MARKETING SCIENCE INSTITUTE

Reports

2007

WORKING PAPER SERIES

ISSUE THREE

NO. 07-003

Reports

2007

WORKING PAPER SERIES

ISSUE THREE

NO. 07-003

The Marketing Science Institute supports academic research for the development —and practical translation— of leading-edge marketing knowledge on issues of importance to business performance. Topics are identified by the Board of Trustees, which represents MSI member corporations and the academic community. MSI supports academic studies on these issues and disseminates findings through conferences and workshops, as well as through its publications series.

Marketing Science Institute
1000 Massachusetts Avenue
Cambridge, MA
02138-5396

Phone: 617.491.2060
Fax: 617.491.2065
www.msi.org

MSI Reports (ISSN 1545-5041) is published quarterly by the Marketing Science Institute. It is not to be reproduced or published, in any form or by any means, electronic or mechanical, without written permission.

The views expressed here are those of the authors.

Working Paper Series
The articles that appear in *MSI Reports* have not undergone a formal academic review. They are released as part of the MSI Working Paper Series, and are distributed for the benefit of MSI corporate and academic members and the general public.

Subscriptions
Annual subscriptions to *MSI Reports* can be placed online at www.msi.org. Questions regarding subscriptions may be directed to pubs@msi.org.

Single reports
Articles in *MSI Reports* are available in downloadable (PDF) format at www.msi.org.

Past reports
MSI working papers published before 2003 are available as individual hard-copy reports; many are also available in downloadable (PDF) format. To order, go to www.msi.org.

Corporate members
MSI member company personnel receive all MSI reports (PDF and print versions) free of charge.

Academic members
Academics may qualify for free access to PDF (downloadable) versions of MSI reports and for special rates on other MSI print publications. For more information and to apply, go to "Apply for academic membership" on www.msi.org.

Classroom use
Upon written request, MSI working papers may be copied for one-time classroom use free of charge. Please contact MSI to obtain permission.

Search for publications
See the searchable publications database at www.msi.org.

Submissions
MSI will consider a paper for inclusion in *MSI Reports*, even if the research was not originally supported by MSI, if the paper deals with a priority subject, represents a significant advance over existing literature, and has not been widely disseminated elsewhere. Only submissions from faculty members or doctoral students working with faculty advisors will be considered. "MSI Working Paper Guidelines" and "MSI 2006-2008 Research Priorities" are available in the Research section of www.msi.org.

Publication announcements
To sign up to receive MSI's electronic newsletter, go to www.msi.org.

Change of address
Send old and new address to pubs@msi.org.

As Time Goes By: Warm Intentions and Cold Feet for Really New versus Incrementally New Products?

David L. Alexander, John G. Lynch, Jr., and Qing Wang

Marketers should minimize the extent to which their products are perceived as "really new": the psychological newness of highly innovative products reduces consumers' intention to buy, and their likelihood to follow through on purchase.

Report Summary

This study examines how differences in consumers' thinking about really new products (RNPs) and incrementally new products (INPs) affect (1) their formation of long-term new-product purchase intentions and (2) the likelihood that they will follow through on their stated intentions to buy products and use them as they expect.

In four field studies conducted with the CBS television network, the authors find that consumers are less likely to intend to purchase really new compared to incrementally new technology products. Further, the likelihood that consumers will follow through on their stated intention to buy in the next six months increases over time for INPs, but decreases over time for RNPs.

Those intending to acquire INPs are significantly more likely to think concretely about their intentions. In the first week of ownership, consumers who purchase RNPs think more abstractly about how they will use their new purchases than do consumers who purchase INPs. Moreover, those buying INPs are accurate in their estimations of how much they will use the products, whereas those buying RNPs are not.

One surprising implication of these results is that firms should minimize the extent to which their products are perceived as "really new." If consumers perceive that a new technology offers (a) new benefits, (b) greater uncertainty about those benefits, (c) greater uncertainty about cost-benefit tradeoffs, and (d) a greater need to change their behavior to enjoy benefits, they reduce their intention to purchase and are less likely to follow through on positive intentions to purchase RNPs compared to INPs. Further, consumers' more abstract thoughts about using RNPs lead to dramatic errors—both over- and underestimation—in buyers' expectations of how much they will use the product after acquisition, whereas expectations are more accurate for INPs. This implies that RNPs will suffer from high rates of return, and negative word-of-mouth, compared to INPs.

Finally, the decreasing likelihood that consumers will follow through on purchase intentions of RNPs over time suggests that "preannouncement" strategies like that for the Apple iPhone may be less effective for really new than for incrementally new products. ■

David L. Alexander is a doctoral candidate at the Fuqua School of Business, Duke University. **John G. Lynch, Jr.,** is Roy J. Bostock Professor of Marketing at the Fuqua School of Business, Duke University. **Qing Wang** is Associate Professor in Marketing and Innovation at the Warwick Business School, University of Warwick, United Kingdom.

Introduction

In 2001, the Segway scooter was unveiled, hyped by sophisticated investors such as Jeff Bezos of Amazon.com and Steve Jobs of Apple Computer, who predicted that cities would be re-designed to accommodate the computer-controlled, self-balancing human transporter. The venture capitalist John Doerr predicted that Segway would make its first billion dollars faster than any company in history. The Segway was released for sale in 2002, but by the summer of 2004, fewer than 10,000 units had sold (Foust 2006).

Segway's experience exemplifies the issues firms face as they try to measure demand for and market really new products. As Hoeffler (2003) has shown, consumer uncertainty about really new products can make their cost-benefit tradeoffs highly labile, making it difficult for firms to estimate market demand for really new products using conventional methods. Only recently have we begun to study how marketing research methods and marketing strategies for launching more standard, "incrementally new" products (INPs) should be modified for the higher-risk, higher-reward realm of really new products (RNPs) (Lehmann 1994; Moreau 1997; Urban, Weinberg, and Hauser 1996).

In this research, we examine how psychological differences in consumers' thinking about RNPs and INPs alter formation of long-term new-product purchase intentions and affect the likelihood that consumers follow through on their stated intentions to buy products and use them as they expect. RNPs promise more new benefits than INPs, but consumers are uncertain of the utility of those benefits and of how to trade off any received benefits against costs, and they anticipate that they will have to change their behavior to attain potential benefits (Hoeffler 2003).

We ask how these differences between RNPs and INPs affect the perceived attractiveness of these products when consumers consider their distant-future intentions, and how product attractiveness changes when products are encountered in the marketplace. We couple Hoeffler's (2003) perspective with extant psychological literature on temporal construal (Liberman, Trope, and Stephan in press; Trope and Liberman 2003; Trope, Liberman, and Wakslak 2007) to make six predictions about the comparative purchase and use of RNPs and INPs, which we test in four field studies. The predictions are:

1. Consumers are less likely to express intentions to purchase RNPs than INPs;

2. Positive intenders follow through on those intentions less often for RNPs than INPs;

3. This difference in follow-through grows stronger over time after the measurement of purchase intentions;

4. Compared to those intending to purchase INPs, those intending to purchase RNPs think less specifically about where and when they will buy (c.f. Gollwitzer 1999).

Compared to those within a week of acquiring INPs, those within a week of acquiring RNPs:

5. have more abstract representations of how they will use the product in the first week and

6. have less calibrated expectations about their extent of use in the first week after purchase.

We discuss the implications of these findings for the launch of really new products and for market research on really new products.

Conceptual Background

Psychological newness and temporal construal

Varying definitions exist for what makes a product "really new," focusing on chronologi-

cal, technological, or psychological newness. Booz Allen & Hamilton (1982) distinguish products that are "new to the market" versus "new to the firm." Goldenberg, Lehmann, and Mazurski (2001) find that moderately new-to-market products succeed more than really new ones.

In this study, we test effects of psychological newness. Work on psychological newness has focused on the inapplicability of existing category knowledge to understanding the new product (Moreau, Lehmann, and Markman 2001; Moreau, Markman, and Lehman 2001; Wood and Lynch 2002). That research focuses on cross-sectional variation among consumers in the perceived newness of a new product and how that variation explains processing of information about the new product.

Our focus is not on variation in consumers' perceptions of newness, but on variations among the products themselves, as perceived by those in the market for those products. We rely on the work of Hoeffler (2003), who argued that really new products produce high levels of uncertainty in consumers' perceived ability to estimate their consumption utility prior to purchase. He argued that, compared to incrementally new products, for really new products consumers perceive:

1. greater ability to do things that existing products do not let them do easily,

2. greater uncertainty about consumption benefits,

3. greater uncertainty about cost-benefit tradeoffs in utility functions due to lack of understanding of attribute-to-benefits links or practice making cost-benefit tradeoffs (Hoeffler and Ariely 1999), and

4. greater need to change their behavior in order to attain the potential benefits of the new product.

We should note that psychological newness is not a matter of chronological age. Streaming TV and flat-screen plasma TV were introduced at roughly the same time in 1997, but streaming TV is perceived as higher in psychological newness by those who have never owned but plan to acquire/adopt in the near future. Flat screen TVs do not allow consumers to do new things they could not do with prior products, the benefits are relatively certain as are the cost-benefit tradeoffs, and consumers do not think they will have to change their behavior to enjoy the benefits. RNPs such as streaming TV, PDAs, and blogging services are perceived as really new along the four dimensions outlined above by those who have never owned them; these technologies allow consumers to do new things, but the benefits and cost-benefit tradeoffs are uncertain, and significant behavior change is required to enjoy the benefits.

We marry Hoeffler's perspective on newness with extant psychology literature on temporal construal (Trope and Liberman 2003; Trope, Liberman, and Wakslak 2007). Research on construal theory shows that in dealing with temporally distant actions, people think in terms of abstract, high-level considerations of the desirability of the action. In dealing with near-term actions, they think in terms of concrete, low-level considerations of the action's feasibility. Allowing consumers to do new things is a matter of desirability, and uncertainty about the benefits of really new products undercuts that desirability. Needing to change one's behavior in order to attain the benefits is a matter of feasibility.

We predict and find that consumers follow through less on intentions to acquire RNPs than INPs only when intention and behavior measurement are separated in time. The more temporally distant the judgment of intention from the expected acquisition, the more different will be the mental representations at the two points in time. The greater the discrepancy in mental representations, the less follow-

through we expect, but this should be exacerbated for RNPs, which are higher in desirability (ability to do new things, according to Hoeffler 2003) and lower in feasibility (because significant change in behavior is necessary to attain the potential benefits).

Relation of intentions to perceived newness

Consumers often form new-product purchase intentions well in advance of when they expect to buy those products. Research on temporal construal shows that, when evaluating products well in advance of buying them, consumers tend to focus on the abstract benefits or pros of the products while underweighting the products' more concrete constraints or cons (Eyal et al. 2004; Trope and Liberman 2000, 2003).

When consumers who do not yet own new products judge their intentions to acquire them in the distant future (e.g., in the next six months), will they be more positive toward INPs or RNPs? Theoretical arguments can be made in either direction. Reasoning strictly from temporal construal theory, thoughts about distant actions should give high weight to desirability and low weight to feasibility. According to Hoeffler, really new products are extremely positive on desirability (ability to do new things) and extremely negative on feasibility (requirement of behavior change to enjoy benefits); incrementally new products are more moderate on both, implying:

H1a: When asked about intent to purchase in the distant future, consumers should be more positive about really new products than about incrementally new products.

However, Zhao (2006) showed that thoughts about distant-future purchase of INPs are dominated by desirability whereas thoughts about the purchase of RNPs are a more even mix of desirability and feasibility. Moreover, RNPs are characterized by high uncertainty about benefits and cost-benefit tradeoffs. Literature on missing information has established that a perceived absence of relevant information leads to lower evaluations as a penalty for uncertainty (Jaccard and Wood 1988; Johnson and Levin 1985; Meyer 1981; Simmons and Lynch 1991). In addition, one might expect that the uncertainty associated with benefits of really new products diminishes their appeal compared with the benefits of incrementally new products. Hoeffler, Moreau, and Kubowicz-Malhotra (2006) have shown that consumers' perceptions of feature importance decline with uncertainty. Similarly, Mukherjee and Hoyer (2001) found that novel attributes lead to lower evaluations of high-complexity products. These premises might lead one to predict:

H1b: When asked about intent to purchase in the distant future, consumers should be more positive about incrementally new products than about really new products.

Given these psychological forces operating in opposite directions, both H1a and H1b are plausible, and we test empirically whether newness increases or decreases intention to acquire.

Newness and follow-through on stated intentions

Stating an intention to acquire a new product in the next *N* months does not mean that one will actually follow through. Intentions expressed at a temporal distance may appear unwise when the purchase occasion draws nearer in time. Zauberman and Lynch (2005) describe the "Yes … Damn!" effect wherein people commit themselves to time-consuming activities under the false expectation that they will be less busy in the future than they are today. Really new products require consumers' time investments to change behavior to accommodate the new product; the cost of this investment will be less off-putting when forming an intention to adopt the product in the distant future than when faced with adopting the product in the store, making follow-through on intent lower.

When consumers who have stated an intention to acquire a new product go to buy it, the change in temporal frame from distant opportunity to near purchase can lead them to construe the product differently. When forming a purchase intention, consumers give more weight to high-level benefits, such as the ability of a product to allow them to do new things they couldn't do before, and relatively less weight to low-level feasibility constraints, such as the fact that they will have to change their behavior to enjoy those benefits (Trope and Liberman 2000, 2003). When the purchase opportunity is at hand, people tend to increase the weight they give to a product's low-level feasibility constraints and reduce the weight they give to high-level benefits, so that products should be devalued as purchase becomes imminent. This devaluation effect should be stronger for RNPs than for INPs because, as mentioned earlier, RNPs have more extreme benefits and costs. Thus, we posit:

H2: Consumers are less likely to follow through on their intentions to buy psychologically newer products.

Newness and timing of follow-through on stated intentions

Consider a set of consumers asked about their intent to acquire each of 28 entertainment and communications products and services within the next six months. Some of those responding positively for a given product expect to acquire in the next few days, but others expect to acquire in a month, or several months. According to construal theory, those expecting to buy later should give more weight to desirability and less weight to feasibility than those expecting to buy sooner. Later, those same consumers will have to decide whether to actually make the purchase. At the time of decision, construal theory implies that the weight of feasibility should be high and the weight of desirability should be low. Those making a final decision of whether to acquire a few days after expressing an intention have a relatively slight difference in temporal perspective and in the relative weights of desirability and feasibility between the time of intention judgment and the time of adoption decision. Those making a final decision three months after stating an intention to acquire have a much greater difference in temporal perspective and therefore a bigger difference in weights at intent vs. purchase.

Combining these premises with the reasoning underlying H2, we predict that the probability of follow-through should be lowest when there is a large difference in temporal perspective, that is, when considerable time elapses between forming an intention to purchase and actually acting on that intention, and when the product itself has a pattern of extremely high benefits and extremely high costs rather than more moderate benefits and moderate costs. Therefore, it follows that the effect described in H2 should become stronger with time, and we should observe an interaction of newness and time on follow-through. Put differently:

H3: For those stating a positive intention to acquire in *N* months, the probability of follow-through should decline over months, but this effect should be stronger the more psychologically-new the product.

Of course, other forces may make follow-through increase or decrease over time. The key prediction, though, is that the negative effect of newness on follow-through should grow stronger with time.

Study 1: A Newness Index Predicts Acquisition Intentions

We measured the psychological newness of 28 new entertainment and communication technologies as perceived by the average customer who does not own the given technology but who stated an intention to acquire it in the next six months. We tested whether that aggregate newness index could predict the fraction of those not owning the technologies

who intend to acquire them in the next six months (H1).

Method

Participants. In late August and early-September 2004, 12,237 members of the CBS Television City online panel were sent e-mails inviting them to participate in Study 1. Twenty-two percent of those invited (2,692) agreed to participate (57.7% female, mean age 39, ranging from 11 to 77).

Procedures. A link in the invitation e-mail took participants to the survey's home page, where participants were presented with a list of 28 new communications and entertainment products. Products were described as shown in Table 1. For each product, participants were asked to indicate whether they currently owned the product and, if they did not, whether they intended to purchase (or adopt) the product in the next six months (1 = yes, 0 = no).[1]

For each of the products that participants intended to buy, we measured perceived product newness using a formative index[2] developed from Hoeffler's (2003) characterization of RNPs. Participants were asked to rate their agreement with each of these four statements on a five-point scale anchored by "strongly disagree" on the left and "strongly agree" on the right:

1. I feel quite certain of the benefits I could expect to get if I bought (adopted) this product/service (reverse coded).

2. I'm quite sure of what the relevant tradeoffs are among the costs and benefits of buying and using this product/service (reverse coded).

3. I'll have to change my behavior significantly to attain the potential benefits of this new product/service.

4. Using this new product/service would allow me to do things that I can't easily do now.

Results and discussion

Mean Newness Index Scores. Responses to statements 1 and 2 were reverse coded, and the scores for the four items were summed, producing a product newness score (ranging from 4 to 20) for each product a participant intended to acquire. Participants reported intentions to acquire a total of 5,207 new products. For each product, intenders' product newness scores were averaged to create a mean product newness score for that product. Mean newness across respondents is used to measure properties of products, not people—a measure of aggregate psychological response by people "in the market" rather than a measure of individual perception (c.f. Holak and Lehmann 1990; LaBay and Kinnear 1981; Moreau, Lehmann, and Markman 2001; Rogers 2003). Table 1 lists the 28 products as described to respondents, their associated newness scores among intenders, and the percent of the total sample reporting prior ownership of the products. Higher scores reflect greater product newness.

In studies 2 and 4, we retained the 12 products with the highest newness scores as RNPs (e.g., blogging service, streaming TV, PDA, digital video recorder (DVR), DVD-by-mail service) and the 10 products with the lowest newness scores as INPs (e.g., flat screen TV, DVD player, home theater system, broadband Internet service). For later studies, we dropped six products with intermediate newness scores (e.g., camcorder, video game player, MP3 player).

Reliability and Validity of Mean Newness. The interjudge reliability of the product newness scores reflects the proportion of variance in the observed 28 product newness scores accounted for by variance in the 28 product newness true scores rather than random variation among participants in which products were perceived as more or less new. (The product newness true scores are the average of the newness scores of the untapped market intending to acquire these products.)

Table 1

New Communications and Entertainment Products Used in Studies 1, 2, and 4

Product Type	New Product	Perceived Newness	Product Ownership
Incrementally new products (INPs)			
	Flat screen (plasma or LCD) TV	8.87	9%
	New video game titles (e.g., Doom III, Halo 2, Grand Theft Auto: San Andreas, Metroid Prime 2, Metal Gear Solid 3, Half-Life 2, and Gran Turismo 4)	9.14	10%
	High definition TV (HDTV) and HDTV tuner	9.18	17%
	Home theater with surround sound (Dolby)	9.32	44%
	DVD player	9.59	88%
	Broadband Internet service (cable modem or DSL)	9.79	56%
	DVD recorder	9.87	17%
	Products to detect and remove Internet "spyware" (advertising-supported software such as Gator) or to block popup ads (e.g., Pest Patrol, Google popup blocker)	9.91	66%
	Digital cable	9.98	43%
	Digital still camera	10.04	48%
Neither really new nor incrementally new (i.e., intermediate in newness)			
	Camcorder	10.01	70%
	Video game player (e.g., Xbox, GameCube, PlayStation)	10.07	46%
	MP3 player (e.g., Apple's iPod)	10.12	26%
	Google's Gmail: free email with ads keyed to the content of your emails	10.22	4%
	Premium cable TV service or cable channels (those requiring added payment beyond basic cable)	10.23	55%
	Broadband Internet phone service (voice over Internet protocol [VOIP])	10.29	7%
Really new products (RNPs)			
	On-demand digital cable services (e.g., HBO On Demand, Showtime On Demand)	10.38	12%
	DVD-by-mail service (e.g., Netflix, Walmart.com)	10.38	23%
	Digital video recorder (TiVo or Replay TV) or similar services integrated into cable TV or satellite boxes (e.g., DIRECTV, Dish Network, Time Warner Cable)	10.51	24%
	Instant messaging (computer to computer)	10.56	63%
	Cell phone with picture phone capability	10.62	19%
	Cell phone with Internet access	10.63	38%
	Home computer with Microsoft Media Center	10.68	23%
	Cell phone with walkie-talkie feature (e.g., Nextel)	10.70	9%
	Personal digital assistant (standard PDA/pocket PC without wireless Internet service)	10.76	35%
	Cell phone with text messaging	11.14	66%
	Streaming television (TV programs streamed to your computer)	11.32	3%
	Blogging (web logging)	11.77	6%

Following Winer (1971) and Lynch, Buzas, and Berg (1994), we estimated interjudge reliability via an ANOVA decomposition of sources of variance, resulting in high reliability (.95). Interjudge reliability for each of the product newness scale items individually ranged from .89 to .97.

Newness scores were collected from the subset of survey panelists who did not own the product but who intended to acquire it in the next six months. Newer products had lower penetration rates in the CBS panel ($r = -.07$, $p < .001$).[3] Ownership rates are shown in Table 1. We present evidence in the studies that follow that newness scores predict various outcomes consistent with theory, controlling for penetration.

Newness Predicts Acquisition Intentions. We fit a binary logit model to participants' responses to whether, in the next six months, they intended to buy a product they did not currently own (1 = Yes, 0 = No).[4] Our model included mean product newness, controlling for participant-specific fixed effects [P(Stating Purchase Intention) = *f*(mean newness, participant dummy)]. Consistent with H1b and not H1a, we find that people are less likely to report an intention to buy newer products, $b = .78$, $\chi^2 = 917.30$, $p < .001$. The related-odds ratio estimate (exp(*b*)) is .46, indicating that the odds of stating the intention to buy a new product decrease by a factor of .46 for a 1 point increase in the product's mean newness score.

Figure 1 shows the actual probability of stating an intention to acquire each of the 22 really new or incrementally new products as a function of newness. Least-new products are shown on the left (plasma TV, new video game, etc.), and most-new products are shown on the right (blogging, streaming TV, etc.). The error bars around each point show plus and minus one standard error. The solid line shows the prediction of the logistic regression model. The main finding is that respondents are, in expectation, more than four times more likely to intend to acquire least-new products as they are to intend to acquire most-new products.

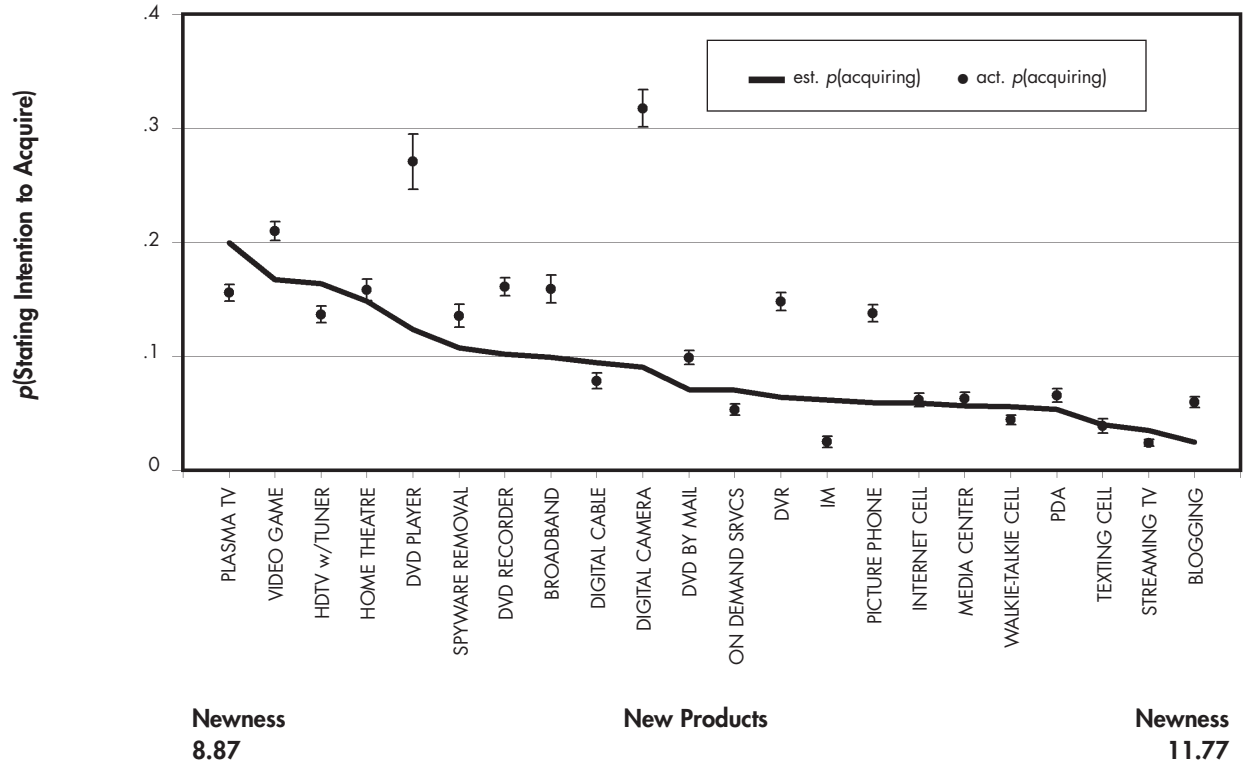
We reran the analysis adding price of the product (estimated mostly from bizrate.com pages in http://www.archive.org) and percentage of the full Study 1 sample already owning the product as covariates, reasoning that prior diffusion of the product might predict adoption intentions. Ownership ($b = 1.15$, $\chi^2 = 158.83$, $p < .001$) and price ($b = -.0001$, $\chi^2 = 45.33$, $p < .001$) were highly significant, but their inclusion did not change the relationship of newness to probability of intending to acquire in the next six months ($b = -.92$, $\chi^2 = 826.57$, $p < .001$).

Similar results were obtained replacing composite newness with each individual component of newness, except that "new things possible" had a nonsignificant positive effect. If the components of newness are entered as independent predictors in a binary logit, summing the two very highly correlated uncertainty components to a single predictor, we find that uncertainty ($b = -.87$, $\chi^2 = 110.85$), change behavior ($b = -1.16$, $\chi^2 = 72.72$), and new things possible ($b = -.23$, $\chi^2 = 14.71$) all have significant negative effects on intent to acquire. Again, this result is unchanged by adding ownership rate and price to the model.

The key implication of these results for marketers of new technologies is that anything that makes their product seem newer actually discourages consumers in the untapped market from forming a positive intention to acquire. Intention to adopt is depressed by being uncertain of the benefits of a new product, being uncertain of the cost-benefit tradeoffs, or perceiving that new things are possible but that one will have to change one's behavior to enjoy those benefits. If one is attempting to market a product that might, by these criteria, be perceived as new, it is in one's interest to position the product as less revolutionary than it may

Figure 1

Probability of Stating an Acquisition Intention as a Function of Mean Product Newness



Error bars around each mean show + and – 1 standard error. The solid line shows the prediction of a logistic regression.
Note: The abscissa of Figure 1 shows only the ordering of newness, not spacing, in order to make product names legible.

really be, consistent with Hoeffler, Moreau, and Kubowicz-Malhotra (2006), who show that positioning really new products on their less new attributes leads to more acceptance.

Before drawing this conclusion, we should examine how newness affects the likelihood that consumers will actually follow through on a stated intention to acquire a new product.

Study 2: Newness and Follow-through on Stated Intentions

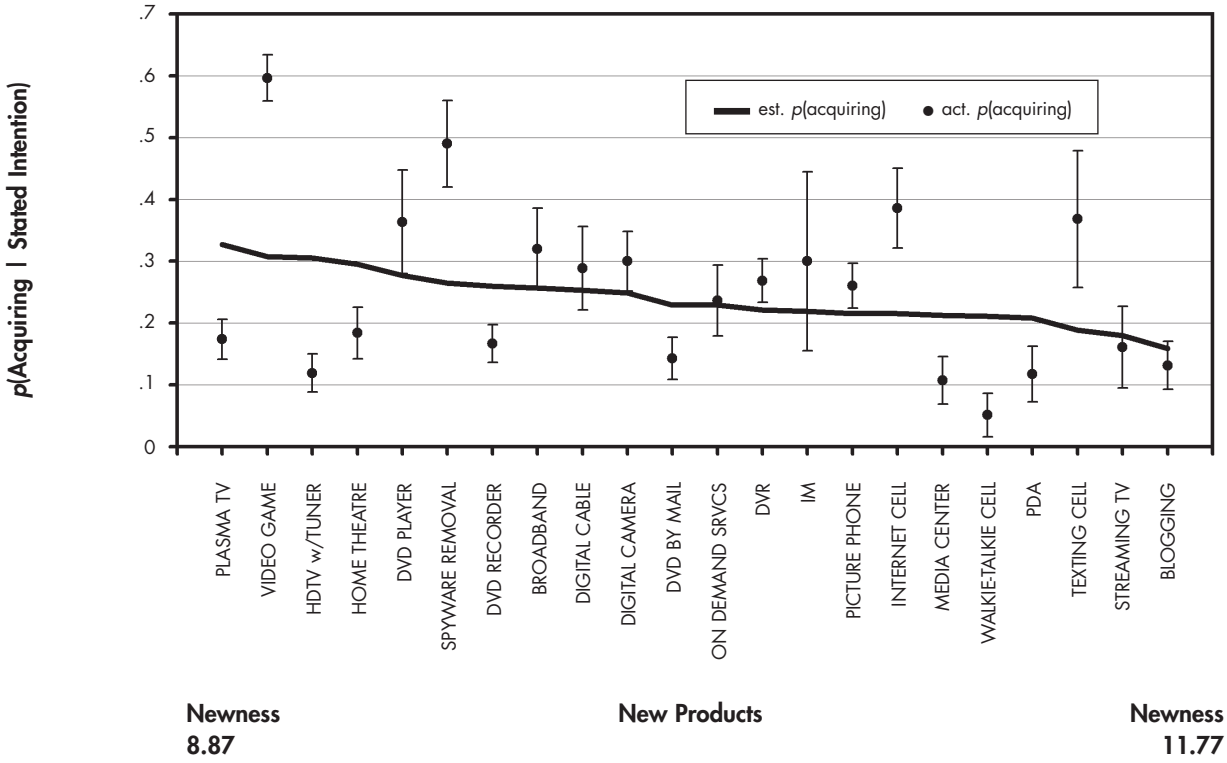
In Study 2, we returned to Study 1 respondents who intended to acquire one or more INP or RNP. We predicted based on construal theory that intenders are less likely to follow through on their positive purchase intentions for newer products (H2) and that this effect of newness on follow-through will grow with time after stating a positive intention to acquire (H3).

Method

Participants. Sixty percent (1,622) of the 2,692 Study 1 participants reported an intention to buy within six months at least one of the 12 products we classified as really new or the 10 we classified as incrementally new. Approximately four months after Study 1, we invited these 1,622 to participate in a follow-up study, and 38% (620) agreed. Those who declined to participate in Study 2 did not differ from those who accepted in terms of age, gender, or the number of the 22 products already owned (52.7% female, mean age 38, with ages ranging from 11 to 77, having reported in Study 1 owning 4.3 INPs and 3.4 RNPs on average).

Figure 2

Effect of Newness on Follow-through on Stated Intentions to Acquire



Error bars around each mean show + and – 1 standard error. The solid line shows the prediction of a logistic regression.
Note: The abscissa of Figure 2 shows only the ordering of newness, not spacing, in order to make product names legible.

Procedures. We e-mailed the 1,622 Study 1 intenders a link to the Study 2 survey's home page that captured their respondent ID number when they visited. Participants entered their age and gender and were then presented with the RNPs and INPs they had said in Study 1 they intended to buy in the next six months. Participants were asked to indicate for each product whether they had bought the product since the earlier survey. For the products they had bought, participants were asked to indicate the month (August, September, October, or November) in which they had purchased the product. Participants responded to a series of questions for another, related research project and were then thanked for participating.

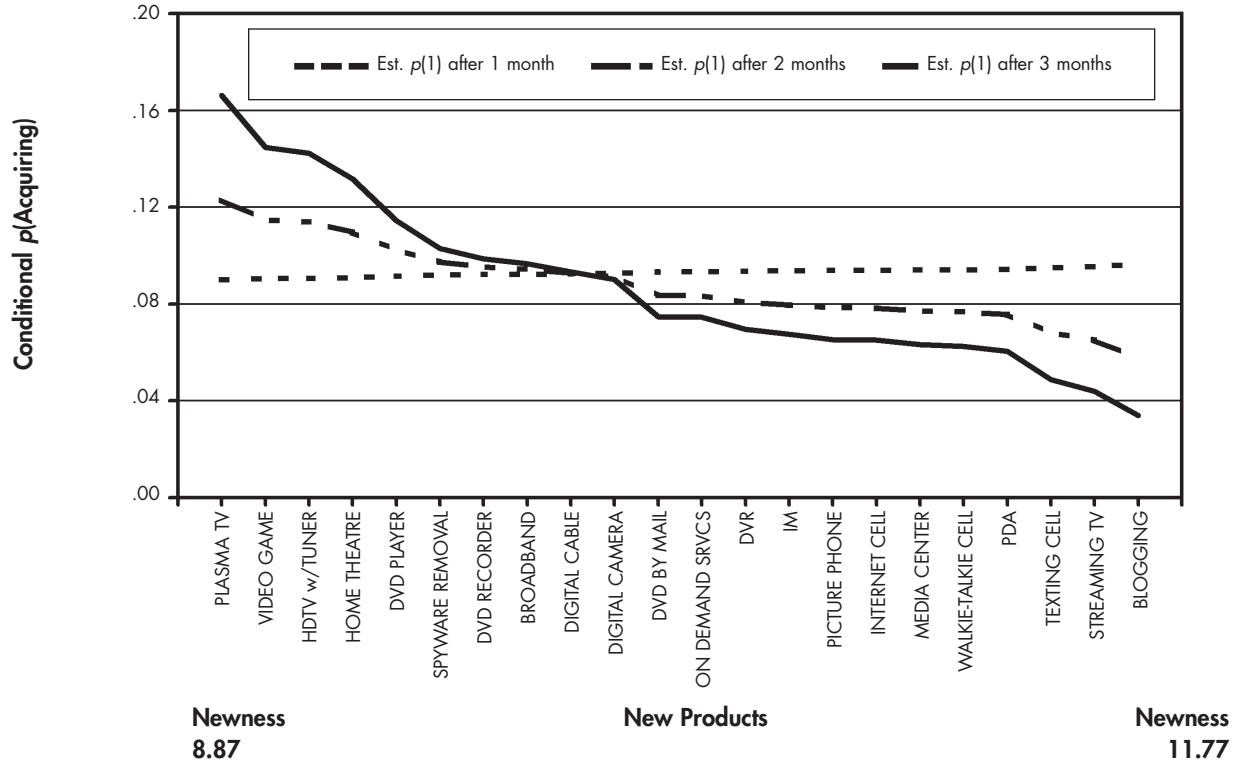
Results

Following Through on Intentions. We fit a binary logit model of participants' reports of whether they had bought a product (1 = Yes, 0 = No) as a function of average product newness and participant random effects to control for within-subjects variance resulting from participants' responding for multiple new products [P(Acquiring | Stated Intention) = f(mean newness, participant (random))]. Consistent with H2, participants who had stated an intention to acquire a newer product were less likely to have reported acquiring the newer products, $b = -1.17$, $\chi^2 = 16.84$, $p < .001$. Figure 2 shows the results, again with error bars denoting plus and minus one standard error. The predicted probability of follow-through is twice as high for the least-new products as for the most-new products studied. These results are only strengthened by adding ownership rate and price to the model ($b = -1.15$, $\chi^2 = 48.67$, $p < .001$).

Timing of Acquisition. For the products respondents reported buying since the Study 1

Figure 3

Effect of the Interaction of Newness and Time on Follow-through on Estimated Hazard Rate of Acquiring in Month *N* Given a Stated Intention to Acquire in Six Months and No Acquisition by Month *N* – 1



Note. The abscissa of Figure 3 shows only the ordering of newness, not spacing, in order to make product names legible.

survey, participants were asked to provide the month in which they had bought the product. Hypothesis 3 is that the negative effect of newness on follow-through should become stronger with the passage of time after stating an intention to acquire. We examined the conditional probability that a person would buy a new product in the *n*th month after stating an intention to buy within six months, given that he or she had not bought the product in a previous month.

To estimate the conditional probabilities in the months after we measured an intention to purchase, we modeled the data using a discrete-time nonproportional hazard rate function (Allison 1995). We fit a binary logit model to the data set with the mean product newness scores and measurements (in months) of the time since purchase intention and their interaction as the independent variables, controlling for participant-specific fixed effects [P(Acquiring in Month N | Stated Intention and No Acquisition by $N-1$) = f(mean newness, month, mean newness × month, participant dummy)]. Newness was mean centered and month was coded so that one month after purchase was scored as 0, following procedures outlined by Irwin and McClelland (2001) to spotlight the simple effect of one interacting variable at particularly meaningful values of the other variable.

There is no simple effect of newness on follow-through rate at the month coded 0 (one month after stating intention) (b = .12, χ^2 = .90). Critically, however, we found a significant interaction of newness with month (b = –.39, χ^2 = 16.12, p < .001), consistent with H3. The simple effect of newness became more strongly negative with time. The interaction is shown in Figure 3. This result only

strengthened when we added ownership rate, price, and their interactions with month to the model ($b = -.64$, $\chi^2 = 29.02$, $p < .001$).

H3 was stated in terms of the increasing simple effect of newness as a function of months; one can alternatively discuss the simple effect of months as a function of newness. Using the methods described in Irwin and McClelland (2001), we estimated the effect of time on the conditional likelihood of following through on purchase intentions at +2 SD (RNP) , +1 SD (RNP), −1 SD (INP) and −2SD (INP), relative to the 22 newness values. We found the simple effect of time was positive and significant for the −2 SD and −1 SD INPs ($b = .80$, $\chi^2 = 34.41$, $p < .001$ and $b = .51$, $\chi^2 = 37.01$, $p < .001$); that is, the likelihood that people followed through on their purchase intentions for INPs increased with time. The simple effect of time was not significant at +1 SD RNP, but was marginally negative at +2 SD RNP ($b = -.35$, $\chi^2 = 3.64$, $p = .057$); the likelihood that people followed through on their purchase declined with time since stating intention. These results were unchanged by adding ownership rate and price to the model, along with their interactions with month, except that the simple effect of time became significant and negative at +1 SD RNP and +2 SD RNP ($b = -.28$, $\chi^2 = 3.98$, $p = .046$ and $b = -.76$, $\chi^2 = 11.87$, $p < .001$).

Discussion

Implications for Marketing Research on New Products. Study 2 adds to the body of work on use of intentions in new product forecasting and to an emerging stream of work on how standard market research measurement techniques must be modified for really new products (Hoeffler 2003; Urban, Weinberg, and Hauser 1996). It is common in marketing forecasting models such as BASES to use intention to buy to forecast trial sales, often by making assumptions about the percentage of those checking the top boxes in intention scales that will actually follow through to purchase (Clancy, Krieg, and Wolf 2006; Morwitz 2001; Morwitz and Schmittlein 1992). The key implication of our research is that standard deflators will be larger for really new products than for incrementally new products. Jamieson and Bass (1989) found that the deflators required were larger for durables than for consumer packaged goods; perhaps this difference might be explainable at least in part by the greater psychological newness of durables. Moreover, prior research has not tested how the intention-to-purchase deflators may differ as a function of temporal distance (Morwitz 1991). Figure 3 suggests that, for really new products, people are progressively less likely to follow through with increasing temporal distance, but for incrementally new products, the opposite is true.

Theoretical Issues. Our findings from Study 2 largely agree with deductions arrived at by combining Hoeffler's (2003) characterization of really new products with temporal construal theory (Trope and Liberman 2003). Construal theory implies that the probability of follow-through should decline for all products the greater the temporal distance between the time an intention is stated and the time of decision, but follow-through should decline more rapidly for psychologically newer products characterized by more high-level benefits and low-level costs. We observed that probability of follow-through declined with time for RNPs, consistent with Castano et al. (2006), but follow-through actually increased over time for psychologically less-new products. This increase requires a theoretical explanation that goes beyond construal theory.

A variety of mechanisms might produce a positive main effect of time that might combine additively with the mechanisms of construal theory or contribute to the time × newness interaction. It may be that respondents answering intent questions are more likely to form an implementation intention for INPs than for RNPs. An implementation intention is an intention that goes beyond stating a goal to perform behavior X (e.g., I intend to get a

Table 2
New Communications and Entertainment Products Used in Study 3

New Product	Study 3 Perceived Newness
Flat screen (plasma) TV*	9.31
Broadband Internet service (cable modem/DSL)*	9.46
Digital cable*	9.93
Portable DVD player	10.01
Home theater with surround sound (Dolby)*	10.11
Satellite radio (e.g., Sirius)	10.23
Digital photo frame	10.40
DVD-by-mail service (e.g., Netflix)*	10.43
Bluetooth cellphone headset	10.45
MP3 player*	10.45
On-demand digital cable service (e.g., HBO On Demand)*	10.68
DVD player with HD up-conversion	10.75
Cell phone with Internet/e-mail access*	10.84
GPS navigation system	10.85
Digital camcorder*	10.93
DVD recorder*	11.10
Personal digital assistant (PDA w/o wireless Internet service)*	11.16
Tablet computer	11.42
Portable video game player (e.g., Sony PSP)	11.48
Digital video recorder (e.g., TiVo, DVR from Time Warner Cable)*	11.48
Computer-to-computer telephone service (e.g., Skype)	11.87
Blogging service*	13.41

* Product also used in Studies 1, 2, and 4

digital video recorder in the next 6 months), so that intenders also specify procedures by which they will attain the goal to do X and the circumstances under which X will be accomplished (e.g., I will call Time-Warner this Friday when they open at 9 AM to arrange for installation of a DVR on the following Monday when I'll be working at home). Research suggests that such contextualized thinking dramatically increases the probability of following through on intentions (Gollwitzer 1999). Dholakia and Morwitz (2002) found that measuring attitudes towards banks led to persistent influence on patronage of those banks over the course of a year. They found that the effects increase for the first six months, with the maximum impact occurring several months after the survey. Levav and Fitzsimons (2006) conjectured that such persistent effects from "mere measurement" are caused by respondents forming implementation intentions, particularly when they can easily mentally represent the behavior. Dahl and Hoeffler (2004) showed that people have a hard time visualizing themselves using RNPs. Study 3 tests whether intenders are more likely to form implementation intentions for acquiring incrementally new products than for acquiring really new products.

H4: In responding to intention questions, people are more likely to form implementation intentions for INPs than for RNPs.

Study 3: Newness Affects Concreteness of Thinking in Forming Intentions

Method

Participants. One hundred and seven MBA students at Duke University were recruited to participate in a two-session research study and were paid $15 for completing both sessions. We focus on measures relevant to testing H4, collected in the first session.

Procedures. Participants were presented with a list of 22 new communications and entertainment products and services (e.g., satellite radio, DVD recorder, flat screen (plasma) TV, portable video-game player) shown in Table 2. They were asked to identify those they currently owned and those they intended to acquire in the next six months.

For each product they did not currently own, participants first rated the four items in the formative product-newness index described in Study 1. Because the sample was so small compared with the sample in Study 1, we

surveyed even those not intending to acquire. Next, participants were asked to rate how informed they felt about the product on a seven-point scale anchored by "completely uninformed" at 1 and "completely informed" at 7 (Davidson et al. 1985). Finally, we measured formation of implementation intentions (concrete intentions) by asking participants to agree or disagree with the statement "I've thought about exactly where and when I would [buy/sign up for] a [product/service]," on a five-point scale from "strongly disagree" to "strongly agree."

Results

Indexing Product Newness. We indexed product newness exactly as we did in Studies 1 and 2, with two exceptions. First, as before, participants rated the four formative newness items only for products they did not already own, but we included responses both from those (few) intending to acquire and from those not intending to acquire who expressed at least moderate familiarity with the product or service. Table 2 lists the 22 products used in Study 3 and their average newness ratings. As in Study 1, we calculated interjudge reliability for mean newness (.91) and for the four newness components (.86 to .89). Second, the list of 22 products and services only partially overlapped, because over a year passed between the studies. Thirteen products were common to the product lists for both Study 1 and Study 3 (e.g., blogging service, digital cable, digital video recorder, DVD-by-mail service, etc.). The correlation of the average product newness scores across these two studies for these 13 products is .86, suggesting that newness perceptions of products are temporally stable among those not owning them.

Implementation Intentions. For the products participants intended to acquire, we regressed implementation intention ratings against mean-centered average product newness, a mean-centered measure of how informed people felt about the product, and a participant dummy [II = *f*(mean newness, informedness, participant dummy)]. Consistent with H4, we found that product newness had a significant, negative effect on the formation of implementation intentions ($b = -.29$, $F(1, 45) = 8.87$, $p = .005$). People formed implementation intentions more often for INPs than for RNPs. Formation of implementation intentions was also positively related to how informed they felt about the product or service ($b = .29$, $F(1, 42) = 11.36$, $p = .002$).

Discussion

This study shows that people are less likely to form implementation intentions for RNPs than for INPs. This may help explain our findings from Study 2 that likelihood of following through on expressed intention to acquire really new products decreased with time but follow-through for incrementally new products increased with time.

Implementation intentions are intentions that are more concrete; they are accompanied by thoughts about the context of planned behavior. Abstractness/concreteness of representation is the fundamental underpinning of construal level (Trope, Liberman, and Wakslak 2007). If newer products are represented more abstractly, newness may be another determinant of psychological distance, along with hypotheticality and temporal, geographic, and social distance (Lynch and Zauberman 2007).

Study 4 tests another implication of the posited more-abstract representation of newer products, namely, that consumers think more abstractly about use of really new products immediately prior to acquiring them, and that this is associated with inaccurate estimates of amount of initial use. A *New York Times* story, "Seductive Electronic Gadgets Are Soon Forgotten" (Hafner 2003), describes the plight of consumers who buy cutting-edge electronic gadgets, only to use them lightly if at all. Thompson, Hamilton, and Rust (2005) observed that consumers give more weight to product capability and

less weight to usability when they evaluate products prior to use than they do when they evaluate products during or after use. Consumers tend to choose overly complex products that do not maximize their satisfaction, resulting in "feature fatigue."

Disuse of new products has very negative consequences for seller and for buyer. For the buyer, disuse of a newly purchased product implies a waste of money and time in searching for the product and becomnig familiar with it, as well as other forms of psychological distress (Mick and Fournier 1998). When a product is purchased but not used as expected, this is likely to lead to negative word-of-mouth that will dampen others' purchases (Moldovan, Goldenberg, and Chattopadhyay 2006). Buyers who use a product less than expected will be disinclined to invest further in the technology (Farley et al. 1987).

In Study 4, we identify consumers who are within a week of acquiring a new technology product or service and ask them to describe in their own words how they expect to use the technology in the first week after acquisition. We expect that consumers will describe their predicted use of really new products more abstractly than the use of incrementally new products.

H5: Consumers acquiring really new products will represent their initial use more abstractly than will consumers acquiring incrementally new products.

More abstract representation of initial use in turn should be associated with inaccurate estimation of the amount of initial use. Therefore we also recorded participants' estimation of expected use in the first week after acquisition and compared this with reported actual use after a week of ownership. We predicted:

H6: Expected and actual use will be more discrepant for RNPs than for INPs.

Study 4: Use of Really New and Incrementally New Products

Method

Participants. Participants were recruited from the CBS Television City online panel as part of another project. Our recruiting procedures for Study 4 required that we identify consumers who were within a week of acquiring one of the 12 RNPs or 10 INPs used in Studies 1 and 2. We recruited consumers who would agree to be surveyed at three points in time: a week before acquisition, one to two weeks after acquisition, and six weeks after acquisition. We report here only portions of the data from the first two waves.

Participants were paid $20 for agreeing to participate in the study and then $5 for each subsequently completed survey, with a $15 bonus for completing all three surveys, or $50 in total. Two hundred and fifty participants agreed to participate in November 2004. We sent them weekly e-mail reminders that inquired whether they were within seven days of acquiring the product in question, sending them to the Wave 1 survey website if they said yes. Of these, 116 completed the Wave 1 survey and 63 completed both the Wave 1 and Wave 2 surveys. In October 2005, we recruited another 1,011 members of the panel to participate. They were paid $10 for agreeing to participate, $6 for each subsequently completed survey, and a $20 bonus for completing all three surveys, or $48 in total. Of these, 528 participants ultimately completed the Wave 1 survey and 238 completed the Wave 2 survey.

Wave 1 Survey. Once participants identified a product they expected to acquire in the next seven days, they were asked to complete the Wave 1 survey. First, we asked participants to provide a one-to-two-paragraph description of their envisioned use of the product in the first week it was available to them. Participants were then asked a set of questions about their expected use of the product during that time period:

- How many minutes or hours do you expect to spend reading through any user instructions for (Product X) in the first week after you have it available to you in your home? (Please use decimals to indicate minutes rather than hours.)
- How many hours do you expect to spend using (Product X) in the first week after you have it available to you in your home?
- On how many separate occasions do you expect to use (Product X) in the first week after you have it available to you?
- What percent of the available functions or features of (Product X) do you expect to use at least once in the first week after you have it available to you?

Participants then responded to a series of items for another related research project. They were then told that they would receive an e-mail inviting them to complete a second survey one week after the date they indicated they would have the new product available for their use. Approximately seven days after that date, participants received the Wave 2 survey invitation.

Wave 2 Survey. In Wave 2, participants were first asked whether they had acquired the new product, and if so, when. Participants who had acquired the product and had it available for 7 to 21 days were then asked to give a one-to-two-paragraph description of their envisioned use of the product in the next week. Participants were then asked this set of questions about their actual use of the product:

- You acquired (Product X) (Z) days ago. Please answer the following questions about your actual use of (Product X) in the first seven days after you got it and had it available at home for your own use.
- How many minutes or hours did you spend reading through any user instructions for (Product X) in the first week after you had it available to you in your home? (Please use decimals to indicate minutes rather than hours.)
- How many hours did you spend using (Product X) in the first week after you had it available to you in your home?
- On how many separate occasions did you use this product in the first week after you had it available to you in your home?
- What percent of the available functions or features of (Product X) did you use at least once in the first week after you had it available to you in your home?

Participants then responded to items for a related research project and were dismissed.

Results and discussion

Differing Product Construals. A total of 602 participants provided free-form responses describing their expected use of a new product they intended to acquire. We dropped 40 of these participants who erroneously provided responses for more than one product. A total of 296 participants provided responses after they had acquired a new product. These responses were decomposed into idea units describing how the participant expected to use the product. Per Liberman and Trope (1998), these idea units were then coded for abstractness by assuming that superordinate, high-level descriptions of an activity fit the structure "[description] by [activity]" whereas subordinate, low-level descriptions fit the structure "[activity] by [description]."

Consider the activity "taking pictures with my digital camera." The high-level description of this activity as "capture memories" fits the first structure (e.g., "I capture memories by taking pictures with my digital camera") but not the second structure (e.g., it is odd to say "I take pictures with my digital camera by capturing memories"). In contrast, a low-level description of that activity ("setting the camera on flash mode") fits the second structure (e.g. "I take pictures with my digital camera by setting it on flash mode") but not the first structure (e.g. "I set my camera on flash mode by taking digital pictures").

Three coders, blind to the hypotheses, coded the structure of each idea unit as superordinate, subordinate, ambiguous, or neither. Idea units with superordinate structure were coded as 1; idea units with subordinate structure were coded as −1; idea units whose structure was identified as neither or ambiguous were coded as 0. Two coders coded all of the idea units. When these two coders disagreed, the third coder would code the idea units. If the third coder agreed with one of the first two coders, the third coder's coding was used. Otherwise, the third coder chose between the first two coders' responses. For each participant, the codings for his or her idea units for a wave were averaged to create an abstractness score for the participant's envisioned product use for that wave. Higher scores indicated more abstract responses.

We analyzed the abstractness scores for participants, using mean newness and the response wave as predictors while controlling for participant and the time of recruitment [Abstractness Score = f(mean newness, participant, wave, recruited group)]. Supporting H5, participants construed newer products more abstractly (b = 1.85, $F(1, 596) = 36.64$, $p < .001$). The two recruitment groups differed, with earlier participants providing more abstract responses, but the two groups did not differ in the effect of product newness on response abstractness.

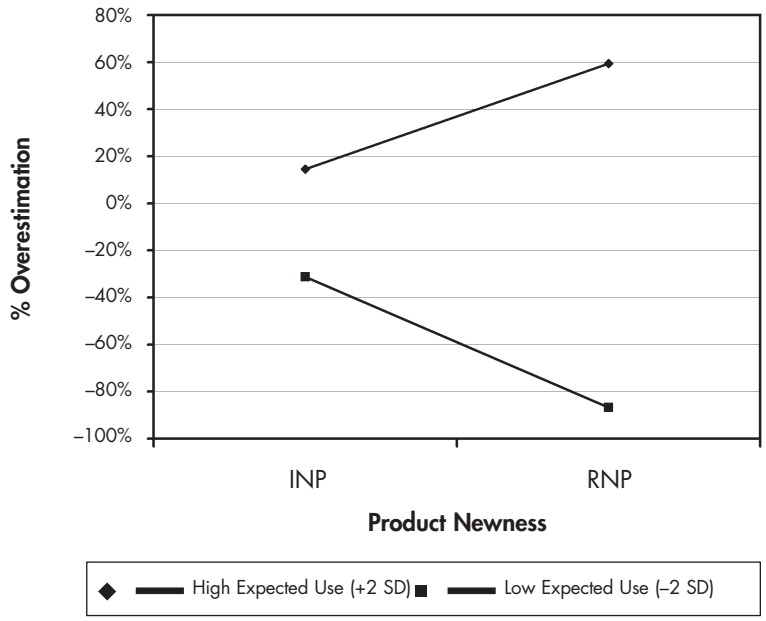
Misestimating New Product Use. To examine how well calibrated consumers are in their estimation of their new product use, we examined participants' responses to how long they expected to use the product and how fully they expected to use the product. We dropped 12 of the 301 participants who completed the wave 2 survey but not the wave 1 survey. We calculated each participant's overestimation of feature use and time of use by subtracting actual use from expected use and dividing the difference by expected use [Overestimation = (Expected − Actual) / Expected]. This allowed us to compare products with very different typical levels of use per week. We winsorized the top and bottom 1% of the distribution to eliminate the influence of outliers. We then standardized participants' expected usage responses across all respondents (mean = 0, SD = 1) to create an independent variable for predicting degree of overestimation for our tests of H6. If calibration is perfect, there should be no simple effect of expected use, and our overestimation index should equal 0. However, if participants are miscalibrated by being insufficiently regressive in their predictions, those expecting a high level of use will overestimate and those expecting a low level of use will underestimate.

We examined the effect of product newness on usage overestimation by performing univariate analyses of covariance on participants' overestimation values, with mean-centered product newness, standardized expected usage, and their interaction as predictors, along with main effects and interactions of recruitment group.[5] For two of our four measures, results supported H6. For the percentage of a product's features that participants used, we found a positive main effect for expected feature usage (b = .48, $p < .001$). Because newness was mean-centered, this implies that for a product of average newness, as expected feature usage increases, feature usage overestimation also increases. Consistent with H6, we found a significant interaction between product newness and expected percentage of features used (b = .28, p =.011). Figure 4 shows that participants who expected to use more product features than the average person overestimated their feature usage to a greater degree for newer products. Participants who expected to use fewer product features than the average person underestimated their feature usage to a greater degree for newer products.

We found a similar pattern of results in participants' overestimation of the time they would spend using a new product. For products of average newness, we found a positive simple effect of expected usage (b =.049, $p < .001$).

Figure 4

Effect of Interaction of Expected Use and Newness on Percentage Overestimation [(Actual Use – Expected Use) / Expected Use]



INPs are –2 standard deviations from the mean in newness, and RNPs are +2 standard deviations from the mean in newness.

We found an interaction between the expected time spent using a new product and product newness (b = .29, p < .02). Supporting H6, as product newness increased, participants showed poorer calibration between their expectations and actual use. The effect of expected use on percentage overestimation was greater for newer products. We found no such interactions for number of usage occasions or time spent reading instructions.

Discussion. We found in Study 3 that consumers think in a less specific way about purchasing psychologically newer products, making them less likely to form implementation intentions. Similarly, in Study 4, we found that people think more abstractly about RNPs than INPs when they are contemplating how they will use the products in the first week after purchase. We also found that expectations of extent of use were well calibrated for INPs, but miscalibrated for RNPs for two of our four measures of use.

General Discussion

At the outset of this paper, we described Segway's success at raising awareness for its revolutionary product that just wouldn't sell. In Study 1, we surveyed members of the CBS online panel about their purchase intentions for 28 new communications and entertainment products and found they were less likely to report intending to buy newer products.

In Study 2, we found that among Study 1 participants expressing positive intentions to buy RNPs or INPs, follow-through was lower for those intending to buy newer products. That is, we found that as the months passed after participants expressed new-product purchase intentions, follow-through was more and more negatively related to psychological newness. Temporal construal theory predicts that follow-through should be lower for really new products than for incrementally new products, because the former are characterized by more extreme benefits and more extreme costs or constraints. The bigger the difference in temporal perspective between the time an intention is formed and the decision of whether or not to follow through, and the more extreme the profile of costs and benefits, the more likely the consumer should be to fail to follow through on an intended purchase.

Further, we found that as the likelihood of follow-through in month N decreased over time for RNPs, it increased for INPs. That is, a momentum toward product purchase grew in participants intending to buy INPs, but that momentum never developed in participants intending to buy RNPs. For marketers of RNPs like Segway, this implies that marketing actions intended to build demand for really new products far in advance of launch may provide little value post launch.

A number of psychological mechanisms may have contributed to this pattern. In Study 3, we found that consumers are less likely to form implementation intentions for RNPs

than for INPs, perhaps contributing to lower likelihood of fulfillment over time in Study 2 (Gollwitzer 1999).

In Study 4, we found that people who were within a week of acquiring INPs and RNPs represented their expected use more abstractly for RNPs. Moreover, we found that people's expectations about extent of use were largely calibrated for INPs, but grossly miscalibrated for RNPs.

Implications

These results are important for both consumer researchers and marketing practitioners. For consumer researchers, our findings from Study 2 show how construal theory can provide insights into how temporal distance affects the intention-behavior link for RNPs and INPs differently. Our findings from Studies 3 and 4 contribute to work on construal theory by showing that psychological newness of products produces abstract thinking very much like other factors affecting construal level (c.f. Trope, Liberman, and Wakslak, in press), and we use that insight to connect work on implementation intentions (Gollwitzer 1999) and construal theory.

Market researchers will be interested in Study 2's finding that for long-term purchase intentions, the intention-behavior link grows weaker as consumers experience greater uncertainty in evaluating the products they intend to buy, but only after a delay. We would expect few product-newness driven differences in purchase-intention follow-through when consumers expect to buy a product shortly after expressing a purchase intention. However, we would expect significant product-newness driven differences in follow-through rates when purchase intentions are formed well in advance of expected purchase opportunities. It is common in new product forecasting models (e.g. BASES) to deflate intention-to-buy measures. Our findings show that the more psychologically new the products, the more deflating purchase intentions require, particularly long-term intentions.

For marketing practitioners, our findings highlight the challenges in marketing RNPs. Earlier, we discussed Segway's unsuccessful efforts to create prelaunch buzz to stimulate intentions to buy when the product was later released. Our findings from Study 2 suggest that for RNPs, purchase intentions formed long in advance result in very little follow-through. Study 2 implies that prelaunch buzz may be more successful for INPs, since follow-through for those products increases over time. So, for example, a new video game title that is incrementally new by Hoeffler's criteria may in fact benefit from prelaunch buzz.

As marketers consider how to position a really new product, they must be aware that consumers are less likely both to form intentions to buy RNPs and to follow through on those intentions. Marketers may be better served positioning a product like the Apple iPhone as an incremental (a smart phone with better Internet and a better interface) rather than a revolutionary improvement (c.f. Hoeffler, Moreau, and Kubowicz-Malhotra 2006). Moreover, the finding that consumers are so miscalibrated about the extent to which they use RNPs implies that sellers of RNPs should expect to have more delighted customers, but also more seriously disappointed customers than would be typical of INPs. This may imply that RNPs may have higher returns and more detractors (Reichheld 2006), with negative word-of-mouth from those who find the product to be less useful than anticipated (Moldovan et al. 2006).

In our research, psychological newness appeared to be an unalloyed negative for marketers. However, the novelty associated with a psychologically new product may make it more likely that news media will carry stories about the new product and that consumers will pay attention to those stories

or advertisements about the product (Alexander 2007). Similarly, because RNPs may be perceived to be higher in novelty and usefulness than INPs, consumers may be more likely to share word-of-mouth information for RNPs, driving diffusion (Moldovan, Goldenberg, and Chattopadhyay 2006). Future research should examine the broad information environment in which people learn about new products and the full scope of processes they go through, from becoming aware of the product to forming a purchase intention to following through and actually using both RNPs and INPs.

Acknowledgments

The authors thank the CBS Corporation and the Marketing Science Institute for financial support of this research, and Ted Kneisler, David Poltrack, and Brian Rodriguez for their help in fielding the research reported. They thank participants at MSI's conference on "Accelerating Market Acceptance in a Networked World" for comments, particularly Doug Milliken of Clorox for his analysis of the application of our framework to business issues facing new product marketers. This article is based in part on the first essay of the doctoral dissertation of David Alexander, written under the direction of John Lynch. The authors thank dissertation committee members Jim Bettman, Carl Mela, and Kevin Weinfurt for comments. They also thank Steve Hoeffler, Wes Hutchinson, Laura Kornish, Don Lehmann, Anne Laure Sellier, Yaacov Trope, Russ Winer, and seminar participants at Duke University, University of Colorado, Columbia University, University of Alberta, University of St. Thomas, New York University, Emory University, and the Hong Kong University of Science and Technology for helpful comments, and Wagner Kamakura for statistical advice.

Notes

1. Those not intending to acquire any unowned products were slightly older, more likely to be female, owned fewer of the 28 products, and those products that they did own were subsequently scored as slightly less new, on average.

2. Measures combined to create a formative index are not assumed to be correlated, as they precede the construct (i.e., in this research, psychological newness) rather than reflect it (Bollen and Lennox 1991). In contrast, reflective measures of a construct are expected to be correlated, as it is assumed that all are caused by the respondents' underlying level on the measured construct.

3. On average, participants reported owning 9.3 (33%) of the 28 new products, including 42% of the 10 products classified as INPs and 26.7% of the 12 products classified as RNPs.

4. The 2,692 participants reported owning 24,912 of the 28 new products we queried them about, which left 50,464 products that participants did not own. They were asked to report their six-month purchase intentions for these products.

5. We did not find significant differences between the sets of recruited participants in either ANCOVA.

References

Alexander, David L. (2007), "Consumer Processing of Advertising for Really New Products." Durham, N.C.: Fuqua School of Business, Duke University, Essay from unpublished Ph.D. dissertation.

Allison, Paul David (1995), *Survival Analysis using the SAS System: A Practical Guide*. Cary, N.C.: SAS Institute.

Bollen, Kenneth, and Richard Lennox (1991), "Conventional Wisdom on Measurement: A Structural Equation Perspective," *Psychological Bulletin* 110 (2), 305-14.

Booz Allen & Hamilton (1982), *New Product Management for the 1980s*. New York, N.Y.: Booz, Allen & Hamilton.

Castano, Raquel, Mita Sujan, Manish Kacker, and Harish Sujan (2006), "Managing Uncertainty in the Adoption of Really New Products: Temporal Distance and Mental Simulation." New Orleans, La.: Tulane University, Working Paper.

Clancy, Kevin J., Peter C. Krieg, and Marianne McGarry Wolf (2006), *Market New Products Successfully.* Lanham, Md.: Lexington Books.

Dahl, Darren W., and Steve Hoeffler (2004), "Visualizing the Self: Exploring the Potential Benefits and Drawbacks for New Product Evaluation." *Journal of Product Innovation Management* 21 (4), 259-67.

Davidson, Andrew R., Steven Yantis, Marel Norwood, and Daniel E. Montano (1985), "Amount of Information about the Attitude Object and Attitude-Behavior Consistency." *Journal of Personality and Social Psychology* 49 (5), 1184-98.

Dholakia, Utpal M., and Vicki G. Morwitz (2002), "The Scope and Persistence of Mere-Measurement Effects: Evidence from a Field Study of Customer Satisfaction Measurement." *Journal of Consumer Research* 29 (September), 159-67.

Eyal, Tal, Nira Liberman, Yaacov Trope, and Eva Walther (2004), "The Pros and Cons of Temporally Near and Distant Action." *Journal of Personality and Social Psychology* 86 (6), 781-95.

Farley, John U., Barbara Kahn, Donald R. Lehmann, and William L. Moore (1987), "Modeling the Choice to Automate." *Sloan Management Review* 28 (2), 5-15.

Foust, Jeff (2006), "Of Segways and Space." *Space Review* (June 5), http://www.thespacereview.com/article/636/1.

Goldenberg, Jacob, Donald R. Lehmann, and David Mazurski (2001), "The Idea Itself and the Circumstances of Its Emergence as Predictors of New Product Success." *Management Science* 47 (1), 69–84.

Gollwitzer, Peter (1999), "Implementation Intentions: Strong Effects of Simple Plans." *American Psychologist* 54 (7), 493-503.

Hafner, Katie (2003), "Seductive Electronic Gadgets Are Soon Forgotten." *New York Times* (October 15), http://www.nytimes.com/2003/10/15/technology/15GADG.html?ex=1381636800%26en=4986ff3b43b1f0c4%26ei=5007%26partner=USERLAND.

Hoeffler, Steve (2003), "Measuring Preferences for Really New Products." *Journal of Marketing Research* 40 (November), 406-20.

———, and Dan Ariely (1999), "Constructing Stable Preferences: A Look into Dimensions of Experience and Their Impact on Preference Stability." *Journal of Consumer Psychology* 8 (2), 113-39.

———, Page Moreau, and Claudia Kubowicz-Malhotra (2006), "Building Evolutionary Bridges for Revolutionary Products." Nashville, Tenn.: Vanderbilt University, Working Paper.

Holak, Susan L., and Donald R. Lehmann (1990), "Purchase Intentions and the Dimensions of Innovation: An Exploratory Model." *Journal of Product Innovation Management* 7(1), 59-73.

Irwin, Julie R., and Gary H. McClelland (2001), "Misleading Heuristics and Moderated Multiple Regression Models." *Journal of Marketing Research* 38 (February), 100-9.

Jaccard, James, and Gregory Wood (1988), "The Effects of Incomplete Information on the Formation of Attitudes toward Behavioral Alternatives." *Journal of Personality and Social Psychology* 54 (4), 580-91.

Jamieson, Linda F., and Frank M. Bass (1989), "Adjusting Stated Intention Measures to Predict Trial Purchase of New Products: A Comparison of Models and Methods, *Journal of Marketing Research,* 26 (3), 336-45.

Johnson, Richard D and Irwin P. Levin (1985), "More than Meets the Eye: The Effects of Missing Information on Purchase Evaluations." *Journal of Consumer Research* 12 (September), 169-77.

LaBay, Duncan G., and Thomas C. Kinnear (1981), "Exploring the Consumer Decision Process in the Adoption of Solar Energy Systems." *Journal of Consumer Research* 8 (December), 271-78.

Lehmann, Donald (1994), "Characteristics of 'Really' New Products." Presented to the Marketing Science Institute Conference, Boston.

Levav, Jonathan and Gavan J. Fitzsimons (2006), "Asking Questions and Changing Behavior: The Role of Ease of Representation." *Psychological Science* 17 (3), 207-13.

Liberman, Nira, and Yaacov Trope (1998), "The Role of Feasibility and Desirability Considerations in Near and Distant Future Decisions: A Test of Temporal Construal Theory." *Journal of Personality and Social Psychology* 75 (1), 5-18.

———, ———, and Elena Stephan, (in press) "Psychological Distance." In *Social Psychology: Handbook of Basic Principles* , Vol. 2, eds. E. Tory Higgins and Arie W. Kruglanski. New York, N.Y.: Guilford Press.

Lynch, John G. Jr., Thomas Buzas, and Sanford Berg (1994), "Regulatory Measurement and Evaluation of Telephone Service Quality." *Management Science* 40 (2), 169-94.

———, and Gal Zauberman (2007), "Construing Consumer Decision Making." *Journal of Consumer Psychology* 17 (2), 107-12 .

Meyer, Robert J. (1981), "A Model of Multiattribute Judgments under Attribute Uncertainty and Informational Constraints." *Journal of Marketing Research* 18

(November), 428-41.

Mick, David Glen, and Susan Fournier (1998), "Paradoxes of Technology: Consumer Cognizance, Emotions, and Coping Strategies." *Journal of Consumer Research* 25 (September), 123-43.

Moldovan, Sarit, Jacob Goldenberg, and Amitava Chattopadhyay (2006), "The Different Roles of Product Originality and Usefulness in Generating Word of Mouth." Jerusalem, Israel: Hebrew University of Jerusalem, Working Paper.

Moreau, C. Page (1997), "A Different Game: Really New Products, Evolving Markets, and Responsive Organizations." Cambridge, Mass.: Marketing Science Institute, Report No. 97-118.

———, Donald R. Lehmann, and Arthur B. Markman (2001), "Entrenched Knowledge Structures and Consumer Response to New Products." *Journal of Marketing Research* 38 (February), 14-29.

———, Arthur B. Markman, and Donald R. Lehmann (2001), "'What Is It?' Categorization Flexibility and Consumers' Responses to Really New Products." *Journal of Consumer Research* 27 (March), 489-98.

Morwitz, Vicki G. (1991), "The Link between Purchase Intentions and Purchase Behavior: Predicting Across Individuals and Over Time." Philadelphia, Penn.: Wharton School of Business, University of Pennsylvania, Unpublished Ph.D. dissertation.

——— (2001), "Methods for Forecasting from Intentions Data." In *Principles of Forecasting: A Handbook for Researchers and Practition*ers, ed. Scott Armstrong, 35-56. Norwell, Mass.: Kluwer Academic Publishers.

———, and David C. Schmittlein (1992), "Using Segmentation to Improve Sales Forecasts Based on Purchase Intent: Which 'Intenders' Actually Buy?" *Journal of Marketing Research* 29 (November), 391-405.

Mukherjee, Ashesh, and Wayne D. Hoyer (2001), "The Effect of Novel Attributes on Product Evaluation." *Journal of Consumer Research* 28 (December), 462-72.

Reichheld, Fred (2006), *The Ultimate Question: Driving Good Profits and True Growth*. Boston, Mass.: Harvard Business School Press.

Rogers, Everett M. (2003), *Diffusion of Innovations,* 5th ed. New York, N.Y.: The Free Press.

Simmons, Carolyn J., and John G. Lynch, Jr. (1991), "Inference Effects without Inference Making? Effects of Missing Information on Discounting and Use of Presented Information." *Journal of Consumer Research* 17 (March), 477-91.

Thompson, Debora Viana, Rebecca W. Hamilton, and Roland T. Rust (2005), "Feature Fatigue: When Product Capabilities Become Too Much of a Good Thing." *Journal of Marketing Research* 42 (November), 431-42.

Trope, Yaacov, and Nira Liberman (2000), "Temporal Construal and Time-Dependent Changes in Preferences." *Journal of Personality and Social Psychology* 79 (6), 876-89.

———, and ——— (2003), "Temporal Construal." *Psychological Review* 110 (3), 403-21.

———, ———, and Cheryl Wakslak (2007), "Construal Levels and Psychological Distance: Effects on Representation, Prediction, Evaluation, and Behavior." *Journal of Consumer Psychology* 17 (2), 83-95.

Urban, Glen L., Bruce D. Weinberg, and John R. Hauser (1996), "Premarket Forecasting of Really New Products." *Journal of Marketing* 60 (1), 47-60.

Winer, B. J. (1971), *Statistical Principles in Experimental Design*. New York, N.Y.: McGraw-Hill.

Wood, Stacy L. and John G. Lynch, Jr., (2002) "Prior Knowledge and Complacency in New Product Learning." *Journal of Consumer Research* 29 (December), 416-26.

Zauberman, Gal, and John G. Lynch, Jr. (2005) "Resource Slack and Discounting of Future Time versus Money." *Journal of Experimental Psychology: General* 134 (1), 23-37.

Zhao, Min (2006), "Thinking about What You Don't Think About: The Role of Mental Simulation in Preference Consistency and New Product Evaluation." Chapel Hill, N.C.: University of North Carolina, Chapel Hill, Unpublished doctoral dissertation.

Report No. 07-112