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From Point of Purchase to Path to Purchase: How Preshopping Factors Drive Unplanned Buying

Many retailers believe that a majority of purchases are unplanned, so they spend heavily on in-store marketing to stimulate these types of purchases. At the same time, the effects of "preshopping" factors—the shoppers' overall trip goals, store-specific shopping objectives, and prior marketing exposures—are largely unexplored. The authors focus on these out-of-store drivers and, unlike prior research, use panel data to "hold the shopper constant" while estimating unbiased trip-level effects. Thus, they uncover opportunities for retailers to generate more unplanned buying from existing shoppers. The authors find that the amount of unplanned buying increases monotonically with the abstractness of the overall shopping trip goal that is established before the shopper enters the store. Store-linked goals also affect unplanned buying; unplanned buying is higher on trips in which the shopper chooses the store for favorable pricing and lower on trips in which the shopper chooses the store as part of a multistore shopping trip. Although out-of-store marketing has no direct effect, it reinforces the lift in unplanned buying from shoppers who use marketing materials inside the store. The authors discuss the implications for retailers.

Keywords: consumer behavior, Poisson model, retailing, Tobit model, unplanned buying

> Supermarkets are places of high impulse buying … 60 to 70 percent of purchases there were unplanned, grocery industry studies have shown us. (Underhill 2000, p. 101)

Acting in accordance with the widespread belief that many purchases are unplanned, managers invest considerable resources inside the store to influence shoppers. Recently, the Grocery Marketing Association (2007) forecasted a compound annual growth rate of more than 20% for in-store marketing budgets; furthermore, according to *Advertising Age*, "the oft-quoted statistic that consumers make 70% of brand decisions in the store boosted shopper marketing and made other advertising seem almost pointless" (Neff 2008). Although unplanned buying clearly results from exposure to in-store stimuli, we argue that it also depends on conditions established before the shopper enters the store, some of which are under the retailer's control. We take the retailer's perspective and focus on these largely ignored out-of-store factors, including the overall trip goal and other shopping trip antecedents, while controlling for known in-store drivers. Retailers can benefit by generating additional unplanned buying from their existing shopper base.

Unplanned buying is essential to retailers, but academic research is sparse, and what constitutes "unplanned buying" differs by study. We examine unplanned category purchases because a majority of items on shopping lists are at the category, rather than the brand or stockkeeping unit, level (Block and Morwitz 1999); our dependent variable, the total number of unplanned category purchases per trip, enables us to assess the basket-level impact of the out-of-store factors. Classic (e.g., Kollat and Willett 1967) and recent (e.g., Inman, Winer, and Ferraro 2009) articles have studied category characteristics and shopper activities inside the store that have implications for consumer welfare (e.g., ways consumers can safeguard themselves from "too much" unplanned buying). In contrast, we explore the role of consumer preshopping strategies and show how a retailer can use this "shopping trip antecedent" perspective to stimulate unplanned buying.[1]

In summary, we study how what a shopper "brings to the store" affects how he or she behaves when "inside the store." We focus on actionable trip-level drivers, such as the

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[1]Several major retailers (including Wal-Mart) increasingly target customers according to the purpose of their shopping trip (Fox and Sethuraman 2006); we validate this orientation as an approach to understanding unplanned buying (see the "Discussion and Conclusion" section).

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abstractness of the overall shopping goal (Lee and Ariely 2006) and specific goals associated with store choice (e.g., those related to anticipated prices and assortments, as in Bell and Lattin [1998] and Briesch, Chintagunta, and Fox [2009]). Controlling for the main effects of in-store stimuli, we examine the interaction between out-of-store and in-store promotions (Kahn and Schmittlein 1989, 1992). We build on studies linking shopping trip antecedents to in-store choices (e.g., Briesch, Chintagunta, and Fox 2009; Hansen and Singh 2009; Kahn and Schmittlein 1989, 1992) and show how they affect unplanned buying.

In contrast with most published research, we use diary panel data to investigate unplanned buying. Panel data are critical to our substantive objective; a positive relationship between, for example, shopping goal abstractness and unplanned buying in cross-sectional data cannot distinguish two rival explanations: (1) Abstract-goal shoppers (a specific shopper segment) do more unplanned buying, and (2) these same shoppers do more unplanned buying on trips when their shopping goal is abstract. If the former explanation is true, retailers may only be able to augment unplanned buying by attracting certain types of shopper; if the latter is true, more unplanned buying can be generated from the existing customer base. This distinction is crucial because it is more costly for the retailer to pursue a strategy based on the first explanation than the second.[2]

We contribute three new findings to the collective knowledge on unplanned buying. First, unplanned buying increases monotonically with the abstractness of the overall shopping goal the shopper holds before entering the store. Second, store-linked goals held before shopping produce trip-specific changes in unplanned buying. On trips in which the household chooses the store for good pricing and shopping convenience, there is more unplanned buying; on trips in which the household chooses the store as part of a multistore shopping strategy, there is less (more than one store-specific goal can be activated on a trip). Third, out-of-store marketing has no direct effect on unplanned buying; however, exposure to out-of-store marketing reinforces the lift in unplanned buying when shoppers report using marketing inside the store. We show that the collective revenue impact of these effects is significant, and we offer some preliminary evidence that the "abstract-goal" effect differs across retail formats for the same shopper. Although hard discounters receive a larger share of shoppers' abstract trips, a shopper visiting a full-service supermarket with an abstract shopping trip goal does even more unplanned buying (i.e., more than that with the abstract goal alone).

We organize the rest of the article as follows: We first summarize prior findings, introduce our shopping trip antecedent perspective, and develop our hypotheses. Next, we describe the unique diary panel data (more than 18,000 purchases in 58 categories from more than 3000 trips, 400 households, and 23 stores) and measures. Then, we specify Poisson and Tobit models and report the findings. In the final section, we offer implications for managers and researchers.

[2]We thank an anonymous reviewer for suggesting this important clarification.

Literature Review and Conceptual Development

Our objective is to understand how shoppers' goals and the marketing they are exposed to before they enter a store shape their unplanned buying decisions when they are inside the store. We begin with a brief summary of previous findings and then introduce our conceptual framework and hypotheses.

Prior Research

In their classic study, Kollat and Willett (1967) find that unplanned buying is positively related to transaction size and negatively related to shopping lists and the number of years married. By examining the frequency of past customer experience with the chosen unplanned items, they surmise that "in-store stimuli usually reminds shoppers of present or future needs rather than evoking new needs" (p. 30). Granbois (1968) finds that unplanned buying increases with time spent in the store, the number of aisles shopped, and the number of people in the shopping party. Park, Iyer, and Smith (1989) find that shoppers do the most unplanned buying when they are in unfamiliar stores and under no time pressure. Beatty and Ferrell (1998) focus on individual differences and find that the "propensity for impulsiveness" trait is a significant driver of unplanned buying. Rook and Fisher (1995) study individual differences as well; they show that normative evaluations moderate the acceptability of impulse buying—purchasing a gift on impulse is a good thing, but splurging on oneself is not. Drawing on the self-control literature, Inman, Winer, and Ferraro (2009) predict and find that certain category characteristics, such as hedonicity, and consumer in-store activities, such as the number of aisles shopped, increase unplanned buying across shoppers.

We provide more information on prior findings and methods in Table 1. A common theme across these articles is the focus on in-store drivers of unplanned buying and the effects of individual difference variables (i.e., demographics and shopping habits). Our study complements these by examining out-of-store factors and trip-level antecedents of unplanned buying. Studies that focus on preshopping factors from which the motivation and context for a shopping trip emerge are rare ("Marketing Actions That Influence Shopper Behavior" is a focus of the Marketing Science Institute's [2010] "Shopper Marketing" research initiative).

This Research: Out-of-Store Factors and Hypotheses

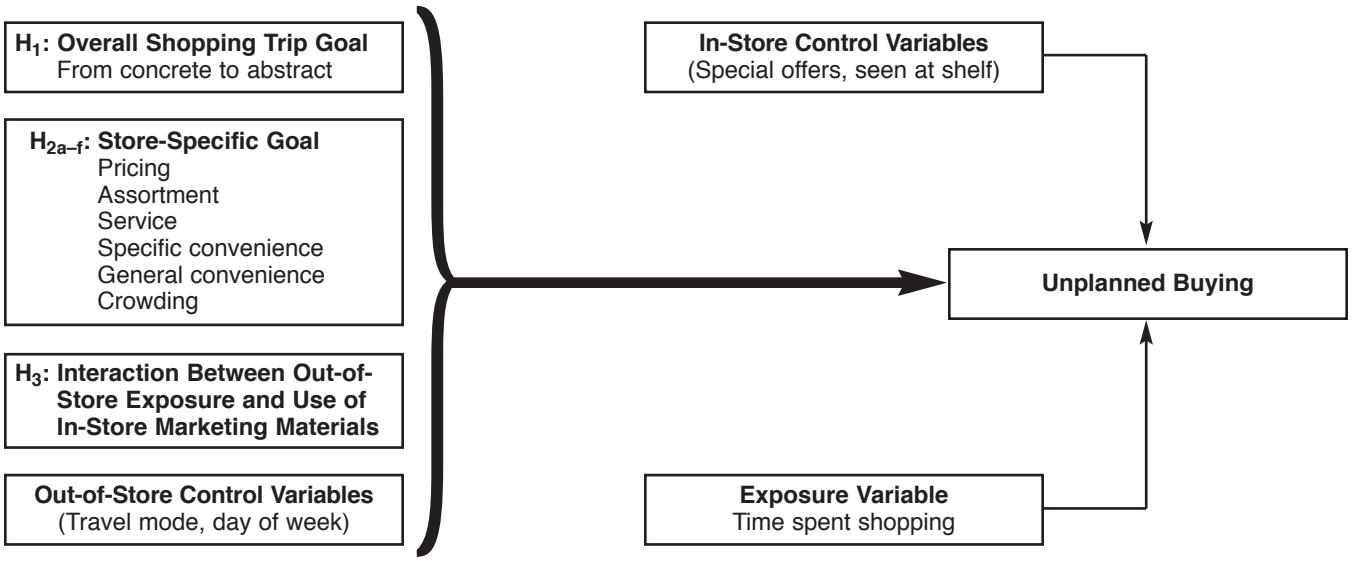
We develop our conceptual framework in a way similar to Chandon and colleagues (2009), who study the effectiveness of in-store marketing. As Figure 1 shows, we isolate out-of-store factors, controlling for in-store factors, and allow for the possibility that time spent shopping is endogenous.[3] In our model, we focus on a household's preshopping process, which includes establishing an overall shopping goal, developing store-specific shopping goals, and experiencing possible exposure to out-of-store marketing

[3]We provide more details in the "Models and Findings" section and thank an anonymous reviewer for suggesting the approaches we take. See Equations 1–4 and the related discussion.

TABLE 1
Summary of Selected Literature on Unplanned Buying

Research Study	Variables	Research Methods and Data	Key Finding
Kollat and Willett (1967)	•Main dependent variable: number of different products purchased •Independent variables: shopper traits (i.e., demographics) and shopping trip factors (e.g., transaction size, major trip, purchase frequency, use of shopping list)	•Collection method: shopper interviews on store entry and exit •Amount and type of data: 596 shoppers, 64 categories, cross-sectional data	Most unplanned purchases are a response to forgotten needs and out-of-stock products.
Granbois (1968)	•Main dependent variable: number of different products purchased •Independent variables: shopper traits (e.g., demographics) and shopping trip factors (e.g., time in store, number in shopping party)	•Collection method: shopper interviews on store entry and exit, observation of shoppers while shopping •Amount and type of data: 388 shopping parties, 84 categories, cross-sectional data	The study of unplanned purchasing can be improved by combining survey with observational methods.
Park, Iyer, and Smith (1989)	•Dependent variable: purchase of products to satisfy needs that we unrecognized •Independent variable: shopping trip factors (e.g., store knowledge, time available for shopping)	•Collection method: shoppers interviewed as in Kollat and Willett (1967) •Amount and type of data: 68 shopping parties in four experimental conditions (high or low knowledge; no time pressure or time pressure), cross-sectional data	Most unplanned purchasing are done in the low-store-knowledge/no-time-pressure condition.
Beatty and Ferrell (1989)	•Main dependent variable: likelihood of an impulse purchase •Independent variables: shopper traits (i.e., demographics, impulse buying tendency) and shopping trip factors (e.g., time, budget, enjoying)	•Collection method: shoppers interviewed as in Kollat and Willett (1967) •Amount and type of data: 533 shoppers, 153 who made impulsive purchases, cross-sectional data	Individual differences in the propensity for impulsiveness are a significant driver of unplanned buying.
Bucklin and Lattin (1991)	•Main dependent variable: probability of category purchase incidence, latent shopping state (planned or opportunistic) •Main independent variables: shopper “traits (i.e., deal loyalty) and shopping trip factors (e.g., inventory, store loyalty, marketing-mix variables)	•Collection method: purchase data collected from supermarket scanners •Amount and type of data: 152 shoppers, 52 weeks of purchases, 2 categories, panel data structure	The probability of unplanned state is higher in low-loyalty stores and for households that buy on deal.
Rook and Fisher (1995)	•Main dependent variable: alternative purchase scenarios that vary in level of impulsiveness •Main independent variable: shopper traits (i.e., buying impulsiveness, normative evaluations of impulsiveness as moderator)	•Collection method: respondent evaluation of hypothetical buying scenarios (Study 1), actual buying behavior (Study 2) •Amount and type of data: 212 undergraduate students (Study 1), 104 mall shoppers (Study 2), cross-sectional data	Impulsive buyers (trait) do more impulsive buying, but this is moderated by normative evaluation of acceptability of impulsive purchase.
Inman, Winer, and Ferraro (2009)	•Main dependent variable: decision type classified as planned, generally planned, or completely unplanned, for each product category •Main independent variables: shopper traits (i.e., demographics), shopping trip factors (e.g., time, use of shopping list), and category factors (e.g., display, coupon availability, category hedonicity)	•Collection method: shoppers interviewed as in Kollat and Willett (1967) •Amount and type of data: 2300 shoppers, 14 U.S. cities, over 40,000 purchases, cross-sectional data	Stable category factors and customer-self control factors exert the most influence on unplanned buying.
The current study	•Main dependent variable: number of unplanned category purchases per trip •Main independent variables: previsit, out-of-store-factors (overall shopping trip goal, store-specific goals, out-of-store marketing)	•Collection method: shoppers interviews and self-reports •Amount and type of data: 441 shoppers, 3014 shopping trips, 58 product categories, more than 18,000 purchases, panel data	Unplanned buying increases monotonically with the abstractness of the shopping goal held by the shopper before entering the store.

FIGURE 1
Conceptual Framework: How Preshopping Factors Drive Unplanned Buying



(e.g., store flyers in the mail, word of mouth from family and friends, television advertising). Figure 1 shows each of these three shopping trip elements. The overall shopping trip goal ranges from concrete to abstract, whereas store-specific goals cover pricing, assortment, service, location convenience, and crowding (more than one store-specific goal can be activated on any particular trip); out-of-store marketing encompasses a variety of factors. Note that each of these shopping trip elements is (at least in principle) within the sphere of the retailer's influence.

Overall shopping trip goal (H_1). Shoppers may enter a store with an overall goal ranging from the very precise and concrete (e.g., to take advantage of a specific promotion) to the relatively abstract (e.g., to fill up on weekly needs). Construal-level and mind-set theories also distinguish between abstract and precise goals (e.g., Gollwitzer 1999; Trope, Liberman, and Wakslak 2007); decision makers in "abstract" states are more flexible and receptive to their environments, whereas those in more precise states are "closed off" to their surroundings. More recent applied research has also emphasized the importance of goal abstraction: "The success of marketing actions, such as promotions, depends on the *goals* consumers have when they are exposed to such promotions" (Lee and Ariely 2006, p. 60, emphasis added). Related evidence shows that the "type of trip"—a proxy for shopping goal abstractness—affects in-store behaviors, conditional on store choice (e.g., Seetharaman, Ainslie, and Chintagunta 1999; Walters and Jamil 2003).

H_1: Unplanned buying increases monotonically with the abstractness of the individual consumer's overall shopping trip goal.

Store-specific goals (H_2). Store choices depend on price image perceptions (Hansen and Singh 2009), breadth and depth of assortment (Briesch, Chintagunta, and Fox 2009), location convenience (Huff 1964), the ability to do one-stop shopping (Messinger and Narasimhan 1997), and store service—an important element in store positioning (Lal and Rao 1997). By definition, any reason for choosing a store affects store choice (positively). What is not known is whether these store-specific goals determined *ex ante* (i.e., before the visit) also affect unplanned buying in the store. Prior research implies that shoppers will do more unplanned buying in stores with low prices because they feel more normatively justified (Rook and Fisher 1995). On trips in which shoppers take advantage of one promoted product, they will likely be aware of and buy other promoted products (Lichtenstein, Netemeyer, and Burton 1995). Similarly, wider assortments tempt shoppers to deviate from plans and also encourage those with poorly defined preferences to do more unplanned buying. Stores with good service also engender confidence and pleasure in shopping, which is positively related to unplanned buying (Donovan et al. 1994; Sherman and Smith 1987).

H_{2a}: (Pricing) Unplanned buying increases on trips in which the shopper chooses the store for low prices and attractive promotions.

H_{2b}: (Assortment) Unplanned buying increases on trips in which the shopper chooses the store because it has a wide assortment.

H_{2c}: (Service) Unplanned buying increases on trips in which the shopper chooses the store because it has good service.

We hypothesized that the store choice reasons of "low prices," "large assortment," and "good service" increase unplanned buying on the trip; however, other reasons for store choice need not increase unplanned buying. Location convenience from one-stop shopping in the chosen store ("everything I need in one place") and one-stop shopping for the trip in general should have opposite effects. A store

chosen for one-stop shopping should experience more unplanned buying—by committing to only one store, the shopper may be signaling that he or she has insufficient time (Zeithaml 1985) or cognitive resources (Bettman 1979) to create a detailed plan on a given trip. Conversely, trips in which the shopper plans to visit multiple stores may indicate more complex planning because he or she may spread category purchases across stores. On these trips, the shopper may also cherry-pick from colocated stores (Fox and Hoch 2005). These behaviors imply less unplanned buying in individual stores on a multistore trip.

H_{2d}: (Specific convenience) Unplanned buying increases on trips in which the shopper chooses the store for one-stop shopping.

H_{2e}: (General convenience) Unplanned buying decreases on trips in which the shopper chooses the store because he or she can visit other stores at the same time.

Finally, on some trips, the shopper might choose a store to avoid crowds. On the one hand, more space allows the shopper to shop with an open mind-set and take in the store environment; these factors should make the shopper more susceptible to unplanned buying.[4] On the other hand, a less crowded store means less time waiting and less exposure to the product choices of other shoppers; exposure to environmental cues, such as noise and crowding, decreases self-control (Evans 1979), which implies that there is more unplanned buying in congested stores. Moreover, Levav and Zhu (2009) find that shoppers react against "confinement" by expressing a need for more variety. Thus, we expect the following:

H_{2f}: (Crowding) Unplanned buying decreases on trips in which the shopper chooses the store to avoid in-store crowding and long queues.

Interaction between out-of-store exposure and use of in-store marketing materials (H_3). Shopper responsiveness to marketing stimuli is the *sine qua non* of research in retailing. Shoppers redeem coupons when benefits exceed the cost of sorting and clipping (e.g., Chiang 1995; Neslin 1990); they stockpile when savings exceed the storage and holding costs (e.g., Bell and Hilber 2006; Blattberg, Eppen, and Lieberman 1981). Shoppers also respond to monetary and nonmonetary promotions (e.g., Chandon, Wansink, and Laurent 2000), they are induced to buy more by signs and displays (Dhar and Hoch 1996; Inman and McAlister 1993; Inman, McAlister, and Hoyer 1990), and their overall responsiveness is predicted by their psychographics (Ailawadi, Neslin, and Gedenk 2001).

It is well known that in-store marketing activities capture a shopper's attention and therefore drive up unplanned buying (Inman, Winer, and Ferraro 2009). On trips in which the shopper takes note of marketing information outside the store environment, the shopper is likely to have engaged in planning (Bettman 1979), so this should not affect unplanned buying. Prior research suggests, but does not test, the idea that when a shopper is exposed to out-of-store marketing on a trip, in-store stimuli can trigger forgotten needs (Inman, Winer, and Ferraro 2009; Kollat and Willett 1967), suggesting a positive interaction between out-of-store and in-store marketing.[5]

H_3: Unplanned buying increases on trips when the shopper who has been exposed to out-of-store marketing also has a tendency to scan marketing materials inside the store.

Control Variables

We control for the direct effects of in-store marketing and other out-of-store contextual factors that are not of substantive interest per se (see Figure 1). These factors include travel time to the store and whether the store was visited second or later in a multistore trip; both are proxies for the "fixed costs" of shopping (e.g., Tang, Bell, and Ho 2001). We also control for the mode of travel (walking, cycling, or driving), which affects the capacity to transport goods, shopping periodicity (e.g., Helsen and Schmittlein 1993), weekend shopping patterns (Kahn and Schmittlein 1989), and trip-level variation in shopper gender (e.g., Kollat and Willett 1967). The number of planned purchases (i.e., those determined before the shopping trip) controls for the *ex ante* trip-level basket size.

More time in the store on a trip leads to more unplanned buying (Park, Iyer, and Smith 1989). We have no substantive interest in the effect of time, but we need to control for it appropriately. One approach is to argue that, conditional on the other variables, time spent in the store can be included as a direct covariate (see Inman, Winer, and Ferraro 2009); however, as is Inman, Winer, and Ferraro (2009), we are concerned that time in the store is possibly endogenous. In our data, there is a relatively small trip-level positive correlation between time in the store and the number of categories bought (r = .24). We use two model-based solutions to address this endogeneity problem—instrumental variables Poisson regression and Tobit regression—and discuss both in the "Models and Findings" section. Our goal is to show that the estimates of interest (i.e., those that test H_1–H_3) are robust to alternative methods of controlling for the effect of time spent in the store.

Data and Measures

The use of diary panel data to study unplanned buying is a unique aspect of our study. We first discuss data collection and then offer the specific measures used to test H_1–H_3.

Data

The diary panel contains more than 18,000 category purchases from 58 product categories (see Appendix A). Participating households were screened to be representative of the market for the country in question and were paid €20 for their cooperation. After each trip, households completed a short questionnaire and checked off whether each category

[4]We thank an anonymous reviewer for this observation.

[5]Out-of-store marketing covers three separate types of marketing initiatives that are collected in the shopper survey. We discuss these in the "Data and Measures" section; we show each of these in Table 2 and provide the exact questions and questioning procedure in Appendix B.

purchase was "planned in advance of the store visit and purchased" or "decided in store and purchased." The questionnaire included several other questions; respondents did not know that we were studying unplanned buying per se. Households completed a new questionnaire directly after each trip and attached their receipts. (We required these to ensure accurate reporting and subsequently cross-checked receipts and questionnaire responses.) After two weeks, the research firm visited each household to collect the questionnaires.

Recall that a key methodological difference between this study and prior research is that ours uses panel diary data rather than one-shot experiments or shopper intercept data (see Table 1). These data enable us to disentangle whether changes in unplanned buying are truly driven by factors that vary across shopping trips for the same customer and not simply by differences across customers (unobserved heterogeneity). This is important because if the retailer can generate more unplanned buying from the existing shopper base, it obviates the need to attract a certain type of shopper who is especially susceptible to unplanned buying. We estimate panel fixed-effects models to control for unobserved shopper heterogeneity that may be correlated with our key measures, but this requires at least two observations per household.[6] This leaves 441 households that take 3014 supermarket trips during the two-week observation period from June 2006 to July 2006. Households take between 2 and 23 trips (the mode is 6), and trips occur at 23 distinct retail chains. The average number of unplanned category purchases per trip is 1.39 (the range is 0 to 10), the average total number of planned categories is 5.00, and the average time spent in the store is 18 minutes. We provide summary statistics for the variables in Table 2.

Measures: Hypotheses H_1–H_3

Overall shopping trip goal (H_1). To test H_1, we elicit shopping trip goals directly, using a continuum of abstraction ranging from concrete goals ("shopping for special offers and promotions," "shopping for immediate consumption," "shopping for a meal on the same day") to the relatively abstract ("fill-in trip: daily essentials and top-up shopping") to the most abstract ("major trip: shopping for the whole week or more").[7] Fill-in trip for daily essentials and top-up shopping is the most prevalent shopping trip goal (43% of all trips), followed by major trips that occur weekly or less frequently (26%), shopping for meals on the same day (15%), shopping for immediate consumption (11%), and shopping for special offers and promotions (3%). We also need to rule out plausible alternative explanations for the goal abstraction effect (H_1). On trips in which shoppers have an abstract goal, they might peruse more items and visit more aisles. This could lead to more unplanned purchases. We rule these explanations out by adjusting for the number of planned purchases (a proxy for items perused) and the amount of time spent in the store (a proxy for the number of aisles visited).

Store-specific goals (H_2). We follow the procedure used to develop the measures to test H_1; that is, we elicit these store choice goals directly from shoppers. We show the six possible store choice goals in Table 2. Shoppers can report multiple goals for choosing a particular store on a trip (the average number of store goals per trip is 1.7). The most common reason for selecting the chosen store is "able to visit other stores at the same time" (37% of all trips). We test $H_{2a–f}$ after controlling for baseline unplanned purchasing in each store (though store fixed effects) to rule out unobserved store factors as an explanation for the findings.

Interaction between out-of-store exposure and the use of in-store marketing materials (H_3). We measure preshopping exposure to marketing stimuli outside the store environment by having shoppers indicate whether, before entering the store, they saw or were exposed to (1) newspapers inserts; (2) store leaflets in the mail; and (3) other marketing information, such as television or radio advertising, coupons, or shopping advice from friends and family. We list these three types of preshopping marketing exposures in Table 2 along with their summary statistics. (Appendix B presents the wording of the questions used.) As with store choice goals (H_2), shoppers can report exposure to more than one type of out-of-store marketing activity. Of the three, a leaflet delivered to the home is the most commonly observed out-of-store marketing device (seen on 19% of all trips; see Table 2).

Recall that H_3 pertains to whether the interaction of these exposures with the tendency of the shopper also to scan marketing materials inside the store has any effect on unplanned buying. To test H_3, we collect an additional parsimonious measure from each shopper. Shoppers indicate whether they "stay informed about special offers using the leaflet inside the store" (they indicate agreement with this statement for 26% of all trips). Each measure of out-of-store marketing interacts with this measure.

Finally, in testing H_3, it is important to control for exposure to in-store marketing on shopping trips (in-store marketing is a well-known driver of unplanned buying). We measure trip-level exposure to two types of in-store marketing listed under "Control Variables" in Table 2: "special offers seen at the shelf" (27% of trips) and "special offers seen on display away from the shelf" (17% of trips).

Models and Findings

We now develop and estimate several models of unplanned buying to ensure that the conclusions we draw are valid. To account for the possibly endogenous relationship between unplanned buying and time spent in the store, we use an instrumental variables Poisson model for the count (of unplanned category purchases per trip) and two Tobit specifications that explicitly model the rate of unplanned buying per unit time spent in the store.

[6]We also estimate random-effects models using all the data; however, a Hausman test shows that the key random-effects modeling assumption—that the regressors are uncorrelated with the random effect—is rejected. We provide more details in the next section.

[7]Some research (e.g., Kahn and Schmittlein 1989, 1992) distinguishes "major" and "fill-in" trips *ex pos*t from grocery receipts. Our measures, developed from direct consumer self-reports (e.g., Walters and Jamil 2003), are more comprehensive, mutually exclusive, and collectively exhaustive, and a professional marketing research company hired by our data provider pretested them on a large multinational consumer packaged goods company.

TABLE 2
Model Variables and Summary Statistics

Model Variables[a]	M	SD	Minimum	Maximum
H_1: Overall Shopping Trip Goal[b]				
Shopping for special offers and promotions	.031	.174	0	1
Immediate consumption, to use straight away	.112	.315	0	1
Same day, shopping for meals on the same day	.149	.346	0	1
Fill-in trip, daily essentials, top-up shopping	.431	.495	0	1
Major trip, weekly or less often	.256	.424	0	1
H_2: Store Choice Goals				
a: Low prices	.243	.429	0	1
a: Attractive promotions and special offers	.298	.458	0	1
b: Large assortment	.217	.412	0	1
c: Friendly store, good service	.149	.356	0	1
d: Store offers one-stop shopping	.312	.463	0	1
e: I can visit other stores at the same time	.365	.482	0	1
f: No crowds in the store	.116	.320	0	1
H_3: Interaction Between Out-of-Store Exposure and Use of In-Store Marketing Materials				
Special offers seen in the newspaper	.013	.112	0	1
Special offers seen in the leaflet delivered to home	.189	.392	0	1
Special offers seen on television, as heard on the radio, as seen in coupons, or as communicated by friends and family	.025	.157	0	1
Stay informed through leaflet about offers	.257	.357	0	1
Control Variables				
Travel time to store (log minutes)	1.99	.618	0	4.26
Travel to store by bicycle or scooter	.325	.469	0	1
Travel to store by car or taxi	.479	.500	0	1
Trip on Friday or Saturday (stores closed Sunday)	.379	.485	0	1
Primary shopper female on current trip	.814	.389	0	1
Multistore shopping trip (at least one other store visited on this trip before current store)	.179	.384	0	1
Total number of planned category purchases	4.997	4.147	1	28
Special offers seen on the shelf	.271	.446	0	1
Special offers seen on display away from shelf	.165	.371	0	1
I wanted the shopping trip to be fast and efficient	.679	.467	0	1
Exposure Variable				
Time spent shopping (minutes)	17.821	11.484	1	85
Dependent Variable				
Total number of unplanned category purchases	1.39	1.93	0	10

[a]All model variables, except the control variables "travel time to store" and "total number of planned category purchases" and the exposure variable "time spent shopping," are dummy variables. The actual questions asked to each survey participant appear in Appendix B.

[b]The "overall shopping trip goal" (H_1) variables are mutually exclusive and collectively exhaustive; that is, the shopper chooses only one overall shopping trip goal per shopping trip. Conversely, the shopper can indicate agreement with any number of "store choice goals" (H_2) and any of the three types of out-of-store marketing variables, as well as the tendency to use in-store leaflets (interaction between out-of-store exposure and the use of in-store marketing materials [H_3]), and can check any number of the control variables.

Notes: Proprietary survey panel data were collected from 441 shoppers who took 3014 shopping trips at supermarkets in a Western European country. The data were collected in conjunction with a major multinational packaged goods manufacturer that asked to remain anonymous. The data cover the period from June 12 to July 10, 2006.

A Poisson Model of Unplanned Buying

Consider h = 1, 2, …, H households taking t = 1, 2, …, T_h shopping trips. The total number of unplanned purchases on each trip t for each household h is UP_{ht}, and we assume that UP_{ht} follows a Poisson distribution. The number of unplanned category purchases is an integer with no a priori upper bound.[8] As Ross (1996) shows, the Poisson distribution can be derived as an approximation to the sum of independent Bernoulli random variables (X_1, X_2, ..., X_n) with heterogeneous parameters. To understand this, let $X_i = 1$ if an unplanned purchase is made in category i = 1, 2, …, N and 0 if otherwise, where N is the total number of categories. Dropping subscripts, we let $UP = \Sigma_{i=1}^{N} X_i$ and allow unplanned purchase incidence probabilities to vary across categories, $X_i|\theta_i \sim \text{Bernoulli}(\theta_i)$. If we assume that θ_i follows a beta distribution B(a, b) across categories, the marginal distribution of X_i is Bernoulli with probability $p = a/(a + b)$.[9]

[8]Technically, the 58 categories in the consumer survey is an upper bound, but this is far greater than the observed maximum number of unplanned category purchase decisions on a single trip (10).

[9]See Knorr-Held and Besag (1998, p. 2050) and Ross (1996). This Poisson approximation also allows unplanned purchase incidence probabilities to be weakly positively correlated across categories. Ross (1996, p. 465) provides the error bound for the Poisson approximation when correlations are present.

If p is small, UP ~ Poisson (Np), which leads to Equation 1 with Np = μ.

Although a multivariate probit model could be applied to the category-level data, modeling the total number of unplanned category purchases is better suited to our trip-level research objectives.[10] The categories themselves (listed in Appendix A) are defined at a level that makes cross-category substitution less relevant; furthermore, we have no information on category-level marketing. The large number of categories (58) would also make it difficult to implement this approach.

As such, UP_{ht} follows a fixed-effects Poisson model (Winkelmann 2008, p. 222):

$$(1) \qquad P\left(UP_{ht}\middle|x_{ht}, \alpha_h\right) = \frac{\exp\left(-\alpha_h\mu_{ht}\right)\left(\alpha_h\mu_{ht}\right)^{UP_{ht}}}{UP_{ht}!},$$

where

$$\mu_{ht} = \tau_{ht}\exp(x'_{ht}\beta).$$

The Poisson-distributed variable is the product of an exponential mean function, μ_{ht}, and a multiplicative household-specific effect, α_h, that is estimated jointly with β. The mean μ_{ht} in Equation 1 is a combination of the nonnegative rate, $\exp(x'_{ht}\beta)$, adjusted for the length of exposure τ_{ht} (i.e., the amount of time spent in the store). Explanatory variables (x_{ht}) are the out-of-store factors of interest as well as the set of controls and store fixed effects. The expected number of unplanned purchases is as follows:

$$(2) \qquad E(UP_{ht}|x_{ht}, \alpha_h) = \alpha_h\mu_{ht}.$$

There is a closed-form analytical expression for $\hat{\alpha}_h$ that can be inserted back into the likelihood. Because this obviates the need to estimate H separate household-level fixed-effect parameters, the estimates of β are neither biased nor inconsistent (Winkelmann 2008). The first-order condition for β uses within-shopper variation, averaged across shoppers, and is a product of the residuals, scaled by the within-household average ratio of observed unplanned buying ($\overline{UP}_h$) to expected unplanned buying ($\overline{\mu}_h$) and the explanatory variables:

$$(3) \qquad \sum_{h=1}^{H}\sum_{t=1}^{T_h}\left(UP_{ht} - \frac{\overline{UP}_h}{\overline{\mu}_h}\mu_{ht}\right)x_{ht} = 0.$$

We estimate household effects α_h nonparametrically. A major reason to use a fixed-effects approach is to control for across-shopper differences (Allison and Waterman 2002). This uses shopping trip–level (within-household) variation to estimate parameters and averages the estimates across households. Our fixed-effects model avoids biased estimates of β that arise from (1) misspecification of the distribution of random effects and (2) correlation between the shopper-level baseline α_h and the explanatory variables x_{ht}. A Hausman test comparing our fixed-effects model with a random-effects model (which assumes that the distribution of α_h is independent of x_{ht}) rejects the random-effects specification ($p < .001$). Because the first-order conditions in Equation 3 are identical to method-of-moments estimation, "one does not need to worry about over-dispersion, or other expressions of non-Poisson-ness" (Winkelmann 2008, p. 227).[11]

An additional issue in our application is that exposure time (i.e., time in the store) is potentially endogenous (see Figure 1 and the previous discussion of this point). We account for this by (1) using instrumental variables for exposure time in the Poisson model described previously and (2) estimating two separate Tobit specifications that directly model the rate of unplanned buying.[12] We use day, hour, and location dummy variables as instruments that have significant effects on exposure time (first-stage regression $R^2 = .47$) but not on unplanned buying directly ($\chi^2_{(16)} = 14.09$, $p = .59$), thus satisfying the instrumental variables exclusion restriction.

A Tobit Model of Unplanned Buying

To further account for the possibly endogenous relationship between unplanned buying and exposure time (time spent shopping), we model the rate of unplanned buying as the dependent variable (i.e., the total number of unplanned purchases on a trip divided by the time spent in the store, y_{ht}). Because this new variable is continuous and censored at zero, we can use a Tobit model to relate it to explanatory variables:

$$(4) \qquad y_{ht} = \frac{UP_{ht}}{\log\left(\tau_{ht}\right)} = \max\left\{\alpha_h + x'_{ht}\beta + \varepsilon_{ht}, 0\right\}.$$

We estimate two versions of the Tobit model because, unlike the Poisson, there is no analytical trick that lets us circumvent estimating all H household-level fixed effects. The first uses standard maximum likelihood estimation, but it is well known that this procedure generates inconsistent estimates due to the incidental parameters problem (Baltagi 2008). The second uses a semiparametric approach, trimmed least absolute deviations (LAD), to estimate the fixed effects, which overcomes this problem (Honoré 1992).

Findings: Hypotheses H_1–H_3

Table 3 reports the estimates for the fixed-effect Poisson IV, Tobit, and trimmed LAD Tobit models. The signs and levels of significance for the focal variables and the control variables are remarkably consistent across all three specifications, and this provides us with some assurance as to the robustness and validity of the estimates. Hereinafter, we focus on the Poisson results. The fourth column in Table 3 shows the marginal effects (from the Poisson IV model); for continuous covariates, we compute these at one standard deviation above and below the mean.

Overall shopping trip goal (H_1). As the overall trip goal becomes more abstract (the shopper and all else are held constant), there is more unplanned buying. The relevant

[10]We thank an anonymous reviewer for this suggestion.

[11]We estimated all models in STATA. We estimated the Poisson model using conditional maximum likelihood.

[12]We are grateful to an anonymous reviewer for suggesting the Tobit specification.

TABLE 3
Parameter Estimates from Fixed-Effect (FE) Poisson and Tobit Models

Dependent Variable: UP_{ht} (Number of Unplanned Category Purchases)	FE Poisson (IV)[a]	FE Tobit[b]	FE Trimmed Tobit[c]	Marginal Effect (%)[d]
H_1: Overall Shopping Trip Goal				
β_1: Shopping for special offers and promotions	–.278†	–.174	–.210	–24
β_2: Immediate consumption, to use straight away	.023	–.070	–.072	—
β_3: Same day, shopping for meals on the same day	.119	.138	.132	—
β_4: Fill-in trip, daily essentials, top-up shopping	.241**	.222*	.233*	27
β_5: Major trip, weekly or less often	.462***	.522***	.569***	59
H_2: Store Choice Goals				
β_6: a: Low prices	.111†	.148**	.156*	12
β_7: a: Attractive promotions and special offers	.120*	.085†	.075	13
β_8: b: Large assortment	.064	.064	.074	—
β_9: c: Friendly store, good service	.088	.112†	.094	—
β_{10}: d: Store offers one stop shopping	.111*	.131**	.121*	12
β_{11}: e: I can visit other stores at the same time	–.119**	–.033	–.064	–11
β_{12}: f: No crowds in the store	–.129*	–.067	–.119†	–12
H_3: Interaction Between Out-of-Store Exposure and Use of In-Store Marketing Materials (H_3)				
β_{13}: Special offers seen in the newspaper × stay informed through leaflet about offers	.209	–.095	.360	—
β_{14}: Special offers seen in the leaflet delivered to home × stay informed through leaflet about offers	.305**	.252*	.210	36
β_{15}: Special offers seen on television, heard on the radio, seen in coupons, or communicated by friends and family × stay informed through leaflet about offers	.518*	.571*	.505*	68
Control Variables				
γ_1: Travel time to store (log minutes)	–.121**	–.054	–.039	
γ_2: Travel to store by bicycle or scooter	.180*	.147*	.172*	
γ_3: Travel to store by car or taxi	.385***	.377***	.414***	
γ_4: Trip on Friday or Saturday (stores closed Sunday)	–.107**	–.066†	–.059	
γ_5: Primary shopper is female on current trip	.345***	.332**	.279**	
γ_6: Multistore shopping trip (at least one other store visited on this trip before current store)	–.022	–.058	–.040	
γ_7: Total number of planned category purchases (log units)	–.613***	–.330***	–.326***	
γ_8: Special offers seen at the shelf	.345***	.377***	.280**	
γ_9: Special offers seen on display away from shelf	.468***	.456***	.419***	
γ_{10}: I wanted the shopping trip to be fast and efficient	–.479***	–.671***	–.597***	
γ_{11}: Special offers seen in the newspaper	–.221	.174	–.028	
γ_{12}: Special offers seen in the leaflet delivered to home	–.052	–.015	–.015	
γ_{13}: Special offers seen on television, heard on the radio, seen in coupons, or communicated by friends and family	–.046	–.051	–.113	
γ_{14}: Special offers seen at the shelf × major trip	–.074	.046	.044	
γ_{15}: Special offers seen on display away from shelf × major trip	–.259*	–.084	–.142	
γ_{16}: Special offers seen at the shelf × fill-in trip	–.170	–.047	–.068	
γ_{17}: Special offers seen on display away from shelf × fill-in trip	–.212†	–.015	–.065	
Log-likelihood	–2,985	–2,298	—	

†$p < .10$.
*$p < .05$.
**$p < .01$.
***$p < .001$.
[a]The R^2 in the first-stage regression (with instruments for time) is .47.
[b]We also estimated a random-effects Tobit model; the fixed-effects model is preferred under the Hausman test.
[c]The trimmed Tobit LAD (estimator) estimates fixed effects semiparametrically (Honoré 1992). We estimate this model as a robustness check.
[d]Marginal effects for continuous covariates are calculated at one standard deviation above and below the mean for the Poisson IV model.
Notes: Total number of households = 441; shopping trips = 3014. Household and store fixed effects for all models are suppressed to save space (these are available on request).

coefficients increase from $\beta_1 = -.278$ to $\beta_5 = .462$ (we observe the same monotonically increasing sequence in the coefficients from the Tobit and trimmed Tobit models). A joint test of a monotonic ordering from the concrete goals to the relatively abstract ("fill-in") to the most abstract ("major") is highly significant ($\chi^2_{(4)} = 34.14$, $p < .001$). Pairwise tests are consistent with H_1: The major-trip effect is larger than the fill-in-trip effect ($\chi^2_{(1)} = 8.37$, $p = .004$), and fill-in-trip effects are about the same as the effects for shopping for meals on the same day ($\chi^2_{(1)} = 2.39$, $p = .123$). The "same-day" effect is about the same as the effect of shopping for "immediate consumption" ($\chi^2_{(1)} = 1.18$, $p = .277$), but the effect of immediate consumption is larger than that for the goal of shopping for specific promotions ($\chi^2_{(1)} = 4.89$, $p < .027$). Thus, H_1 is largely supported.

Store-specific goals (H_2). Although any goal that leads to store choice on a trip is positive for the retailer (from a traffic perspective), it remains uncertain whether specific reasons translate into incremental (unplanned) category purchases. Our test of H_2 is stringent; the model includes 17 additional controls and store fixed effects to account for baseline store differences apparent for all customers. When the shopper chooses a store for its low prices ($\beta_6 = .111$, t-statistic = 1.82) or attractive promotions ($\beta_7 = .120$, t-statistic = 2.41), there is a 12%–13% increase in unplanned buying; however, assortment and service goals have no effect. Thus, there is modest support for H_{2a} but not for H_{2b} or H_{2c}.

When shoppers choose a store for store-specific convenience (one-stop shopping), there is 12% more unplanned buying ($\beta_{10} = .111$, t-statistic = 2.36). When shoppers choose a store for general convenience in the context of a larger plan, which may involve cherry-picking and basket splitting across stores ("I can visit other stores at the same time"), there is less unplanned buying ($\beta_{11} = -.119$, t-statistic = –2.59). Thus, H_{2d} and H_{2e} are supported. The control variable that measures whether a shop was visited second or later in a multistore trip is not significant ($\gamma_6 = -.022$, t-statistic = –.46). Combining this finding with support for H_{2d} and H_{2e} implies that on multistore trips, a shopper does less unplanned buying overall, not just at stores he or she visits later in the shopping sequence. Finally, when shoppers choose a store because it is "less crowded," they do less unplanned buying ($\beta_{12} = -.119$, t-statistic = –1.97). Consistent with H_{2f}, store congestion (and more exposure to the category choices of other shoppers) increases unplanned buying for the focal shopper on that trip.

Interaction between out-of-store exposure and use of in-store marketing materials (H_3). Trip-level exposure to out-of-store marketing activity has no significant direct effect on a household's unplanned buying (γ_{11}–γ_{13} are not significant in all three model specifications). As we predicted, however, there are positive interaction effects with the tendency to use in-store marketing (specifically, store leaflets). When a household is aware of leaflets before shopping and also reads leaflets taken in the store while shopping, there is 36% more unplanned buying ($\beta_{14} = .305$, t-statistic = 2.70). Similarly, when a household has prior exposure to store marketing through advertising seen on television or delivered through coupons or friends and family and also reads leaflets while shopping, there is 68% more unplanned buying ($\beta_{15} = .518$, t-statistic = 2.14). This is strong evidence for the interplay between out-of-store marketing and in-store marketing. Thus, with respect to H_3, we find strong support for Kollat and Willett's (1967) untested conjecture that in-store marketing can trigger forgotten needs.

Control Variables

Our model includes an extensive set of trip-level controls, in addition to store and household fixed effects. We have no substantive interest in the signs and significance of the control variables per se; however, it is important that they are either consistent with well-established results or plausible (for new variables). The pattern of effects is consistent across all three model specifications; we comment briefly on a few notable effects. Exposure to in-store marketing stimulates unplanned buying. Coefficients on shelf features and displays seen on a trip are highly significant ($\gamma_8 = .345$, t-statistic = 4.03, and $\gamma_9 = .468$, t-statistic = 4.65, respectively). This finding has been reported in the literature; however, our panel data models enable us to claim that this is unambiguously a trip-level effect for an individual shopper. Cross-sectional analysis cannot rule out the following alternative explanation: Only promotion-sensitive shoppers scan features and displays, and only these kinds of shoppers do unplanned buying.[13] (We also find larger in-store marketing coefficients in a model without fixed effects. This suggests that the findings for in-store marketing effects reported in the literature may be overstated.)

Unplanned buying increases on trips when the shopper travels by bicycle or car (relative to a base case of walking). Trips to more distant stores involve less unplanned buying ($\gamma_1 = -.121$, t-statistic = –3.65). This suggests that when the fixed travel cost is high, the shopper may be more inclined to plan category purchases. Consistent with Inman, Winer, and Ferraro's (2009) work, unplanned purchasing increases when the shopping trip is taken by a female member of the household ($\gamma_6 = .345$, t-statistic = 4.16). Kahn and Schmittlein (1989, 1992) speculate that the overall shopping trip goal interacts with response to in-store promotions. We find negative interaction effects (γ_{15} and γ_{17}) only in the Poisson model because they are artifacts of the log-linear model specification, which defines interactions as proportional to the main effects rather than a substantive finding per se (we do not find any significant effects in the Tobit models).

Robustness Checks

The main findings are robust to Poisson and Tobit specifications. The fit of the Poisson model is acceptable—the squared correlation between predicted and actual values is .49. The R^2_{KL} metric for nonlinear models proposed by Cameron and Windmeijer (1997) and based on the Kullback–Leibler divergence is .46. If we replace the number of planned purchases with a set of dummy variables, the results are largely unchanged. Because time is possibly

[13]We thank an anonymous reviewer for drawing our attention to this point. A fixed-effects panel data model rules out these kinds of across-shopper differences.

endogenous, we use a Poisson IV estimation strategy; however, we obtain qualitatively similar effects for the parameters of interest with nonparametric controls for time (i.e., if we use dummy variables to capture shopping trips occurring in discrete intervals of time). We also quantify the additional variation in unplanned buying explained by a trip-level perspective. The R^2_{KL} is .29 in a household effects–only model; adding trip-to-trip variation increases R^2_{KL} by more than 50%. Thus, our substantive trip-level perspective is also justified on statistical grounds.

Discussion and Conclusion

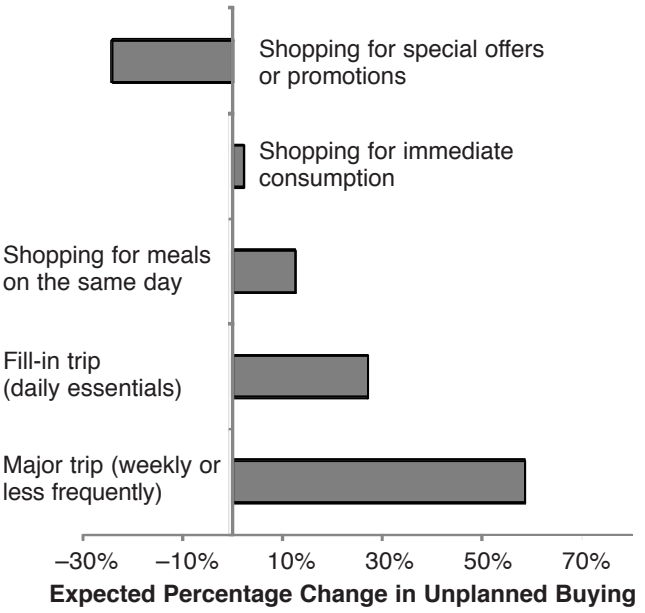
In contrast with prior literature, we explain trip-level unplanned buying that originates from decisions the shopper makes before he or she steps into the store, while controlling for previously found in-store effects. This is a key point of differentiation; most studies focus on differences across shoppers and categories and on the effects of stimuli found inside the store. Furthermore, our panel data models allow for a true trip-level interpretation of the model coefficients, and our findings are not confounded by heterogeneity across shoppers.

Key Findings

Figure 2 shows the average expected percentage change in unplanned category purchases as a function of the overall shopping trip goal (when all other factors are held constant). Consistent with H_1 and recent experimental work (e.g., Lee and Ariely 2006) as well as goal-setting (Gollwitzer 1999) and construal-level (Trope, Liberman, and Wakslak 2007) theories, the more abstract the shopping goal, the more unplanned buying takes place. Major trips have the greatest "scope" for unplanned buying because the shopping mission involves satisfying a range of household needs. One need could be related to a meal (e.g., dinner) but not the precise category (e.g., chicken). These trips show the greatest percentage lift in unplanned buying—almost 60%. Fill-in trips, which are used for "daily essentials" and "topping up," follow with a 27% increase in unplanned buying. Using the trip receipt data, we know that the average trip is €21.45, with an average of 5.0 planned category purchases and 1.4 unplanned category purchases. This means that unplanned purchases contribute approximately €4.70 to an average receipt and planned purchases contribute approximately €16.75. Unplanned buying on trips in which the shopper activates his or her most abstract overall trip goal contributes, on average, an additional €2.77, a 10% increase in the total amount spent.

As Kollat and Willett (1967, p. 29) reasoned more than 40 years ago, "During major trips,… the shopper's needs are not well defined; thus, the shopper is more receptive to in-store stimuli." Because we control for trip-level exposure to many other factors, the effect of concrete versus abstract goals shown in Figure 2 is greater than that due to marketing stimuli the shopper sees, overall basket size, time spent in the store, and the other variables for which we control (see Table 3). Our fixed-effects models estimate household-level intercepts and therefore also rule out explanations

FIGURE 2
Expected Percentage Change in Unplanned Buying as a Function of the Overall Shopping Trip Goal (All Other Variables Constant)



such as that certain types of households are more likely to have abstract goals.

Any store-specific goal that brings a shopper to a store on a trip has a positive effect on traffic; however, our study shows that these goals also affect unplanned buying on the trip when the shopper is inside the store. On trips in which the store is selected for low prices and attractive promotions, there is more unplanned buying because the shopper may feel more normatively justified when he or she engages in incremental purchases (Rook and Fisher 1995). We find moderate increases in unplanned buying of 12%–13%. Again, the overall category and euro value of this lift is approximately 2% for the average shopper on the average trip.

Store-specific convenience (one-stop shopping) leads to 12% more unplanned buying, whereas general convenience with respect to a larger shopping plan ("I can visit other stores at the same time") reduces unplanned buying by a similar amount. We also show that on multistore trips, the shopper does less unplanned buying overall and not just in stores visited second, third, or later. To the extent that multistore trips are an increasing reality in the evolving retail landscape (Gijsbrechts, Campo, and Nisol 2008), there may be a corresponding decline in unplanned buying.

In summary, we find that the specific goal attached to a specific store affects not only the shopper's initial store choice but also his or her unplanned buying inside the store. Note that our test for incremental buying based on store-specific trip goals is stringent because the model includes fixed effects for stores and households as well as a large set of controls.

It is well known that exposure to out-of-store marketing activity facilitates planning and that exposure to in-store

marketing stimuli generates unplanned buying. Thus, these marketing instruments appear to work in opposite directions. Nevertheless, we hypothesized (H_3) and found that for unplanned buying, in-store and out-of-store marketing can be mutually reinforcing. This implies that marketing activities should be assessed from the perspective of their collective, rather than individual, weight.

Implications for Managers

The findings we summarized offer new implications for managers. We comment on three: (1) the benefit of the trip-based, path-to-purchase viewpoint, (2) the differences in unplanned buying across formats, and (3) the need for alternative research methods to investigate shopper behavior.

The benefits of a shopping trip and path-to-purchase perspective. Taken as a whole, trip-level factors greatly improve our ability to understand unplanned buying (adding trip-to-trip variation to the model increased explanatory power by more than 50%). This suggests that retailers should move beyond competing for customers to competing over shopping trips. Sophisticated retailers and major suppliers are beginning to collect data on shopping patterns and segment shoppers according to their shopping trip mission (Fox and Sethuraman 2006) to understand what drives shopping differences across trips for the same household. Previously, we noted that many observers believe that most purchase decisions are made inside the store (Neff 2008). Consequently, marketers allocate funds to in-store marketing to stimulate unplanned buying with in-store displays, promotions, and technological innovations (Albert and Winer 2008). Although we endorse in-store marketing innovation, our findings also underscore the important influence of factors formed early along the path to purchase, when the motivation to shop first emerges. We believe that marketers can generate unplanned buying by persuading shoppers to evoke abstract goals. Furthermore, it makes sense to advertise abstract shopping benefits. Some retailers already do this—for example, Wal-Mart exhorts customers to "Save Money. Live Better"; Tesco reinforces the notion that "Every Little Helps"; and the Dutch supermarket C1000 reminds customers that they are "Always Surprising, Always Advantageous." Finally, retailers should help shoppers frame and evoke store-specific choice goals before they enter the store.

Unplanned buying across retailers and retail formats. Hard discounters have dramatically altered the retail landscape of Western Europe and North America (Cleeren et al. 2010; Van Heerde, Gijsbrechts, and Pauwels 2008). This suggests that similar change could follow in other regions of the world, thus underscoring the need for further research on shopper behavior in this format. Traditional supermarkets and hard discounters vary on pricing, assortment, location, and store environment, but it is unclear how in-store shopper decisions vary across these formats and, in particular, how this affects unplanned buying. Because we control for differences across households and allow the same shopper to visit different stores and formats, our research begins to address this issue.

We know that when a shopper activates an abstract goal before shopping, he or she does more unplanned buying (H_1). Furthermore, in our data, when shoppers have more abstract goals (e.g., a major trip), they are also more likely to visit the hard discounters. Additional analysis shows that even though stores of all types benefit when the shopper enters with an abstract goal, full-service supermarkets receive an extra positive lift in unplanned buying, beyond that due to the abstract goal alone.[14] The marginal value of an incremental abstract goal trip is highest for these types of stores; indeed, the quantitative effects from our model imply that revenue increases of up to 10% per shopping trip are possible. This "interaction effect" implies an avenue for cooperation between branded-goods suppliers and full-service supermarkets. Branded-goods manufacturers that supply products that are bought on major trips struggle to increase volumes at retailers in which the share of these kinds of trips is low. Specific marketing initiatives (e.g., percentage savings on full basket value, in which manufacturers reimburse retailers for the discounts on their brands; multiple-category coupons on the manufacturer's brands at full service supermarkets) could lead a shopper to change his or her mission and deliver disproportionate benefits to both parties.

Alternative research methods. The comprehensive set of nontraditional measures (e.g., shopping trip, store choice goals) we used in this study significantly improves our ability to explain unplanned buying. This is true even though we control for many well-established drivers of unplanned buying, including demographics and in-store marketing. Shopping goals, store choice reasons, and shopper habits all contribute to influence the point-of-purchase in-store decisions. For example, the results pertaining to H_2 show that store-specific choice goals that drive traffic can have either positive or negative effects on incremental buying in the store. Retail managers will benefit from investing time and effort in understanding the shopping process in conjunction with shopping outcomes (e.g., purchase).

Limitations and Implications for Researchers

We investigate the effects of out-of-store factors on unplanned buying in one Western European market. Retail markets are in different stages of evolution, and a cross-country comparison of how what "shoppers bring to the store" affects unplanned buying is an important area for further research. We use panel data to show how trip-to-trip variation drives unplanned buying; however, our observation window is relatively short. (Unplanned buying is measurement intensive, so it is also necessary to consider possible sample attrition as time windows are lengthened.) Longitudinal analysis of steady-state shopping habits around unplanned buying is another important area for further research.

[14]To test this formally, we reestimate our model with additional interaction terms. The coefficient on the interaction between the most abstract overall trip goal ("major trip") and choice of a traditional supermarket format is positive and significant (β_{trad} = .488, t-statistic = 2.79); the same coefficient for the hard discounter interaction is negative and not significant.

APPENDIX A
List of Product Categories Used in the Analysis (in Alphabetical Order)

Baby and toddler food
Baking and dessert products
Bath and shower products
Beer
Books, CDs, CD-ROM
Bread (including crackers, toast, biscuits, rusk) and rolls
Butter/margarine
Cake, biscuits, chocolate, sweets
Cereals (e.g., Corn Flakes, Cruesli)
Cheese
Chilled meals, pizzas
Chilled soup
Cleaning products
Clothes (including shoes, jewelry, watches)
Coffee and tea
Crisps, salted snacks, nuts
Deodorant
Dishwasher, hand soap/powder
Dry groceries (salt, spices, herbs)
Eggs
Fabric conditioner
Fish (including crustaceans and shellfish)
Flowers and plants
Fresh dairy products (drinks and desserts)
Fresh vegetables, fruit, potatoes
Frozen ice cream
Frozen meals, pizzas, snacks
Frozen vegetables/potato products/fish/meat
Household goods (e.g., dishcloths, brushes, candles, crockery, matches, light bulbs)
Long-life dairy products
Magazines
Mayonnaise and other cold sauces
Meals in a tin/jar/packet/box (including dinner kits)
Meat/chicken (including meat products)
Medicine, pills, supplements
Mixes for meals, packet mixes, cooking sauces
Moisturizing cream and body lotion
Diapers, other baby and toddler products
Office articles (including computers and printers)
Olive oil, vinegar
Other articles
Other products in a jar/tin (e.g., meat, fish, olives, gherkins)
Pasta, rice
Pastries and confectionary
Pet food, pet care
Sandwich filling (not chilled)
Sanitary products, panty liners
Shampoo and conditioner
Shaving products
Smoking materials
Soft drinks, juices, ice tea, sport drinks, diluting juice
Soups and bouillon (tinned/packet)
Sugar and condensed milk/creamer
Toilet paper, paper towels, tissues
Toothbrushes, toothpaste, oral care
Vegetables in a tin/jar
Washing powder/liquid
Wine and other alcoholic beverages

APPENDIX B
Questions Used to Derive Focal Measures

Measure	Question
H_1: Shopping Trip Goal	**What was the type of trip taken? (one answer)**
Shopping for special offers and promotions	•Special offers and promotions
Immediate consumption, to use straight away	•To use straight away, things forgotten, immediate needs
Same day; shopping for meals on the same day	•Shopping for meal consumed on same day or weekend
Fill-in trip; daily essentials, top-up shopping	•Daily essentials, top-up shopping
Major trip; weekly or less often	•Big, weekly, or less-than-weekly grocery shop
H_2: Store Choice Goals	**What are the reasons for visiting this store now? (more than one answer)**
a: Low prices	•Low prices
a: Attractive promotions and special offers	•Attractive promotions and special offers
b: Large assortment	•Large/wide range of products
c: Friendly store, good service	•Friendly store
d: Store offers one-stop shopping	•Everything I need in one place
e: I can visit other stores at the same time	•I can visit other stores at the same time
f: No crowds in the store	•No crowds/queues
H_3: Interaction Between Out-of-Store Exposure and Use of In-Store Marketing Materials (H_3)	**Did you see special offers before going into the store; if yes, where? (more than one answer)**
Special offers seen in the newspaper	•In the newspaper
Special offers seen in the leaflet delivered to home	•From a leaflet of the store that is delivered at home
Special offers seen on television, as heard on the radio, as seen in coupons, or as communicated by friends and family	•On television, on the radio, in coupons, from friends or family, and other
Stay informed through leaflet about offers	•Do you stay informed about special offers or advertisements from a leaflet in the shop?
Control Variables[a]	
Special offers seen at the shelf	•Were special offers seen during the shopping trip at the shelf?
Special offers seen on display away from shelf	•Were special offers seen during the shopping trip at a display away from the shelf?

[a]Other control variables have straightforward definitions, and we omit them for space; they are available on request.

REFERENCES

Ailawadi, Kusum L., Scott A. Neslin, and Karen Gedenk (2001), "Pursuing the Value Conscious Consumer: Store Brands Versus National Brand Promotions," *Journal of Marketing*, 65 (January), 71–89.

Albert, Terri C. and Russell S. Winer (2008), "Brother, Can You Spare a Dime? The Spare Change Effect at Point-of-Purchase," working paper, Barney School of Business, University of Hartford.

Allison, Paul D. and Richard P. Waterman (2002), "Fixed-Effects Negative Binomial Regression Models," *Sociological Methodology*, 32 (1), 247–65.

Baltagi, Badi H. (2008), *Econometric Analysis of Panel Data*. Chichester, UK: John Wiley & Sons.

Beatty, Sharon E. and M. Elizabeth Ferrell (1998), "Impulse Buying: Modeling Its Precursors," *Journal of Retailing*, 74 (2), 169–91.

Bell, David R. and Christian A.L. Hilber (2006), "An Empirical Test of the Theory of Sales: Do Household Storage Constraints Influence Consumer and Store Behavior?" *Quantitative Marketing and Economics*, 4 (2), 87–117.

——— and James M. Lattin (1998), "Consumer Shopping Behavior and Preference for Store Price Format: Why 'Large Basket' Shoppers Prefer EDLP," *Marketing Science*, 17 (1), 66–88.

Bettman, James R. (1979), *An Information Processing Theory of Consumer Choice*. Reading, MA: Addison-Wesley.

Blattberg, Robert C., Gary D. Eppen, and J. Lieberman (1981), "A Theoretical and Empirical Evaluation of Price Deals for Consumer Non-Durables," *Journal of Marketing*, 45 (January), 116–29.

Block, Lauren G. and Vicki G. Morwitz (1999), "Shopping Lists as an External Memory Aid for Grocery Shopping: Influences on List Writing and List Fulfillment," *Journal of Consumer Psychology*, 8 (4), 343–75.

Briesch, Richard, Pradeep Chintagunta, and Edward J. Fox (2009), "How Does Assortment Affect Grocery Store Choice?" *Journal of Marketing Research*, 46 (April), 176–89.

Bucklin, Randolph E. and James M. Lattin (1991), "A Two-State Model of Purchase Incidence and Brand Choice," *Marketing Science*, 10 (1), 24–39.

Cameron, A. Colin and Frank A.G. Windmeijer (1997), "An R-Squared Measure of Goodness of Fit for Some Common Non-Linear Regression Models," *Journal of Econometrics*, 77 (2), 329–42.

Chandon, Pierre, J. Wesley Hutchinson, Eric T. Bradlow, and Scott H. Young (2009), "Does In-Store Marketing Work? Effects of the Number and Position of Shelf Facings on Brand Attention and Evaluation at the Point of Purchase," *Journal of Marketing*, 73 (November), 1–17.

———, Brian Wansink, and Gilles Laurent (2000), "A Benefit Congruency Framework of Sales Promotion Effectiveness," *Journal of Marketing*, 64 (October), 65–81.

Chiang, Jeongwen (1995), "Competing Coupon Promotions and Category Sales," *Marketing Science*, 14 (1), 105–122.

Cleeren, Kathleen, Frank Verboven, Marnik G. Dekimpe, and Katrijn Gielens (2010), "Intra- and Interformat Competition Among Discounters and Supermarkets," *Marketing Science*, 29 (3), 456–73.

Dhar, Sanjay K. and Stephen J. Hoch (1996), "Price Discrimination Using In-Store Merchandising," *Journal of Marketing*, 60 (January), 17–30.

Donovan, Robert J., John R. Rossiter, Gilian Marcoolyn, and Andrew Nesdale (1994), "Store Atmosphere and Purchasing Behavior," *Journal of Retailing*, 70 (3), 283–94.

Evans, Gary W. (1979), "Behavioral and Physiological Consequences of Crowding in Humans," *Journal of Applied Social Psychology*, 9 (1), 27–46.

Fox, Edward J. and Stephen J. Hoch (2005), "Cherry-Picking," *Journal of Marketing*, 69 (January), 46–62.

——— and Raj Sethuraman (2006), "Retail Competition" in *Retailing in the 21st Century: Current and Emerging Trends*, Manfred Krafft and Murali K. Mantrala, eds. Berlin: Springer, 193–210.

Gijsbrechts, Els, Katia Campo, and Patricia Nisol (2008), "Beyond Promotion-Based Store Switching: Antecedents and Patterns of Systematic Multiple-Store Shopping," *International Journal of Research in Marketing*, 25 (1), 5–21.

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

Granbois, Donald H. (1968), "Improving the Study of Customer In-Store Behavior," *Journal of Marketing*, 32 (October), 28–33.

Grocery Marketing Association (2007), "Shopper Marketing: Capturing a Shopper's Mind, Heart, and Wallet," report prepared by Deloitte LLP.

Hansen, Karsten and Vishal Singh (2009), "Market Structure Across Retail Formats," *Marketing Science*, 28 (4), 656–73.

Helsen, Kristiaan and David C. Schmittlein (1993), "Analyzing Duration Times in Marketing: Evidence for the Effectiveness of Hazard Rate Models," *Marketing Science*, 12 (4), 395–414.

Honoré, Bo E. (1992), "Trimmed Lad and Least Squares Estimation of Truncated and Censored Regression Models with Fixed Effects," *Econometrica*, 60 (3), 533–65.

Huff, David (1964), "Defining and Estimating a Trading Area," *Journal of Marketing*, 28 (July), 34–38.

Inman, J. Jeffrey and Leigh McAlister (1993), "A Retailer Promotion Policy Model Considering Promotion Signal Sensitivity," *Marketing Science*, 12 (3), 339–56.

———, ———, and Wayne D. Hoyer (1990), "Promotion Signal: Proxy for a Price Cut?" *Journal of Consumer Research*, 17 (1), 74–81.

———, Russell S. Winer, and Rosellina Ferraro (2009), "The Interplay Among Category Characteristics, Customer Characteristics, and Customer Activities on In-Store Decision Making," *Journal of Marketing*, 73 (September), 19–29.

Kahn, Barbara K. and David C. Schmittlein (1989), "Shopping Trip Behavior: An Empirical Investigation," *Marketing Letters*, 1 (1), 55–69.

——— and ——— (1992), "The Relationship Between Purchases Made on Promotion and Shopping Trip Behavior," *Journal of Retailing*, 63 (3), 294–315.

Knorr-Held, Leonhard and Julian Besag (1998), "Modeling Risk from a Disease in Time and Space," *Statistics in Medicine*, 17 (18), 2045–2060.

Kollat, David T. and Ronald P. Willett (1967), "Customer Impulse Purchasing Behavior," *Journal of Marketing Research*, 4 (May), 21–31.

Lal, Rajiv and Ram Rao (1997), "Supermarket Competition: The Case of Every Day Low Pricing," *Marketing Science*, 16 (1), 60–80.

Lee, Leonard and Dan Ariely (2006), "Shopping Goals, Goal Concreteness, and Conditional Promotions," *Journal of Consumer Research*, 33 (2), 60–70.

Levav, Jonathan and Rui (Juliet) Zhu (2009), "Seeking Freedom Through Variety," *Journal of Consumer Research*, 36 (4), 600–610.

Lichtenstein, Donald R., Richard G. Netemeyer, and Scott Burton (1995), "Assessing the Domain Specificity of Deal Proneness: A Field Study," *Journal of Consumer Research*, 22 (4), 314–26.

Marketing Science Institute (2010), *Research Priorities 2010-2012*. Cambridge, MA: Marketing Science Institute.

Messinger, Paul R. and Chavravarthi Narasimhan (1997), "A Model of Retail Formats Based on Consumers' Economizing on Shopping Time," *Marketing Science*, 16 (1), 1–23.
Neff, Jack (2008), "Pick a Product: 40% of Public Decide in Store," *Advertising Age*, (July 28), (accessed September 8, 2010), [available at http://adage.com/article?article_id=129924].
Neslin, Scott A. (1990), "A Market Response Model for Coupon Promotions," *Marketing Science*, 9 (2), 125–45.
Park, C. Whan, Easwar S. Iyer, and Daniel C. Smith (1989), "The Effects of Situational Factors on In-Store Grocery Shopping Behavior: The Role of Store Environment and Time Available for Shopping," *Journal of Consumer Research*, 15 (4), 422–33.
Rook, Dennis W. and Robert J. Fisher (1995), "Normative Influences on Impulsive Buying Behavior," *Journal of Consumer Research*, 22 (3), 305–313.
Ross, Sheldon M. (1996), *Stochastic Processes*, 2d ed. New York: John Wiley & Sons.
Seetharaman, P.B., Andrew Ainslie, and Pradeep K. Chintagunta (1999), "Investigating State Dependence Effects Across Categories," *Journal of Marketing Research*, 36 (November), 488–500.
Sherman, Elaine and Ruth B. Smith (1987), "Mood States of Shoppers and Store Image: Promising Interactions and Possible Behavioral Effects," in *Advances in Consumers Research*, Vol. 14, M. Wallendorf and P. Anderson, eds. Provo, UT: Association for Consumer Research, 251–54.
Tang, Christopher S., David R. Bell, and Teck-Hua Ho (2001), "Store Choice and Shopping Behavior: How Price Format Works," *California Management Review*, 43 (2), 42–49.
Trope, Yaacov, Nira Liberman, and Cheryl Wakslak (2007), "Construal Levels and Psychological Distance: Effects on Representation, Prediction, Evaluation and Behavior," *Journal of Consumer Psychology*, 17 (2), 83–95.
Underhill, Paco (2000), *Why We Buy: The Science of Shopping*. New York: Simon & Schuster.
Van Heerde, Harald, Els Gijsbrechts, and Koen Pauwels (2008), "Winners and Losers of a Major Price War," *Journal of Marketing Research*, 45 (October), 499–518.
Vohs, Kathleen D. and Ronald J. Faber (2007), "Spent Resources: Self-Regulatory Resource Availability Affects Impulse Buying," *Journal of Consumer Research*, 33 (1), 537–47.
Walters, Rockney G., and Maqbul Jamil (2003), "Exploring the Relationship Between Shopping Trip Type, Purchases of Products on Promotion, and Shopping Basket Profit," *Journal of Business Research*, 56 (1), 17–29.
Winkelmann, Rainer (2008), *Econometric Analysis of Count Data*. Berlin: Springer.
Zeithaml, Valarie A. (1985), "The New Demographics and Market Fragmentation," *Journal of Marketing*, 49 (Summer), 64–75.