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Impulse versus opportunistic purchasing during a grocery shopping experience

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Abstract The current study introduces a conceptual distinction between two types of unplanned purchases—impulse purchases (i.e., spontaneous decisions triggered affectively) versus opportunistic purchases (i.e., rational decisions elicited by stimulus exposure)—grounded in separate dynamics of the cognitive processes unfolding during the course of a shopping trip. In a temporal analysis of shopping behavior within a simulated grocery-shopping experience, we found that participants increased their impulse buying but decreased their opportunistic buying, as a function of the number of basket items chosen previously. Similarly, impulse purchases increased in the final stages of the trip, particularly in shoppers without the aid of a shopping list, whereas opportunistic purchases decreased. Ours is thus the first study to report time–course evidence of two types of unplanned purchases within the grocery-shopping experience.

Keywords Unplanned buying · Impulse purchases · Opportunistic purchases · Shopping list · Grocery shopping experience

1 Introduction

The belief that a significant number of the decisions about what to buy when shopping at mass merchandisers occur at the point of purchase increasingly drives marketing research to identify the factors underlying unplanned purchases (Deloitte

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2007). Nevertheless, studies on unplanned buying are still relatively sparse (Bell et al. 2011), particularly from the perspective of the in-store consumer–environment interaction (Inman et al. 2009), with most studies focusing on the person rather than the purchase (Beatty and Ferrel 1998; Kollat and Willett 1967; Park et al. 1989). The purpose of the current investigation was to employ a temporal analysis of purchases at the basket level, where unplanned purchases are considered integral to the shopping experience.

1.1 A cognitive model of the shopping experience

A conceptual framework is helpful in characterizing the mental processes that accompany planned and unplanned purchases as the shopping trip unfolds. Yet while much research has emphasized the strategic importance of the store entrance (Sorensen 2010; Underhill 1999) and even the initial adaptation to the store environment, there still is relatively little understanding of how mental states evolve dynamically once the consumer has passed the entrance. To address this void, we propose a three-stage model of the perceptual and executive control activities that develop through the course of the shopping trip.

1. The transition stage. As the trip commences, shoppers adapt perceptually to the sensory environment of the store, remembering or organizing their ideas about what to buy (cf. Underhill 1999; Sorensen 2010). Here, the shopping trip imposes low levels of information load, thereby freeing cognitive resources, permitting ample capacity to perform the basic cognitive activities necessary to carry out the task at hand. The transition stage thus involves an active posture towards the store environment (Titus and Everett 1996), one dominated by visual search (to identify and select wanted products) and inhibitory control (to eschew exposure to unwanted products). As a result, selection rates during this stage are hypothesized to be greatest for planned items and least for impulse purchases.
2. The procurement stage. The present paper investigates grocery shopping, which is primarily a procurement activity (Bawa and Ghosh 1999). We hypothesize that the procurement stage places a premium on three cognitive processes: (1) visual perception, used to scan the store environment for sought-after products; (2) working memory, used to rehearse the shopping list and maintain a mental budget; and (3) decision-making about whether or not to purchase a perceived item. Shoppers here respond rationally (Block and Morwitz 1999) to prices (Bell and Lattin 1998) and promotional policies (Krishna 1994). As the stage progresses, the continuous exercise of these three processes leads to a steady buildup of cognitive load in tandem with a gradual exhaustion of inhibitory resources (see Vohs et al. 2008). Purchase of planned items are expected to decrease steadily, while needed items absent from the shopping list—hereafter, opportunistic purchases—dominate unplanned selections. As the consumer's cognitive reserve is depleted, affective features of products begin to significantly influence decision-making (Bruyneel et al. 2006; Shiv and Fedorikhin 1999).
3. The inspection stage. With procurement duties over, the shopper engages in an overall review of the products in the cart to fill in any missing items. With inhibitory control weakened from continuous decision-making and compromise,

shoppers are more prone to react passively to stimuli (Titus and Everett 1996) and to engage in buying urges with an emotional trigger (Vohs and Faber 2007). Consequently, as the shopping trip ends the rate of impulse purchase are expected to increase noticeably, whereas the rate of planned and opportunistic purchases plummets.

1.2 Two types of unplanned purchases: impulse versus opportunistic

In the marketing literature, the term unplanned purchase is normally used interchangeably with impulse purchase (but see Piron 1993); the roots of unplanned purchases are thought to be affective. However, our conceptual model implies that unplanned purchases are best bifurcated into impulse purchases and opportunistic purchases. On this view, opportunistic purchases—rational purchases elicited by stimulus exposure—have more in common with the cognitive processes used to select planned items than they do with impulse purchases. Both planned and opportunistic purchases have a rational trigger based on need (Sorensen 2010), resulting from an active shopping stance. Because opportunistic purchases often are linked to aspects of the store environment (Inman et al. 2009), the absence of a shopping list, and an increased use of the store environment as a memory cue (Block and Morwitz 1999), their frequency should be more erratic than planned purchases, which should decrease gradually as the shopping trip unfolds. Yet because opportunistic purchases draw on the same procurement processes of perception, working memory, and decision-making as planned purchases, they should predominate during the procurement stage, and fall off greatly during the later inspection stage of the shopping trip.

By contrast, impulse purchases—spontaneous decisions that follow an emotional urge to purchase (Babin et al. 1994; Rook 1987; Rook and Fisher 1995)—are the byproduct of cognitive biases that grow during the trip, such as breakdowns in self-regulation (Baumeister 2002; Vohs and Faber 2007; Sultan et al. 2011). According to our model, these biases should predominate during the inspection stage when cognitive resources are largely spent. Here, the loss of inhibitory control prevents resistance to the temptation of affective product features. Unlike rational purchases, impulse purchases do not draw on attentional resources but are, in fact, the result of a passive stance toward the shopping environment (Liu et al. 2008). Thus, we predict that impulses purchases will reveal a buying pattern exactly opposite to that of opportunistic purchases.

1.3 The current study

The goal of the current investigation was to measure the time course of impulse versus opportunistic purchases during a simulated grocery-shopping trip. For each basket item not included in the designated shopping list, participants were asked to determine on a four-point scale whether the item was selected because of necessity or emotion; scale values were split at midpoint to code the type of unplanned purchase: impulse or opportunistic. We then examined how often planned, impulse, and opportunistic purchases occurred during different stages of the shopping trip. We were especially interested in the number of prior decisions made before each

purchase, a proxy for resource depletion. We predicted that due to the role of diminished cognitive capacity on self-regulation, impulse purchases, but not planned or opportunistic purchases, would increase with the number of prior purchases. We also predicted that with procurement needs gradually satisfied planned and opportunistic purchases, but not impulse purchases, would decrease steadily as time on trip unfolded, being especially rare in the final moments of the trip where impulse purchases would peak. Finally, since all types of purchases involve the expenditure of cognitive resources in the store environment, we expected the use of a shopping list, which greatly reduces cognitive drain (Block and Morwitz 1999; Liu et al. 2008) to moderate the foregoing relationships.

2 Method

2.1 Participants

Thirty-nine undergraduate and graduate participants (20 males, 19 females; average age, 25 years) from a large public university community were recruited through flyers distributed throughout the university campus. All participants gave written informed consent according to the institutional guidelines prior to testing.

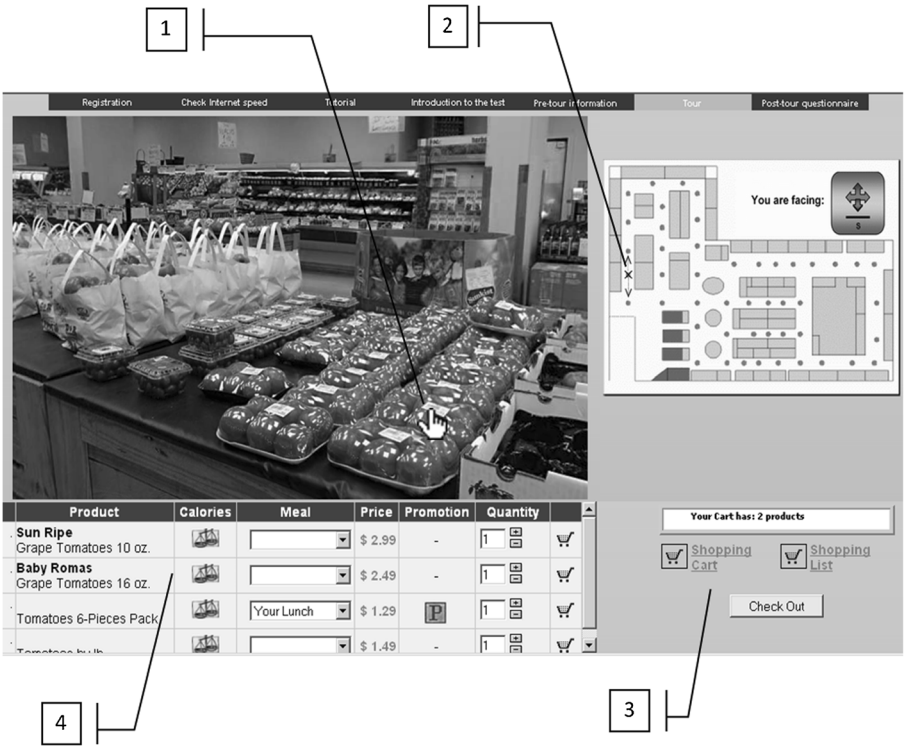

Fig. 1 A view of the simulated grocery store

2.2 Stimulus environment

Forty-six panoramic photographs were used to create a simulated store environment of a small, family-owned grocery store (approximately 5,000 ft^2; see box 2 in Fig. 1 for store layout). The panoramic photographs were merged with a dataset containing information on 1,463 products (60 different product categories with an average of 25 different products per category; 97 % of total store assortment) to associate through a web interface each product in the simulated environment with corresponding product information.

Figure 1 depicts the web-enabled store, containing a window through which the user viewed the store (box 1). Participants interacted with the interface using a normal computer. The user activated the product menu (box 3) by clicking on the shelf containing the relevant items. The menu immediately displayed the product's name, brand, size, price, and promotional information. The user could view several products at once, selecting items to purchase using the shopping cart icon on the far right. A control menu (box 4) included three command buttons to access the shopping cart, the shopping list, or to check out.

2.3 Procedure

Participants first made a pre-trip rating of mental effort on a seven-point scale, followed by a tutorial in the use of the supermarket simulation. They were instructed to choose as they would in an actual quick trip to the grocery store. Participants created a shopping list of routine needs from a panel of specific products actually in the store. Those who indicated that they typically did not use lists when shopping were instructed to memorize the products on their list, which was not subsequently available. Participants were asked to keep their budget below $50 (see Nielsen 2011). A prompt every 5 min reminded participants to be both fast and accurate, previous pilot studies having indicated that the prompts speeded completion of the shopping trip without introducing the stress of a continuous clock counter.

Participants made a post-trip rating of mental effort. Recordings also included three proxy indicators of mental fatigue: the number of choices made prior to each purchase, the time elapsed on trip when each selection was made, and the deliberation time for each purchase. Finally, participants judged on a four-point scale the selection basis of each basket item not contained in the shopping list, with 1 corresponding to "forgotten necessity," 2 to "more forgotten necessity than emotional impulse," 3 to "more emotional impulse than forgotten necessity," and 4 to "emotional impulse."

3 Results

3.1 Analysis of internal validity

Internal checks (see Table 1) indicate that the shopping experience in our simulated environment conformed well to results from other research settings (see also Burke et al. 1992). The shopping trip lasted 15 min on average (SD=5; reported range, 13.4–18.5 min for quick and fill-in trips; Sorensen 2010). The average bill was $42

(SD=$9; reported range, $30–80; SymphonyIRI 2011). The average shopping cart contained 15 products (SD=4; reported purchase size 12 products; Sorensen 2010). Shoppers dwelled in front of store shelves for 33 s on average (SD=23; reported average, 30.2 s for fill-in trips; Sorensen 2010). On average, 38 % of purchases were unplanned (reported range, 27–37 %; Bell et al. 2011). Shopping list fulfillment in our study was high (above 85 %, compared with 80 % in Block and Morwitz (1999)). Seven of the ten categories purchased corresponded to what Nielsen (2011) reports as the most purchased categories in fill-in shopping trips (see Table 3). Finally, 33 % of our sample used a shopping list (reported range for everyday purchases 33–59 %; O'Connell et al. 2012).

3.2 Analysis of purchase types

Mental effort at post-trip was significantly higher than at pre-trip (2.97 vs. 4.28; $F(1, 77)=19.23$, $p<0.01$). The three indicators of mental fatigue (number of prior choices, time elapsed, and deliberation time) were significantly correlated at the purchase level, with prior choices and time elapsed being especially strongly related ($r=0.77$, $p<0.01$; time elapsed and deliberation time, $r=0.22$, $p<0.01$; prior choices and deliberation time, $r=0.09$, $p<0.05$).

Ratings of unplanned purchases (1=forgotten necessity, 4=emotional impulse) conformed to a normal distribution ($F_1=58$, $F_2=68$, $F_3=51$, $F_4=43$; average=2.36; median=2; SD=1.07; skewness=0.20). Nevertheless, the slight distributional skewness combined with the sizable frequency of endpoint (1 or 4) ratings justified bifurcation (MacCallum et al. 2002) of unplanned purchases into opportunistic (1 and 2 s) versus impulse (3 and 4 s) purchases by splitting scale values at midpoint. Importantly, the results were identical after reanalysis using a median split of scale values.

Table 2 presents the results of six-probit models conducted to predict by list usage the number of purchases (across the three types: planned, opportunistic, and impulse) shoppers made as a function of the three mental fatigue indicators, with subject included as a random factor. The probit model ensured that we captured the multilevel structure of the dataset (i.e., 581 cases by 39 subjects). We found that the intraperson

Table 1 Descriptive statistics on shopping diagnostics (39 subjects)

Measure	Unit	Mean	SD
Time spent	Seconds	789.6	322.2
Products on the shopping list	Number	10.6	4.8
Products in the shopping cart	Number	14.9	4.6
Planned purchases	Number	9.2	4.9
Unplanned purchases	Number	5.6	4.1
Store familiarity	1–7 Scale	3.8	1.8
Brand knowledge	1–7 Scale	5.5	1.8
Grocery bill	$	42.2	11.8
Usage of the shopping list	Sample quota	33 %	

correlation (i.e., a measure of how much the purchases are correlated at the level of the individual) was lower for list users than nonusers for both planned and opportunistic purchases (i.e., shoppers more similar to each other), but not for impulse purchases. Nevertheless, we observed a marked difference overall between list users and nonusers, thus implicating list usage as an important moderator of the relationships under investigation. For nonusers, the number of prior purchases was a significantly positive predictor of impulse purchases, but not of planned purchases. Importantly, opportunistic purchases decreased significantly with number of prior purchases, consistent with the idea that resource depletion affects the two types of

Table 2 Results of six-probit models conducted to predict by list usage the number of purchases (across the three types: planned, opportunistic, and impulse) shoppers made

	Coefficients and model fit statistics[a,b]		
Predictors	Planned	Opportunistic	Impulse
Non-users			
Prior choices	−0.02 (0.11)	−0.19* (0.12)	0.26* (0.11)
Absolute elapsed time	−0.05 (0.13)	0.07 (0.13)	−0.01 (0.12)
Deliberation time	0.02 (0.06)	−0.11 (0.06)	0.09 (0.07)
Constant	0.52 (0.30)	−0.19 (0.29)	−2.16** (0.32)
ρ (intraperson correlation)[c]	0.47 (0.09)	0.34 (0.09)	0.14 (0.08)
Wald χ^2 (3)	1.69	7.72	16.13
p Value	0.638	0.052	0.001
N	377		
Number of groups	26		
Mean obs. per group	14.5		
List users			
Prior choices	0.05 (0.12)	−0.14 (0.11)	0.12 (0.13)
Absolute elapsed time	−0.29* (0.14)	0.16 (0.14)	0.16 (0.14)
Deliberation time	−0.05 (0.08)	0.03 (0.08)	0.01 (0.09)
Constant	1.31** (0.26)	−1.09** (0.41)	−1.95** (0.44)
ρ (intraperson correlation)[c]	0.23 (0.11)	0.08 (0.14)	0.18 (0.12)
Wald χ^2 (2)	9.21	1.92	9.55
p value	0.026	0.589	0.022
N	204		
Number of groups	13		
Mean obs. per group	15.7		

[a] SE in parentheses

[b] The xtprobit procedure (in Stata) significantly mitigates the concerns of collinearity because the procedure by default omits correlated variables. Besides, employing only one of the two "duration/number" measures did not alter the significance of the model coefficients.

[c] We find a significant (i.e., non-zero), although not disturbing effect given to personal variation, our principal effects remained intact even when the multilevel structure of the data was ignored (i.e., subject ID was not included in the model).

*p<0.05, significant; **p<0.01, significant

unplanned purchases differently. For list users, the number of planned purchases decreased steadily as time on trip elapsed. Time elapsed was unrelated to the number of impulse or opportunistic purchases made, whether or not participants used a list. Deliberation time was not a direct predictor of any type of purchase.

3.3 Analysis of single purchases

We grouped the number of prior purchases into quintiles ($Q1$=2, $Q2$=5, $Q3$=8, $Q4$=11, $Q5$=16) to analyze shopping patterns at different stages of the trip. Figure 2a depicts the results, revealing an increase in impulse purchases at later stages of the shopping trip (F_{impulse} (1, 580)=10.99, p<0.01), but a decrease in opportunistic purchases ($F_{\text{rational unplanned}}$ (1, 580)=3.80, p<0.01; F_{planned} (1, 580)=0.87, *ns*).

Figure 2b summarizes results of impulse purchases for participants who had a shopping list in hand (n=13) versus those who did not (n=26). Here, we found that list usage interacted with the number of prior choices (F_{impulse} (4, 577)=3.31, p<0.01), with the absence of a shopping list associated with a spike in impulse purchases during the final stage of the trip. This pattern was not present for either planned or opportunistic purchases, (F_{planned} (4, 577)=0.46, *ns*; $F_{\text{rational unplanned}}$ (4, 577)=1.59, *ns*). However, the number of opportunistic purchases was significantly greater without the benefit of a shopping list (73 vs. 56 %; F(1, 580)=16.28, p<0.01), whereas the number of planned purchases was smaller (13 vs. 27 %; F(1, 580)=16.69, p<0.01). Moreover, self-reported mental effort was significantly higher in the absence of a shopping list (F(1, 77)=10.34, p<0.01), with the difference in mental effort pre-trip to post-trip marginally greater without the list (F(4, 74)=3.07, p<0.08).

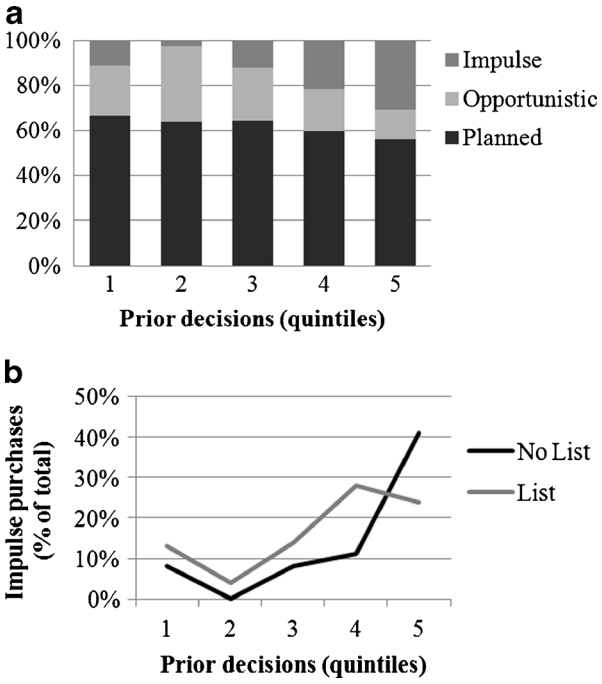

Fig. 2 Results that reveal an increase in impulse purchases at later stages of the shopping trip

Table 3 summarizes the rankings of the top 10 categories for each purchase type (69 % of total purchases). Nonparametric correlations confirmed a greater degree of similarity between planned and opportunistic purchases (ρ=0.70, p<0.01) than between planned and impulse purchases (ρ=−0.43, *ns*) or opportunistic and impulse purchases (ρ=−0.16, *ns*).

4 Discussion

The current study introduced a conceptual distinction between two types of unplanned purchases—impulse purchases and opportunistic purchases—grounded in separate dynamics of the cognitive processes unfolding during the course of a shopping trip. In a simulated grocery-shopping experience, we found evidence consistent with this distinction. Participants increased their impulse buying, but decreased their opportunistic buying, as a function of the number of basket items they selected previously. Similarly, impulse purchases increased in the final stages of the trip, particularly in shoppers lacking a shopping list, whereas opportunistic purchases decreased. Ours is thus the first study to report time–course evidence of two types of unplanned purchases within the grocery shopping experience.

4.1 Implications

The results of the present study hint at the cognitive activities driving different types of purchases in mass merchandizing situations. According to our perspective, impulse

Table 3 Rankings of the top 10 categories for each purchase

							Top 10 categories in fill-in trips		
Rank #	Planned purchases	n	Opportunistic purchases	*n*	Impulse purchases	*n*	Current study	*N*	Nielsen (Nielsen 2011)
1	Fresh produce	71	Fresh produce	36	Salty snacks	12	Fresh produce	112	Milk
2	Meat	30	Meat	12	Deli	8	Meat	49	Bakery
3	Bakery	30	Canned vegetables	12	Soft drinks	8	Bakery	47	Pet care
4	Milk	20	Milk	11	Sauces	6	Cheese	39	Cheese
5	Eggs	20	Cheese	10	Cookies	6	Milk	31	Salty snacks
6	Cereal	19	Bakery	9	Fresh produce	5	Deli	31	Soft drinks
7	Cheese	19	Pasta	7	Meat	5	Cereal	24	Frozen meals
8	Deli	18	Canned meat	5	Cheese	4	Eggs	23	Fresh produce
9	Salty snacks	17	Deli	4	Canned meat	4	Soft drinks	23	Ice cream
10	Soft drinks	13	Salty snacks	3	Cereal	4	Salty snacks	20	Cereals
Total		257		109		62		399	

purchases are fueled by breakdowns in the inhibitory control processes normally used to ward off salient or distracting stimuli in complex multisensory environments such as the grocery store. In our view, the fatiguing of these control processes is itself spurred by the incremental draining of cognitive resources that accompanies the repeated perceptual comparisons, working memory maintenance, and decision-making required to meet procurement needs. In this way, the cognitive operations that support planned purchases also enable opportunistic purchases (through perception and working memory), yet ultimately lead to impulse purchases (through loss of capacity). Indeed, we found that the absence of a shopping list greatly exacerbated this process, stirring a burst of impulse purchases as the shopping trip ended, perhaps because mental fatigue increased rapidly for participants forced to rely solely on working memory for their planned purchases. The lack of a shopping list may also encourage search and exploratory behavior within the shopping environment, speculation consistent with our discovery of more opportunistic purchases in the absence of a list. In view of the scant literature on the use of a shopping list as a memory aid (Block and Morwitz 1999; Liu et al. 2008), we recommend that future research follow up on our conjecture.

The results of the current study further understanding of the relationship between hedonic and utilitarian value in shopping. In essence, our results support a view of fun following work. Although consumers may dislike utilitarian activities per se, they may learn to enjoy a self-reinforcing system of promised rewards, one in which a prize is given at the completion of the task. This interpretation is consistent with the reported correlation between utilitarian and hedonic values (Babin et al. 1994), suggesting a more formal relationship between the two constructs. On one account, ordinary work leads naturally to hedonism, thus connecting hedonism to consumption.

Our distinction between rational unplanned and impulse purchases also implies an intrinsic relationship between unplanned purchases and the store environment. Inman et al. (2009) assert that in-store stimuli function as external memory cues with store displays and hedonic stimulus categories affecting unplanned purchasing. Yet, these authors still equate unplanned purchasing with impulse buying. By contrast, the results of the present paper suggest that category characteristics play a different role from displays with respect to unplanned purchases; specifically, whereas hedonic categories elicit impulse purchases, in-store displays and eye-catching environmental cues (e.g., colors, facings, shelf space, markers, etc.) exert greater influence on opportunistic purchases.

4.2 Limitations

We note several potential limitations of our research design. One is our use of a virtual shopping simulation. Although the simulation provided us with exquisite experimental control over the physical environment, it also perhaps introduced a certain degree of artificiality over typical shopping trips (e.g., our use of pop-up prompts). Nevertheless, we found in manipulation checks that our findings compared favorably with findings obtained within more traditional shopping environments. Similarly, our use of a subject population comprised of 39 students may have constrained the reliability and generalizability of our results to a broader population. It might be argued, for example, that our study underestimated the number of shoppers who depend on a shopping list, despite falling within current market estimates (e.g., O'Connell et al.

2012 report a rising trend from 33 to 59 % from February 2009 to January 2012). Thus, we recommend caution in applying our results to other contexts. We are especially concerned that the small sample size may have limited the statistical power of our analyses, which would explain why certain outcomes—such as the interaction between prior choices and its natural covariate, time elapsed—failed to reach statistical significance. We thus recommend that our study be replicated on a larger sample.

The current study only examined associations between time course/number of prior decisions and shopping behavior. We did not directly manipulate any of the cognitive processes hypothesized to support different shopping behaviors (e.g., perception, inhibitory control, working memory, and decision processes), nor did we directly investigate any possible mediating variables (e.g., cognitive load). Follow-up research will need to explicitly introduce cognitive loads on working memory and decision making to measure their effects on impulse and rational unplanned buying. Nevertheless, to the best of our knowledge, ours is the first study to identify distinct temporal patterns in these two forms of buying.

5 Conclusions

Even in the most recent literature, impulse purchases are generally left undistinguished in theory or measurement from other forms of unplanned purchase. This paper fills a void in research on unplanned buying by offering a conceptual model of the time course of cognitive processes during shopping. The model makes a theoretical and fully intuitive distinction between two types of unplanned purchases: impulse versus opportunistic. Results reported here demonstrate that these two types of purchases follow distinct temporal patterns and are mediated by distinct factors.

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