status (Bellezza, Gino, and Keinan 2014; Bellezza, Paharia, and Keinan 2017). Because conspicuous consumption is tightly linked to the idea of resource waste (Veblen 1899/2007), destroying products or consuming them lavishly may sometimes operate as a signal of status in the eyes of others.

*Alternative Explanation.* An explanation for the upgrade effect may involve shifts in consumers' reference points. In the context of product upgrades, a reference point account would suggest that careless outcomes stem from unmotivated changes to product evaluation as a result of considering upgrades. That is, instead of evaluating a current product in absolute terms,

consumers might evaluate the current product in comparison to the upgrade product, resulting in lowered evaluations and careless behavior. While reference points are interesting and relevant aspects to consider, this account could not fully explain our findings. In Study 2, the presence of upgrade mugs did not influence liking of the currently owned good. The observed non-significant difference between conditions in liking of the basic mugs rules out the potential alternative reference point explanation for subsequent game-playing behavior. In addition, Study 4 also helps to address the alternative reference point account. If thinking of upgrade options lowered the perceived valuation of the currently owned goods relative to these more appealing products, this mechanism should theoretically apply to all the scenarios featuring the upgrade, independent of a justification element. Yet, the significant difference between the two upgrade conditions in Study 4 is inconsistent with the reference point explanation.

### *Managerial Implications*

This research has clear relevance for actual consumer behavior, as emphasized by our investigation of real owners of a wide array of goods. How might marketing managers use these findings to better meet consumer needs and desires? Should marketers promote careless behavior or attempt to prevent it? The next paragraphs discuss the implications of our findings for framing promotions that address consumer-product relationships and for marketing of products “designed to fail,” a strategy referred to as planned obsolescence (Bulow 1986).

Marketers face the complex dilemma of wanting to encourage product and brand attachment in order to drive choice while, at the same time, persuading owners not to hang on to owned products for “too long.” For example, IKEA’s television commercial “Death of a Lamp” encourages consumers to disregard their sadness when replacing an old but functioning lamp to

which they feel attached with a newer one: “Many of you are feeling bad for this lamp; that is because you’re crazy! It has no feelings, and the new one is much better!” Emphasizing similar shifts in focus toward function over sentiment may be especially useful when done in comparison to upgrades. Making explicit comparisons about upgrade features or style could simplify the upgrade justification process, especially in the case of hedonic goods (Okada 2005) and ambiguous product features (Hsee 1995).

As noted earlier, several brands (e.g., Virgin Mobile, eBay, T-Mobile) recently have taken the more direct approach of promoting careless behavior with owned products. Although commercials following this approach tend to be humorous and considered unrealistic (as found in the follow-up study in the online appendix), their message may sway owners searching for upgrade justifications to behave similarly. Of course, encouraging owners to donate or sell their products may produce similar outcomes with less waste and loss of welfare. For example, H&M’s “long live fashion” campaign encourages consumers to dispose of their old clothes in donation bins in their stores so that the company may “reduce waste and give old products a new life.” As seen in Study 4, this is an effective strategy for mitigating guilt when buying new products. To consider another example in the domain of non-durable goods, Vichy (L’Oréal) in Italy has been running the “toss your old foundation” campaign, offering a substantial discount on new Vichy foundations to those consumers trading in their unfinished products.

This research also has implications for managers and designers interested in capitalizing on product use cycles. The principle of planned obsolescence is one method of purposely creating a limited lifespan for products (Bulow 1986). This strategy can, however, create backlash from consumers (Packard 1960). For example, Apple’s practice of remotely distributing software updates that owners can directly (and irreversibly) download on their devices has

negatively been labeled a “trap” to dampen the performance of older products and thus promote acquisition of the latest devices (Rampell 2013). Since new operating systems require more resources to function properly, they typically diminish product performance of older devices (as in the case of installing the latest operating system onto an older iPhone model). However, our findings suggest that planned obsolescence might actually be beneficial for upgrade-minded consumers by “making it easier” for them to damage or detect functional flaws in owned products.

In conclusion, we hope our work is a first step toward providing insights into the novel phenomenon of motivated consumer carelessness toward owned belongings. Contrary to the prevailing notion that consumers highly value and care for their possessions, the current research demonstrates that consumers exhibit cavalier behavior toward owned products when in the presence of appealing product upgrades.

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TABLE 1: PREDICTORS OF REPORTED LOSSES OF APPLE IPHONES ON THE IMEI  
DETECTIVE WEBSITE (STUDY 1A)

<i>Predictors</i>	<i>Unstandardized Coefficient</i>	<i>Std. Error</i>	<i>Standardized Coefficient</i>	<i>t-value</i>	<i>p-value</i>
<i>Intercept</i>	3.159	0.385		8.206	0.001
<i>Days to the release of the next model</i>	0.010	0.001	1.148	9.142	0.001
<i>Days to the release of the next model</i> <sup>2</sup>	-0.001	0.001	-0.939	-10.442	0.001
<i>iPhone sales monthly</i>	0.539	0.089	0.451	6.078	0.001

$R^2 = 0.162$

TABLE 2 (TOP AND BOTTOM): PREDICTORS OF PRODUCT NEGLECT FOR MOBILE PHONES (STUDY 1B)

<i>Predictors</i>	<i>Unstandardized Coefficient</i>	<i>Std. Error</i>	<i>Standardized Coefficient</i>	<i>t-value</i>	<i>p-value</i>	<i>Tolerance</i>
<i>Intercept</i>	0.026	0.148		0.175	0.861	
<b><i>Market availability of next model</i></b>	<b>0.148</b>	<b>0.052</b>	<b>0.103</b>	<b>2.822</b>	<b>0.005</b>	<b>0.845</b>
<b><i>Interest in upgrading</i></b>	<b>0.071</b>	<b>0.014</b>	<b>0.187</b>	<b>5.231</b>	<b>0.000</b>	<b>0.888</b>
<b><i>Price paid</i></b>	<b>-0.001</b>	<b>0.000</b>	<b>-0.393</b>	<b>-10.602</b>	<b>0.000</b>	<b>0.825</b>
<b><i>Book value (% of original value)</i></b>	<b>-0.005</b>	<b>0.001</b>	<b>-0.157</b>	<b>-4.240</b>	<b>0.000</b>	<b>0.825</b>
<i>Dummy - Warranty on current phone</i>	-0.066	0.059	-0.042	-1.130	0.259	0.835
<i>Dummy - This phone was an upgrade</i>	-0.098	0.066	-0.056	-1.487	0.138	0.794
<i>Dummy - This phone was a present</i>	-0.009	0.069	-0.005	-0.133	0.894	0.898
<i>Dummy - This phone was given by my company</i>	0.264	0.210	-0.043	-1.259	0.208	0.957
<i>Dummy - Next phone will be partially paid by me</i>	-0.044	0.067	-0.026	-0.658	0.511	0.707
<b><i>Dummy - Next phone will be fully paid by me</i></b>	<b>0.144</b>	<b>0.061</b>	<b>0.101</b>	<b>2.368</b>	<b>0.018</b>	<b>0.624</b>
<i>Dummy - Next phone other acquisition method</i>	0.156	0.142	0.039	1.102	0.271	0.903

$R^2 = 0.342$

*Bold indicates predictor is significant (p-value column < .05)*

<i>Predictors</i>	<i>Standardized Coefficient</i>			
<b><i>Market availability of next model</i></b>	<b>0.295</b>	<b>0.253</b>	<b>0.158</b>	<b>0.122</b>
<b><i>Interest in upgrading</i></b>		<b>0.230</b>	<b>0.214</b>	<b>0.174</b>
<b><i>Price paid</i></b>			<b>-0.407</b>	<b>-0.395</b>
<b><i>Book value (% of original value)</i></b>				<b>-0.157</b>
<b><i>R<sup>2</sup> change</i></b>	<b>0.087</b>	<b>0.051</b>	<b>0.156</b>	<b>0.021</b>

*Bold indicates betas and R<sup>2</sup> changes are significant (all p-values < .001)*

FIGURE 1: THEORETICAL FRAMEWORK

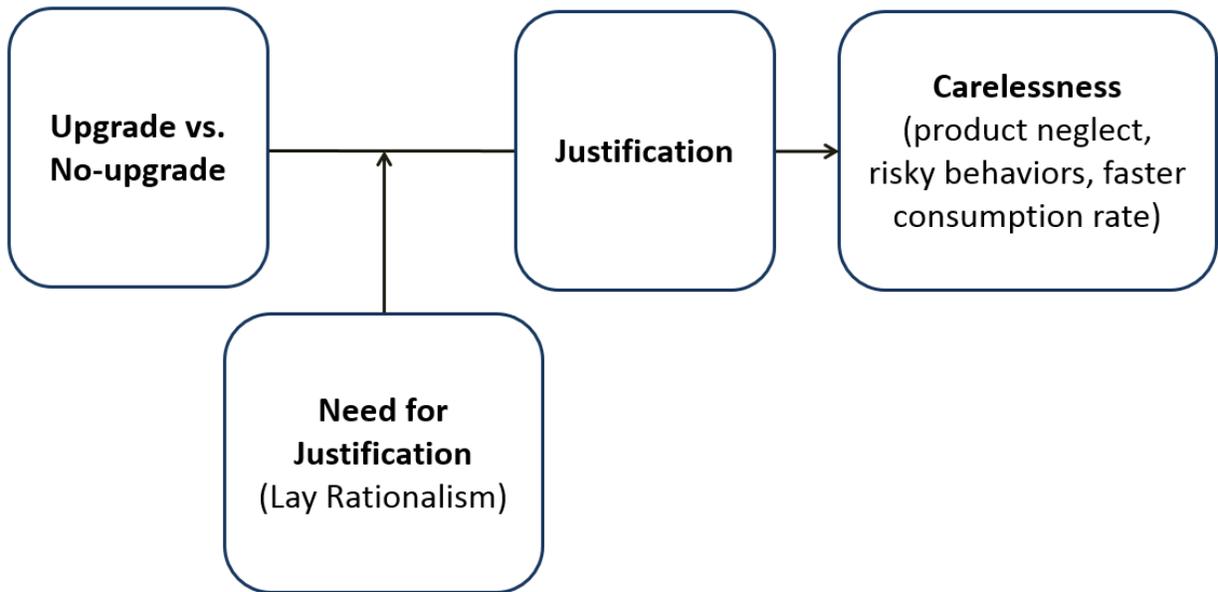
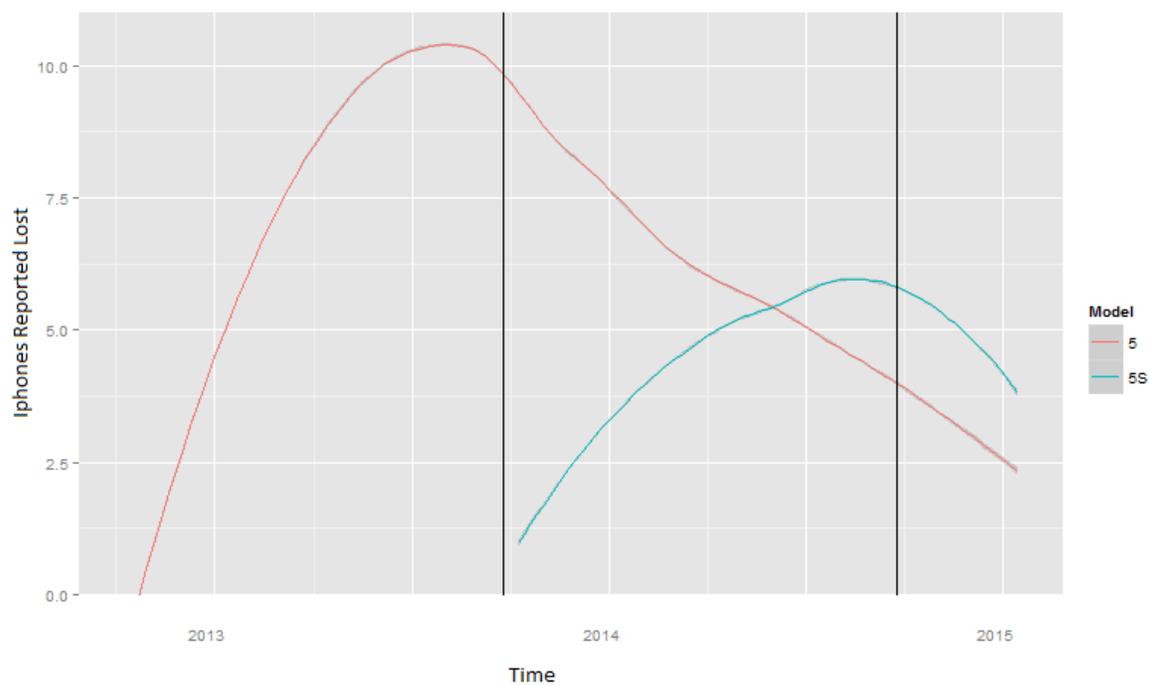
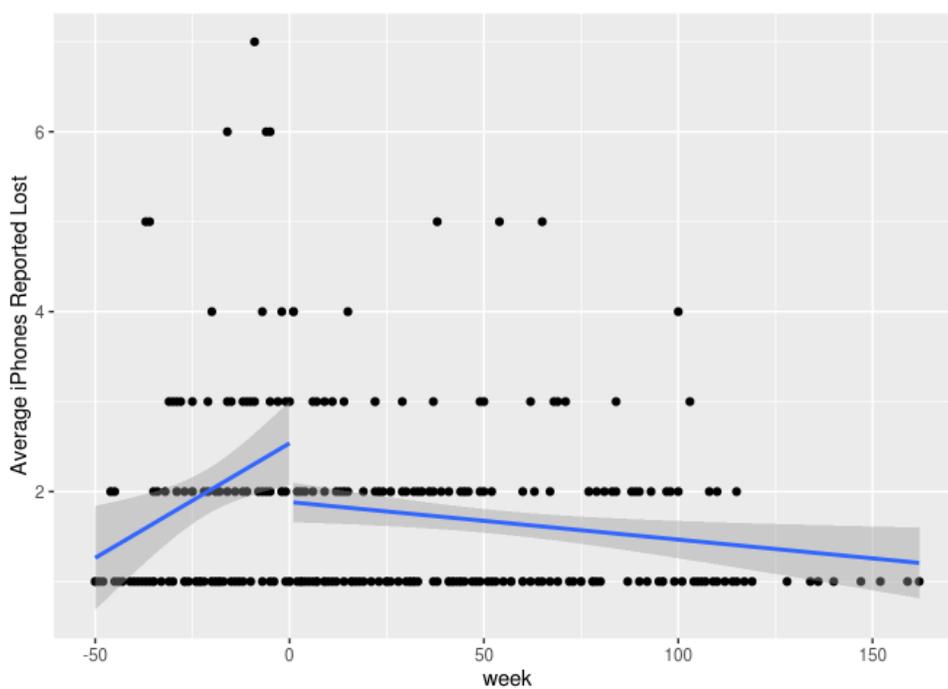


FIGURE 2: APPLE IPHONE 5 AND 5S REPORTED LOSSES ON THE IMEI DETECTIVE WEBSITE (TOP) AND DISCONTINUITY ANALYSIS (BOTTOM) (STUDY 1A)



Note. Number of Apple iPhones 5 and 5S reported lost on IMEI Detective over time. The vertical lines represent the introduction dates of the iPhone5S (September 20, 2013) and the iPhone6 (September 19, 2014).



Note. Release of the next model on the market is the cutoff point.

FIGURE 3: CONTENT ANALYSIS OF FACTORS INFLUENCING PRODUCTS' TREATMENT (STUDY 1B)

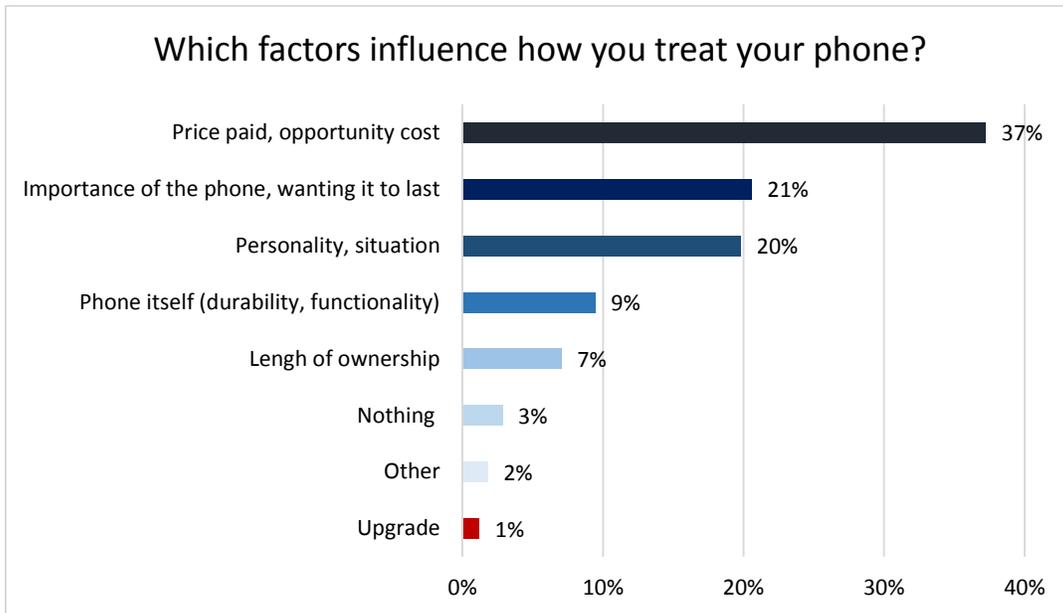


FIGURE 4: INTENDED USAGE ACROSS PRODUCTS (STUDIES 3A, TOP, AND 3B, BOTTOM)

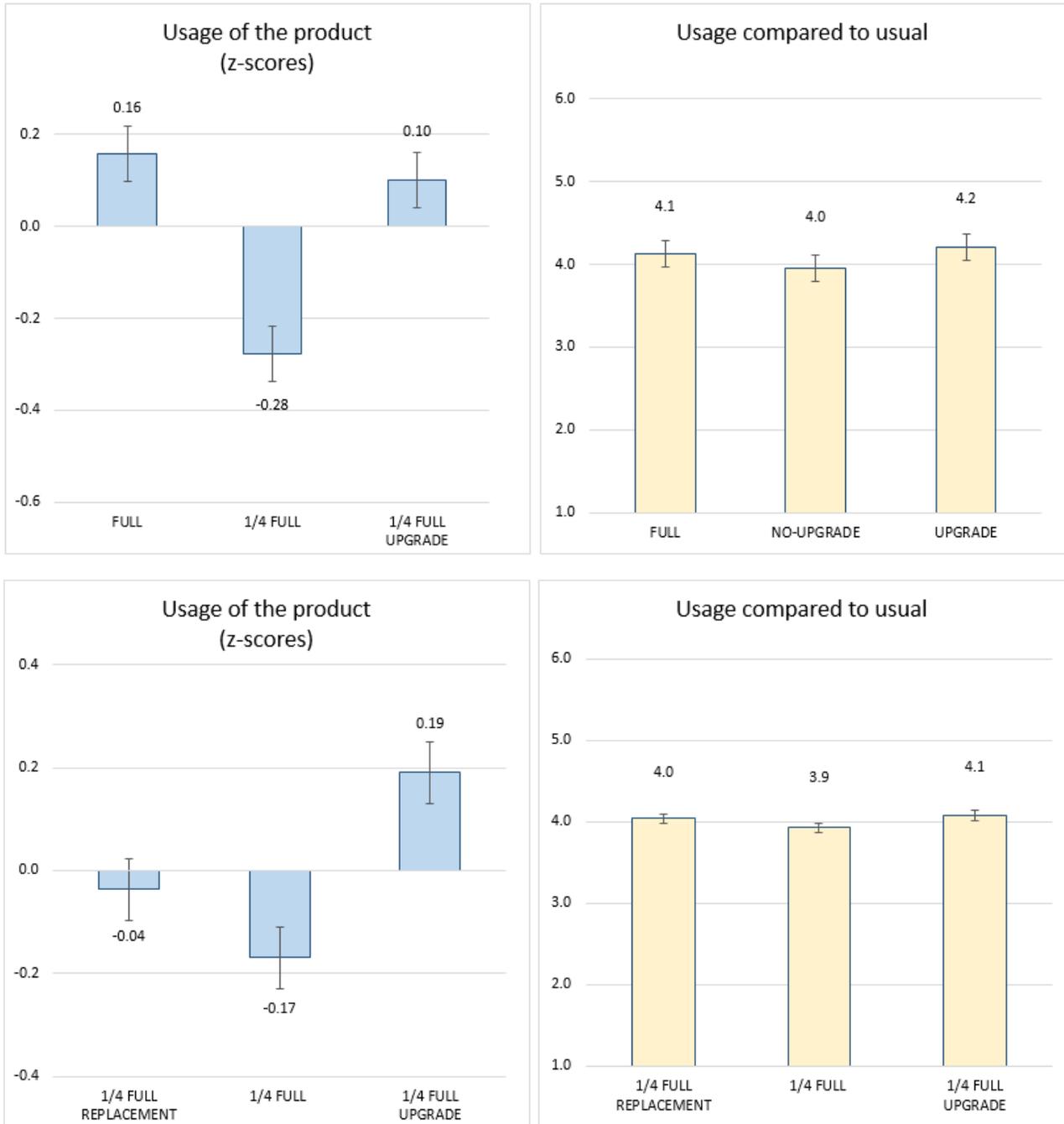


FIGURE 5: PILOT STUDY – MAIN EFFECTS OF PHYSICAL PRODUCT STATE (TOP), MEDIATION (MIDDLE), AND INTERACTION WITH LAY RATIONALISM (BOTTOM)

