

HOW MUCH TO USE?

An Action-Goal Approach to Understanding Factors Influencing Consumption Quantity

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Abstract

Factors influencing how much an individual consumes on a single-usage occasion are identified drawing on research in consumer behavior as well as allied disciplines. The overarching framework for understanding how various factors influence the amount consumed is based on Gollwitzer's (1996) "action-goal" model. Initially, such factors as a product's price and social norms influence the perceived desirability and feasibility of consumption-related goals. In the next phase, such factors as self-control strategies and product instructions influence the selection of a means of implementing the goal. However, during execution, individuals can be distracted from their planned means of implementing the goal. Finally, the consumer's motivation to use feedback, and the type of feedback about consumption, influences subsequent goal setting. The integrated framework we propose provides a means to understand how, and at what stage, various factors affect usage quantity. Such an understanding can aid marketers in formulating products, designing packaging, and creating messages, and can help public policy makers identify effective strategies to manage the well-being of consumers and of the environment.

A consistent and striking feature of the consumer behavior literature is its focus on purchase rather than on consumption (e.g., Helgeson et al. 1984; Holbrook and Hirschman 1982; Kas-sarjian 1978; Wells 1993). Although consumption is often conditional on purchase, a science of consumer behavior that does not follow through to an examination of consumption itself must necessarily be considered incomplete. Further, when inquiry is rooted in a particular context—as when the knowledge base for consumer behavior is derived mainly from the purchase context—the variables important to that particular context can dominate and limit theoretical development in the larger domain of interest.

The study of how and why people consume products generally centers on factors that include the person (who consumes), the product (what is consumed), the temporal dimension (when people consume), the locus of consumption (where people consume), or the quantity consumed (how much). Although the factors are interrelated and each is important to investigate, we focus on the quantity consumed in this review. Understanding how and why consumers make usage quantity

decisions has important practical as well as theoretical implications that warrant scientific inquiry. Usage quantity decisions are ubiquitous, with costs for individuals and society. From the moment individuals awaken in the morning, they make decisions about how much of a product to use. Consumers make mundane decisions about how much shampoo to apply, how much water and coffee to combine to make the perfect beverage, and how much coolant to put in the car's radiator, as well as more portentous decisions about how much of a pharmaceutical product to consume, how much fat-laden food to eat, and how much alcohol to drink before driving.

Marketing managers are interested in the amount consumed because one way to increase product sales and hence profit is by increasing the amount used by individual consumers. Marketers may also want to influence the quantity consumed because of its link with customer satisfaction. If consumers use amounts that are perceived to yield benefits (which could involve either an increase or a decrease in amount), satisfaction will increase, and with it corresponding gains in customer loyalty.

Usage quantity issues are a public policy concern because they can have major implications for consumers' safety and well-being (e.g., a high amount of sugar consumption can lead to diabetes for some people, heavy smoking contributes to birth defects and cardiovascular disease). Environmentalists' assignment of usage quantity as the first of the "three Rs" (reduce, reuse, and recycle) establishes it as a social issue. Persons intent on the conservation of natural resources maintain that even small changes in the amount consumed by each individual can have large effects in the aggregate.

Influencing the total amount consumed requires analysis of factors affecting the two components of usage—the frequency of use and the amount consumed on each occasion. The purpose of this chapter is to identify what is known about how consumers decide how much of a product to use on single consumption occasions (as opposed to the total quantity used across occasions or the frequency of usage), as well as the gaps in that knowledge. Most previous research examining usage quantity does so within the context of a particular social issue (e.g., obesity, energy conservation, alcoholism). A broader perspective is taken here to identify commonalities in usage quantity issues across heretofore conceptually segregated bodies of research because insight into problems identified in one field may facilitate understanding in a seemingly disparate field.

First, a framework of usage decisions is presented that provides conceptual coherence in understanding how people make such decisions. The analysis of usage quantity decisions is grounded in recent advances in relating individuals' goal setting to their goal-striving actions. Then research in consumer behavior as well as research in allied disciplines that address usage issues is reviewed and evaluated in light of the proposed model.

Overview of the Action-Goal Model Applied to Consumers' Usage

The overarching framework for understanding how various factors influence the amount used is based on the analysis of action goals by Gollwitzer (1996). The "action-goal" model provides a means of understanding when and how various factors influence a particular act. Although not formulated with consumption in mind, the model is applicable to understanding the amount consumed.

Phases of Action

Gollwitzer's (1996) model identifies the sequence in which cognitions about a goal relate to the performance of tasks to achieve the goal. Consumption goals are achieved through four quali-

Table 2.1

Usage Phases and Examples for Energy Consumption, Food Consumption, and Pharmaceutical Consumption

Phase	Task	Energy	Food	Pharmaceutical
Predecisional	Identify goals	Compare effort in conserving energy to convenience	Compare health benefits to taste benefits	Compare quality of life if regimen is followed versus status quo
Goal-striving	When, where, and how of starting	Install appliance	Create a menu	Read prescription instructions
Executorial	Actual product usage	Operate appliance	Ingest food	Apply or ingest medication
Postactional	Evaluate outcome of goal striving	Compare electricity bills	Assess health	Analyze side effects

tatively distinct tasks, two of which involve goal setting and two of which involve goal striving. The sequential ordering consists of four phases: predecisional, preactional, executorial, and postactional (Table 2.1).

The model assumes that consumers have a variety of wishes or desires. Individuals' task in the predecisional phase is goal setting - to identify which goals they will strive to achieve. They must analyze the desirability and feasibility of various wishes or options. For example, a consumer might evaluate the desirability of reducing home energy use. Factors influencing the desirability of a goal can be internal or external to the consumer. For example, goal desirability is likely to be context dependent, so social pressures can influence the incentives to pursue a consumption goal. Similarly, the perceived feasibility of achieving a consumption goal can be influenced by internal and external factors. For example, consumers may differ in their sense of self-efficacy, which would influence their beliefs about the feasibility of reducing energy use.

Having set a goal, the consumer proceeds to a goal-striving phase. The task of this preactional stage is "the when, where, and how of getting started" (Gollwitzer 1996, p. 289). Guides to selecting a course of action for consumption can be internal to the consumer or external. For example, product instructions direct consumers to use various amounts, but consumers might instead rely on their previous experience to develop a plan.

In the other goal-striving phase that follows, the consumer executes the behavior, actually consuming the product. Various factors can facilitate the consumer's pursuit of a course of action, but sometimes distractions can disrupt the execution of behavior. For example, a consumer might intend to limit alcohol intake, but situational influences could distract the individual from that plan. Again, internal and external factors play a role.

Following the executorial phase, goal-setting issues are again salient in the postactional phase. The task is to evaluate the outcome of goal striving, which influences the subsequent selection of goals. Consumers can invest varying amounts of effort in evaluating the outcome of usage. For example, a consumer might analyze the efficacy and the anticipated side effects of using more than the prescribed dose of medicine, or might give little thought to the consequences. Additionally, usage situations differ in the type and amount of feedback easily accessible to the consumer.

In sum, the amount used by consumers during consumption can be influenced at any one of the four phases of goal-directed consumption. Each phase involves a different task for successful goal completion (Gollwitzer 1996). Hence, a particular factor may influence usage at different points for different reasons, sometimes increasing the amount consumed and other times decreasing the

amount consumed. For example, social influence can enhance the desirability of a goal (phase 1) and later be a distraction from adhering to a course of action (phase 3). The influence of a factor at one stage is contingent on the successful completion of a previous stage, indicating a way in which one factor may influence another. More detail about the factors influencing usage quantity is provided in the discussion of the individual phases.

Phases at Which Consumption Quantity Is Considered

Although Gollwitzer's (1996) action-goal model provides a useful means of identifying the tasks involved in decisions about consumption, it does not imply that decisions about how much to use are always considered in setting a goal during the first phase. Rather than considering how much to use when setting a goal, the consumer might decide how much to use when planning a course of action to take when using the product. For example, a consumer could decide to treat a cold with a certain medicine and then read the instructions to decide how much of the medicine to take. Further, although the consumer may decide before action initiation how much to eat (e.g., to eat half a hamburger and drink a small cup of coffee), consumption quantity decisions often are unnecessary for the planning of action initiation in phase 2. A person can make usage quantity decisions while consuming.

The fact that consumption can often be initiated without deciding how much to use has implications for the implementation of consumption quantity decisions. A consumer who has not made a quantity decision before initiating consumption may invest little effort in developing predictions about effects of various quantities, and have vague goals about usage quantities with little commitment to those goals (cf. Bagozzi and Edwards 1997). Quantity decisions made "on the fly" in phase 3 may be more subject to distracting environmental influences than when made prior to initiating consumption. For example, a dieter need not relate the quantity of food consumed to the weight loss goal to order a restaurant meal. The dieter's plan to order a low-calorie plate would serve the weight loss goal, but lack of a plan about the quantity to eat may facilitate substitution of a more salient sensory goal about the amount to eat.

If vague plans have been established about usage quantities, consumers will have difficulty identifying useful feedback from monitoring amounts. For example, the decision to eat two pieces of candy is easily monitored by counting candy wrappers, but criteria for satisfying one's goal to eat "some" bread are less clear. In sum, the consumer's motivation to invest cognitive resources may be lower for usage quantity decisions than for consumption decisions pertaining to what, where, and when to consume.

Summary

Having established a general framework for understanding usage quantity decisions, we can now consider specific factors influencing the quantity of consumption at each phase of the model and examine empirical evidence for their influence. Note that research related to one phase can also be relevant to another. Our chapter also identifies issues that warrant further exploration. Because relatively few consumer behavior studies address usage, much of the following discussion synthesizes knowledge from diverse sources and fields on what may seem to be disparate topics.

The Predecisional Phase (Phase 1)

The goal-setting task of the predecisional stage is to evaluate the desirability and feasibility of acting on a goal (Gollwitzer 1996). That evaluation can transform mere wishes and desires to a binding

intention. The intention “specifies a desired end-state, which may be the execution of a concrete behavior or the attainment of a desired outcome” (Gollwitzer 1996, p. 292). For example, goals related to the consumption of alcohol can be identified on an abstract level (to enjoy oneself) or on a concrete level (to have only one drink). Hence, a wide variety of goals can relate to consumption activities. These goals may conflict, as when the “restrained drinker” is caught in a cyclical pattern of consumption (restraint or binging) depending on the fluctuating desirability of conflicting goals (e.g., cravings for alcohol versus self-esteem and self-presentational goals; Bensley 1991).

Previous research on consumption quantity has explored the effect of a specific product attribute (price) on the desirability of consumption. Other research has investigated the impact of social influence on goal setting. Research on product ownership effects suggests additional influences on the desirability and feasibility of consuming certain quantities.

Product Price

Price is an extrinsic property of products that can influence the desirability of consuming. Consumers may infer a product’s desirability from its price and so want to consume more of it. However, economic costs generally increase with the quantity consumed so that the product’s perceived price acts to inhibit consumption (Wansink 1996). Women indicate they would use more of even such inexpensive products as Crisco, M&Ms, and Creamette Spaghetti when they believe the price is low. Similarly, they would use more of Mr. Clean and Crisco when those products are offered on sale than when they are regularly priced. Hence, even small amounts of money appear to have a direct influence on amounts consumed.

Of course, price incentives can also increase the quantity purchased, which can, in turn, influence consumption goals. Ailawadi and Neslin (1998), using scanner panel data, modeled the effect of price promotions on the rate of consumption in two product categories (yogurt and ketchup). Promotions were found to increase household inventory levels, which in turn increased consumption. This may be at least partly because reducing inventory becomes a desirable goal.

Though price promotions or price reductions may intuitively suggest greater purchase quantity, this relationship is not as simple as it seems. Wertenbroch (1998) argues that consumers purchase different quantities of a product when there is a reduction in unit price (e.g., a quantity discount), depending on whether the product is a vice product (e.g., cigarettes, fatty foods) or a virtue product (e.g., low-fat items). His research contends and finds support for the hypothesis that, all else being equal, consumers are less price sensitive for vices than for virtues, and hence would forego savings from price reductions through quantity discounts for vices. Results suggest that consumers impose constraints over purchase (and subsequent consumption) of vice products by effectively paying price premiums in order to engage in self-control. Though this research does not directly test for whether the reduced purchase quantity of vice products reduces consumption quantity of those products, it shows that the nature of the product can affect the quantity purchased.

Price influences depend on the context of usage or the way costs are framed. A product’s price is a simple means of calculating the cost of consumption, but people can be influenced to exert effort to calculate other costs. Energy conservation increases when consumers calculate the total expenditures for using an appliance over the life cycle of the appliance (Hutton and Wilkie 1980). Framed in that way, the immediate savings from buying a cheaper but energy-inefficient appliance can seem trivial.

Context also influences price perceptions in that the salience of purchase costs (e.g., price, shopping effort) probably decline as the temporal interval between purchase and usage increases. Over time consumers would be likely to forget prices (e.g., Dickson and Sawyer 1990). The

exterior protective packaging and other cues to the purchase occasion (e.g., price tags) would be discarded. Other costs (e.g., storing the product) and benefits (e.g., immediate sensory gratification) would become more salient. For example, discounts on large sizes of products make them attractive purchases in warehouse club stores, but large units may be inconvenient for home use. In short, consumers' perceptions of costs when using may vary considerably depending on the salient cues in the usage context. Because of the effort often required to retrieve price information and then integrate it with other, more accessible information, price is likely to have less impact on consumption than it has on purchase.

Further, price may have a more complex effect on the amount consumed than the research suggests when it is perceived as an extrinsic incentive to consume. A consumer's perceived source of motivation to consume influences the desirability of consumption and so is likely to influence the amount consumed. Whether consumption is perceived as intrinsically or extrinsically motivated alters one's pleasure in consumption. Persons who experience autonomy over their behavior like and persist in the behavior more than those whose behavior is controlled by external forces (for a review, see Deci and Ryan 1987). Factors undermining a sense of autonomy include extrinsic incentives to consume, threats of aversive consequences from engaging in consumption, deadlines for completion of activities, surveillance by others, and lack of perceived choice over outcomes.

Social Information

Whereas research examining extrinsic consumption incentives suggests that others' influence attempts can lower the enjoyment of consumption, research also indicates that social influence can enhance the desirability of consumption. Information about others' consumption influences the perceived desirability and feasibility of a goal. Worchel, Lee and Adewole (1975) found that products made scarce because of others' desire for them are evaluated more favorably than items offered in constant supply. They manipulated a supply of cookies so that it was large (10 cookies), small (2 cookies), or diminishing (10 cookies of which 8 were subsequently withdrawn). After tasting the cookies, students indicated that they wanted to eat more of them and believed they were more desirable when they were in limited supply, particularly when the supply diminished from 10 to 2.

Consumption by others suggests the amount that is feasible to consume, so that conforming with consumption norms becomes a goal. Homeowners who were given information about energy expenditures by residents in their area reduced their consumption by more than 20 percent in comparison with those who did not receive that information (Van Houwelingen and Van Raaij 1989). Others' usage seems to have provided a reference point against which the homeowners could evaluate their own usage as excessive, although it also may have made competition with others on the usage dimension a salient and desirable goal.

Effects of Owning Products on the Desirability of Consuming

Although not directly examining amounts consumed, research on ownership indicates that it may influence goal setting. The desirability of consuming may differ depending on whether the product is owned or unowned. Although involvement may decrease after purchase (Richins and Bloch 1986), ownership can induce a greater liking for even inexpensive products (Beggan 1992), which in turn seems likely to increase the pleasure of consuming and the amount consumed. Consumption can sometimes provide a means of incorporating a product into the self, thus affording a sense of possession (cf. Belk 1988). A greater quantity of consumption may heighten such a perception.

On the other hand, one consequence of usage is necessarily a decrease in one's supply. People may be reluctant to relinquish valued products (cf. Kahneman 1992). Whether a greater liking for a product will increase consumption of it or increase reluctance to relinquish possession of it and thus lead to restraint in the quantity consumed is unclear. Perhaps the effect depends on the source of meaning that gives an object value (e.g., utilitarian versus self-expressive, see Richins 1994).

Other Factors Likely to Be Important in the Predecisional Phase

Consumers' personality dispositions are likely to influence their evaluations of consumption goals. Some traits, such as compulsive buying ("chronic and repetitive purchasing that becomes a primary response to negative events or feelings"; O'Guinn and Faber 1989, p. 155) and materialism (valuing acquisition and the means to acquire possessions; Richins and Dawson 1992), suggest a predisposition to view consumption and consuming as desirable goals. Individuals with a higher need for uniqueness value scarce commodities as a means of differentiating the self (Snyder 1992), perhaps also leading to a greater amount consumed than normative. Other traits, such as impulse control, learned industriousness (Eisenberger 1992) and self-efficacy (Bandura 1977), may relate to the perceived feasibility of goals.

The effect of the consumer behavior context (purchase versus consumption) on the perceived desirability of goals has not been explored, but is likely to influence the quantity consumed. Consider the potential differences in the comparison of alternatives. The salient alternatives in a purchase context are other brands of the same product, some of which may not be in one's consideration set (e.g., Pan and Lehmann 1993; Ratneshwar, Shocker, and Steward 1987). In contrast, in a usage context, alternatives are generally limited to the stock on hand, and hence comparisons are likely to involve dissimilar products. Such a comparison could alter the salience of a product's attributes and the consumers' evaluation and subsequent usage of the product (cf. Bettman and Sujan 1987; Johnson 1989; Simonson and Winer 1992).

More research is needed into cultural differences in consumption quantities and cultural trends. Values in Western culture have emphasized status acquired via conspicuous consumption of quantities of goods. Yet, some have noted a shift from status linked to quantity of consumption, both symbolic and material, to quality (Shipman 2004). Conspicuous consumption in the future might be less likely to be manifested by the ability to waste than by a spare or simplified lifestyle that expresses taste.

The Preactional Phase (Phase 2)

Phase 2 is distinguished from phase 1 by its orientation toward implementing goals rather than setting goals. Planning for the initiation and implementation of a task can be simple when the actions are well practiced (Gollwitzer 1996). Some simple action sequences, such as rituals, will have rich meaning embedded in them closely associated with important goals (cf. Rook 1985). In contrast to those who are secure in their routines, the individual who is uncertain of how or where to act invests more cognitive effort in planning for the initiation and implementation of action (Gollwitzer 1996). Sometimes that cognitive effort is devoted to extensive search and complex evaluation before engaging in action. For example, a consumer may attempt to recall nonexperiential knowledge from books and manuals as well as knowledge gained from experience. Hence, the preactional stage includes simple and complex cognitive activity.

Previous research has investigated several aspects of goal implementation in this stage. Some has addressed the link between goal setting and goal implementation by demonstrating that con-

sumption quantity can be a means of implementing nonconsumption goals. Other research has explored strategies of self-control over usage and product-specific beliefs. Several studies have investigated the use of external guides (e.g., instructions) to consumption.

Consuming Amounts to Achieve Nonconsumption Goals

Decisions about the amount to consume can be a means of implementing nonconsumption goals, as is evident from the literature examining social influence and food consumption. Consumption amounts are perceived as a means of conveying achievement of social ideals. College students believe they will appear more feminine by eating less and appear more masculine by eating more (Chaiken and Pliner 1987). Women in particular eat less when they are with an attractive man than they do when they are with another woman (Mori, Chaiken, and Pliner 1987; Pliner and Chaiken 1990). Even if others are not present at the time, women eat less when hungry if another person will be able to identify how much they have eaten (Polivy et al. 1986). Men, in contrast, eat more in groups than they do when alone (Edelman et al. 1986). Additionally, men have more concerns about social censure and about rejection arising from consuming too little alcohol than women do (Teahan 1987).

Women's concern about the impressions created by the amount of food consumed is well founded. College students perceived women who ate a small breakfast and a small lunch as more feminine than women who ate larger meals (Chaiken and Pliner 1987). Impressions of men did not differ with meal size.

Stereotypes about persons who consume too much are not limited to eating, nor is gender always a moderator of such stereotypes. People hold stereotypes about persons who differ in energy-conserving behavior (Sadalla and Krull 1995). Although energy conservation tends to be relatively private, self-presentational concerns may influence the quantity consumed. Some of the stigma attached to using more rather than less may be due to blaming the individual for not exercising restraint. For example, attributing obesity and alcoholism to lack of control leads to condemnation of people with those conditions (for a review, see Weiner 1986). In sum, the research suggests that the amount consumed can be influenced by seemingly irrelevant goals. Perhaps people use whatever means are at their disposal to implement important goals, such as goals of self-presentation.

Practical Means of Exerting Self-Control over Consumption

Implementation of consumption goals may require strategies that help the consumer regulate usage. Often such goals involve forgoing the immediate rewards from consumption because of long-term costs, as when people refrain from eating too much food or drinking too much alcohol to avoid future health problems. People may also need self-control to consume amounts of products that have long-term benefits but few immediate ones (e.g., eating bland diet food) and to time the rewards of usage to receive maximal effect (e.g., savoring products by distributing one's consumption across occasions). Research examining those situations has identified some strategies consumers use to regulate their usage.

Abstinence

One means of reducing the amount used is abstinence. "The technology of self-control often implies outright prohibitions because allowing a little bit eventually leads to excesses" (Thaler

1985, p. 208). For example, Alcoholics Anonymous maintains that abstinence is the only means of controlling alcohol intake. Although typical weight control strategies involve eating less food, certain high-calorie foods generally are prohibited. Research suggests that once a forbidden food has been consumed, the dieter no longer maintains restraint (Knight and Boland 1989).

Identifying conditions that trigger a course of action can help an individual refrain from consumption. One condition is the individual's affective state. Negative moods appear to diminish one's ability to resist temptation (Fry 1975). For example, bulimics who are aware that a bad mood is a common precondition of binge eating tend to refrain from a course of action they know will lead to negative feelings (Fairburn 1993). Passing up the initial opportunity to engage in an activity has the additional advantage of leading to continued forgoing of the activity (Tykocinski, Pittman, and Tuttle 1995).

Precommitment Strategies

Various precommitment strategies also aid in self-control over consumption. As consumption often cannot occur unless purchase preceded it, the type and the amount of product purchased influence the amount consumed. For example, purchase of an energy-efficient appliance facilitates conservation, but purchase of an energy-inefficient appliance results in overconsumption of energy (Anderson and Claxton 1982). Consumers can exercise control over consumption (1) by not purchasing a desired product, (2) by purchasing less of a desired product, or (3) by purchasing product variants that make usage less desirable or costly.

The numerous product variants in the marketplace that make usage less desirable or costly suggest that many consumers opt for them as a means of controlling quantities (e.g., filter cigarettes, reduced-fat foods). A potential disadvantage of this strategy is that it might not reduce the quantity used and could even increase it. Use of a substitute or ersatz product could make risks less salient, removing inhibitions against usage.

Savoring

Self-control is exercised not only when consumers perceive negative consequences in consuming, but also when they temporally regulate the amount consumed to derive maximal benefits. People prefer to separate positive outcomes, enjoying them more by experiencing them on separate days rather than at one time (Linville and Fischer 1991; Thaler and Johnson 1990). For example, students prefer to receive news of excellent grades on each of two papers on separate days rather than on the same day.

Although not tested in the context of product consumption, the principle of separation of gains seems to hold true for food products and perhaps other products as well. Consuming the same food repeatedly decreases its desirability. In one study, ratings of a chocolate candy's tastiness declined at a faster rate after several pieces had been eaten than the rate of decline that occurred after the candy color was changed between pieces (Rolls, Rowe and Rolls 1982). That finding suggests an individual might perceive greater total sensory rewards from eating (and savoring) one piece of a favored item each day than from eating several pieces at one time.

Goal Execution Beliefs in the Preactional Stage

Research suggests that consumers develop product-specific beliefs that guide implementation of goals in the preactional stage. People hold "naïve" theories about the causal relationship between

symptoms and medications that can influence the amount and frequency of medicine usage (Pennebaker and Watson 1988). Some people with high blood pressure believe they can estimate their blood pressure from their symptoms and emotions and plan their medical regimen accordingly. However, their blood pressure estimates are no more accurate than the estimates of those who lacked confidence in their ability to estimate their blood pressure. People also appear to hold theories about satiety, relating energy to food attributes (Booth 1994). Drinkers develop more positive and fewer negative expectancies about effects of ingesting quantities of alcohol than nondrinkers (Grube, Ames, and Delaney 1994). Many college-aged women relate the quantity of alcohol consumed to declines in social inhibitions (Teahan 1987).

In short, product experience affects consumers' naïve theories about cause-and-effect relationships about quantities. Few studies have explored the ways in which consumers test and develop their hypotheses. Consumers may use feedback about product performance to arrive at notions about the effects of various quantities through a trial-and-error process, or may use a more top-down approach, applying schemas and heuristics. For example, smokers may find through a trial-and-error process that adverse consequences do not immediately follow from each cigarette, and might thus conclude that they can dismiss warnings of dangers from smoking (Breznitz 1984).

Besides developing product-specific beliefs, consumers may rely on fairly general heuristics about products and amounts to make plans about how much to consume. Such heuristics may be common because they decrease the effort required to plan for usage. Forming plans for usage can be complex if the individual must take into account multiple causal factors as well as multiple effects (e.g., food intake, rate of consumption, and amount all influence the effects of alcoholic beverage consumption).

Consumption-quantity heuristics have not been explored in the literature. Yet people seem to apply usage heuristics that relate usage quantities to potency, persistence, and onset of effects. The notion that "more is better" suggests a linear relationship between amount and effect leading to the conclusion that overuse will yield better effects. However, some conditions may elicit the reverse belief—that less is better. One study found that many physicians treating pulmonary tuberculosis prescribe insufficient amounts of drugs, thus imposing considerable financial costs for salvaging therapy (medical regimens that compensate for previous mistreatment) and causing detriment to the patients' health (Mahmoudi and Iseman 1993). Presumably, physicians underprescribed in the belief that better outcomes would follow. The notion that "more is longer" suggests a temporal relationship between amount and effect, in that using more will lead to persistence of effects. Similarly, "more is quicker" suggests that using more will lead to more immediate effects. Research is needed to investigate heuristics and beliefs about amounts and the conditions that elicit them.

Also related to consumers' preactional beliefs or theories is the notion of tradeoff between consumption choices. Consumption of one product may affect the choice and consumption of another product in the same episode, as when a consumer plans consumption not just by focusing on single products but also within the larger consumption context or "consumption episode" (e.g., the choice of an entrée and dessert during a meal) (Dhar and Simonson 1999). Consumers sometimes engage in a tradeoff between a goal (e.g., pleasure) and a resource (e.g., money), or a tradeoff between two goals (pleasure and good health). Consumption strategies seem to differ in these two cases. If engaging in a tradeoff between goals and resources, consumers choose a highlighting strategy (e.g., a tasty, expensive appetizer and a tasty, expensive entrée on one occasion, and a less tasty, less expensive items on another occasion). When engaging in a tradeoff between two goals, consumers choose a balancing strategy (e.g., a healthy entrée and a tasty dessert, or a tasty entrée and a healthy dessert). That research, though it does not address consumption quantity specifically, is relevant to understanding how consumption quantity of one product can affect the

consumption quantity of another product during the same consumption episode. Consumption can depend on the nature of tradeoffs that consumers engage in (e.g., consuming a large meal on a special occasion and consuming a smaller meal on another more regular occasion versus consuming a smaller quantity of the entrée in order to consume a larger quantity of dessert during the same meal).

The Impact of External Guides to Usage

Companies and government agencies often provide information through instruction labels and warnings about when, where, and how to use products that can help people implement goals. Yet research suggests that such information has little impact on behavior (for a review on warnings, see Stewart, Folkes and Martin 2001). Consumers typically perceive external guides to executing usage decisions as having little value.

Consumers commonly maintain that they will not read instructional material on products (Wright 1981; Wright, Creighton, and Threfall 1982). Survey respondents report that they do not read product owner's manuals because they believe they already know how to use the product, they lack the time to read them, and they believe they can learn about the product more quickly by using it (Celuch, Lust, and Showers 1992). Those explanations may reflect some broader beliefs. First, consumers appear to believe their generalized knowledge about product use is sufficient when they consider the effort involved in acquiring narrow, brand-specific knowledge. Second, they appear to believe misuse entails few risks and prescribed use entails insubstantial benefits. Such a belief fosters simplified decision making as well as being a possible consequence of simplified decision making (e.g., lack of attention to product performance and feedback about usage). Finally, consumers appear to prefer trial as a means of information acquisition, as suggested by previous research comparing how product trial and other types of marketing communications influence consumers (e.g., Hoch and Deighton 1989; Kamins and Assael 1987; Smith 1994).

Whereas consumers appear to lack motivation to search for instructional information, they will use information when little search is necessary. Energy conservation studies indicate that labels attached to devices as reminders to reduce usage have varying degrees of effectiveness depending on their attention-attracting properties. In a field study, small signs and stickers on classroom light switches did not reduce energy usage, but large signs with bold lettering at classroom exits did (Winett and Kagel 1984). Those guides may have been successful because the students did not make the link between their own energy conservation goal and turning off the classroom lights until the sign drew attention to it.

Even if consumers read instructional information, they may lack the ability or motivation to comply with it. Consider the well-known Food Guide Pyramid. Even after being instructed on the use of the Food Guide Pyramid in selecting serving sizes, students still have difficulty understanding the concept, though they performed better than those without instruction (Knaust and Foster 2000).

Misinterpretation of external information can lead to important errors. Wansink and Chandon (2006) suggest that "low fat" nutritional labels increase food intake by increasing perceptions of appropriate portion size and by decreasing guilt associated with consumption. They contend that consumers' perceptions of serving size are unreliable and vary by as much as 20 percent. In three experiments, a low-fat label increased consumption of a snack (M&M's or granola) compared to when there was no such label, and low-fat labels made consumers feel less guilty about how much they consumed. Moreover, overweight consumers underestimated the calorie content of a

low-fat snack significantly more than normal weight consumers. Even normal weight consumers have difficulty understanding information about food serving sizes.

Even if consumers have the ability to understand compliance instructions, they might not be motivated to comply. Consumers seem to question the trustworthiness of instructions provided by firms. Consumer skepticism could arise because firms often have obvious incentives to encourage overuse (as when increased usage increases profits). However, firms' usage appeals seem to have little impact even when they advocate reduced consumption. A study examining techniques to encourage energy conservation found that brochures explaining how to reduce energy use were more effective in gaining compliance when a government body rather than the local power company urged conservation (Craig and McCann 1978). Consumer overuse in response to firms' usage recommendations may occur for many types of products, as when consumers use more than the recommended amount of products, inferring that fear of legal repercussions leads pharmaceutical manufacturers to be overly cautious. In short, consumers' inferences about motives behind firms' recommendations may decrease compliance with instructions (cf. Kirmani and Wright 1989; Wright 1986).

Gaining compliance with instructions has been a problem even in situations when motivation to comply should be fairly strong and the instruction giver's credibility is high. Most medical therapies address problems that elicit high-involvement information processing from patients. Further, the information source is more credible than most sources of product instructions because the consumer's welfare is the main concern of medical personnel and prescriptions are tailored to the patient's needs. Although some studies have shown compliance with medical regimens to be 95 percent, others have found it to be less than 40 percent, even low enough that the patient's health is at risk (Dunbar-Jacob, Dwyer, and Dunning 1991).

Some of the noncompliance may arise from lack of comprehension. Research suggests that people may have difficulty understanding common instructions (Mustard and Harris 1989). When given sixteen different actual prescription labels, about half of a group of college students interpreted them incorrectly (Mustard and Harris 1989). The results seem to suggest that instructions should always be as simple as possible.

However, other research has shown that the simplest instructions do not always elicit the greatest compliance. The fit between the consumer's goals when using the product and the form of instructions influences compliance (Martin and Folkes 2001). Novice product users comply with more complex instructions about amounts to use when they are motivated to maximize product outcomes than they do when they want to minimize the effort in using products. Novice product users who are motivated to minimize effort comply with simple instructions about amounts to use more than those who want to maximize product performance. Hence, the fit of the particular type of instruction with the consumer's goal in using the product influences compliance. A good fit also enhances the consumer's confidence in using the product and satisfaction with the product.

Another reason for noncompliance may be patients' tendency to substitute their own judgment based on experience with a regimen for experts' advice. For example, alcohol-warning labels are effective in reducing the alcohol intake of pregnant women who have had no previous live births but not for women who have had one or more live births (Hankin et al. 1996).

In sum, consumers are more likely to follow product-related consumption guides when the instructions capture attention and are comprehensible, when the consumers lack or perceive themselves to lack product experience, and when the consumers are motivated to comply. Generally, consumers appear to lack motivation to utilize instructional information, but might use it more when it reduces guilt associated with overuse. Less cognitively demanding instructions should facilitate compliance with labels and instructions (e.g., pictorial instructions or ones that integrate the prescribed quantity, as when cold pills are bubble packed by twos).

Other Factors Likely to Be Important in the PreactionalPhase

More research is needed to examine the motivational component of quantities consumed, especially in regard to affectively laden quantity-of-usage phenomena (e.g., savoring, hoarding, or gorging). Additionally, the way people relate settings to products needs additional investigation. People seem to have well-developed schemas about the situations in which products are used (e.g., soup is eaten for lunch but not breakfast; Wansink and Ray 1996). They may also hold schemas about products and settings that regulate consumption quantities. Consumption-related beliefs that influence the quantity of consumption include perceptions of products as complementary, interchangeable, or incompatible. For example, wine and beer are often perceived as interchangeable yet incompatible for simultaneous or sequential consumption, and the norms about amounts to consume differ. Understanding beliefs about relationships among products should shed light on decisions about the when, where and how of consuming.

The Execution Phase (Phase 3)

The task in the third phase is executing goal-directed behaviors (Gollwitzer 1996). The situation may offer opportunities that facilitate goal achievement or present distractions from pursuing the course of action to completion. Usage can involve highly overlearned and repetitive behaviors enacted under familiar conditions with little incentive to monitor and revise the actions. Such situations increase the likelihood that the chosen action will be carried through to completion. Factors that facilitate overuse in the execution stage include having a large supply of the product on hand, increasing the salience of the product, modifying the product or package to encourage usage and creating consumption atmospherics that encourage usage.

Despite the desire to adhere to a course of action, the consumer may encounter unanticipated obstacles or unsought feedback requiring revisions of executional decisions and repeated search and reevaluation. Further, underuse seems more likely to occur in the execution stage than overuse. Increased use of a product commonly requires additional effort or intensity of performance and persistence in a course of action. Factors that increase the effort needed to use more of the product or interfere with persistence in usage are likely to reduce the quantity consumed.

Available Supply

The supply on hand is an obvious factor restricting the amount used. The supply places an upper bound on the amount of product that can be consumed because an individual cannot use more than the amount available at any one time. Hence, purchase of a large amount permits more usage than the purchase of a small amount. However, the supply also influences usage in less obvious ways. A small supply of a product might cue a variety of cognitions about goal execution, such as thoughts about replenishment costs, predictions for future amounts to consume, and the formation of intentions for replenishment (e.g., a low reading on a gas gauge makes gas prices salient, leading to predictions about when refueling will be necessary).

Perhaps because of these thoughts, consumers apportion a smaller amount of a product for usage when a small supply is available than when a large supply is available (Folkes, Martin, and Gupta 1993). Given a partially full but large container, they put smaller amounts of detergent into a washing machine, apply smaller amounts of shampoo to their hair, and pour less cleanser into a bowl than they do when the same sized container holds twice as much of the product. The total supply rather than the fill level of the container accounts for the difference. Consumers allocate

the same amount of the product when the supply is held constant but the size of the container differs (e.g., pour the same amount when an 8 oz. container is full and when a 16 oz. container is half full). Moreover, the supply effect can not be explained by differential perceptions of product price, potency, and quality associated with fill level or container size. People did not associate a small bottle or a small supply with a higher-quality, more potent, or more expensive product. Further, it is not due to difficulties in regulating the amount during the act of pouring the product from the container. However, visual assessment of the supply seems essential because when the container was opaque, the supply effect disappeared. Perhaps the visual cue increases the salience of the supply as a cue in apportioning an amount to use.

One's supply can be viewed as a resource that consumers become increasingly reluctant to give up as it diminishes. An exception to that rule seems to occur when the consumer has a supply remaining that is slightly greater than the amount that would be apportioned for a single usage occasion. Then, a larger amount is used in an apparent attempt to finish the product and avoid retaining an incomplete portion (Folkes, Martin, and Gupta 1993). For example, a person might scoop a generous portion of ice cream from a nearly empty container rather than leave a minute amount remaining. The reason could be that immediate, salient concerns (storage costs, perceptions of product efficacy) outweigh future costs (inventory replenishment costs).

Another limitation to the effect of supply on usage is a ceiling effect for large supplies. In one of their experiments, Folkes, Martin and Gupta (1993) gave students about to launder their clothes a large container of detergent to use. Students used less detergent when the bottle was one-third full compared to when it was two-thirds full. However, they used about the same amount when the bottle was two-thirds full as when it was full. It may be that a ceiling effect emerged because students feared overusing detergent would harm their clothing. Hence, the tendency to use more with a greater supply occurs only within a limited range of amounts.

Product Salience

Just as the supply of a product can be a salient cue for usage, so also can the salience of the product itself. Product salience is another perceptual facilitator that can increase consumption quantity. Research has shown that making food products visible can stimulate unplanned consumption, even when consumers are satiated. Cornell, Rodin, and Weingarten (1989) allowed their respondents to eat a meal (sandwiches, fruit, potato chips, and brownies) to satiety, before exposing them to pizza. The diners were asked to rate their desire to eat pizza, taste the pizza, and then allowed to eat as much pizza as they wanted. Results showed that respondents' intentions to eat pizza were higher when it was in front of them (compared to pre- and post-lunch ratings). Despite being satiated, they consumed the pizza.

Similarly, visual salience of supply facilitates consumption of stockpiled foods. Chandon and Wansink (2002, study 2) gave consumers either large or moderate quantities (stockpiling versus nonstockpiling) of different kinds of high-convenience or low-convenience foods, and increased the salience of certain foods by providing pictures of them. They then monitored household consumption over a twelve-day period. Overall, stockpiled foods were consumed more than nonstockpiled foods, and high-convenience foods (ready-to-eat foods) were consumed twice as fast when they were stockpiled. Chandon and Wansink (2002) argued that recently stockpiled foods can be visually salient and that could be one reason why they are consumed more.

Product salience seems to particularly influence consumers who find it difficult to restrain consumption. Nederkoorn and Jansen (2002) exposed high- and low-restraint eaters to food, while physiological measurements were taken. Subsequently, respondents participated in a taste

test during which food intake was measured. Unrestrained eaters showed an increase in heart rate, gastric activity, and saliva during food exposure, suggesting that they prepared for food intake, while no such activity was evident in restrained eaters. Gastric activity also significantly correlated with consumption quantity.

Finally, product sampling can facilitate consumption because it primes or induces a motivation to consume more of a high-incentive product (e.g., tasty food). Wadhwa, Shiv, and Nowlis (2006) show that sampling a tasty food or drink enhances consumers' subsequent consumption of other tasty food or drinks. In three experiments they find that consumers who sampled a tasty beverage (study 1) or snack (study 2) consumed more food or drink in a subsequent task than consumers who did not sample (study 1) or those who did not sample as tasty a product (study 2). Further, they find that an individual difference variable, Behavioral Activation System (BAS) sensitivity, moderates this effect. Consumers high on the BAS scale were more likely to subsequently consume a greater amount of cola and more likely to rate other hedonic products favorably if they sampled a sports beverage initially, than if they did not sample the beverage. Those authors argue that BAS is a motivational system that underlies behavioral response tendencies such that individuals with a high BAS sensitivity have a higher motivation to seek out appetitive behaviors when primed with a high-incentive cue.

Package Shape and Product Amount Perceptions

Package shape can influence consumption quantity through perceptions of package size. This effect appears to arise from perceptual biases. Raghubir and Krishna (1999) found that consumers use the height of the container or its elongation to simplify volume judgments of the product inside. A container's height predicted respondents' volume judgments better than or about as well as models that included width or depth. When containers were tall or elongated, respondents in their studies perceived those containers as having more of a product than those that were shorter or squat in shape. If consumers perceive elongated containers to contain more of the product, this increase in perceived available supply should influence the consumption quantity of that product (recall Folkes, Martin, and Gupta 1993). Indeed, Wansink and van Ittersum (2003) conducted research with teenagers at weight-loss camps and with nondieting adults and found that the elongation bias caused teenagers to pour and drink 88 percent more juice or soda into short, wide glasses than into tall, narrow glasses that held the same volume. These teenagers underestimated the amount they poured by as much as 50 percent. Similarly, when experienced bartenders were asked to pour 1.5 ounces of an alcoholic beverage into short and wide glasses, the bartenders on average poured more than when they poured into tall and narrow glasses.

The elongation effects may sometimes arise because the elongated products examined in these studies seem to have attention-attracting properties. Package shapes that attract more attention are also perceived to contain a greater volume of a product than same-sized packages that attracted less attention (Folkes and Matta 2004). The disparity in attention seems to lead to "mental contamination" of the volume judgment. If the containers are similar in size, the one that attracts attention more is judged larger. Folkes and Matta argue that the bias is due to the covariation of the attention directed to a package with its size. Through experience with a variety of stimuli, people probably have learned to determine which of two shapes is larger when the magnitude of the difference is large. A perceptual sensation that covaries with that size judgment is differential attention—large shapes generally attract attention more than small shapes. This covariance of attention and size causes the overall attention-attracting properties of a package to bias or contaminate volume judgments such that packages that attract more attention are also perceived to contain a greater

volume of a product than same-sized packages that attract less attention. Because package shapes that attract more attention lead to perceptions of greater available supply, those perceptions should in turn increase consumption quantity when compared to the consumption quantity of a product contained in a less attention-attracting package (cf. Folkes et al 1993).

Product Design “Affordances” Influencing the Execution Stage

Consumers can also purchase products with design properties that facilitate adherence to one’s course of action. The design aspects of products have been termed “affordances”—“the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used” (Norman 1988, p. 9). Influences on quantity consumption include the features or affordances that initiate use and terminate use.

Norman (1988) analyzed the effect of product design on the implementation of a goal to conserve natural resources. Most home water faucets require one action to start usage and the reverse of that action to stop usage. The action sequence initiating use is generally physically and temporally distinct from the action terminating use. Hence, such faucets do not facilitate water conservation. In contrast, water faucets found in many public facilities allow water to flow only when pressure is applied to hold the faucet in position. The initiating action must be sustained with some effort, whereas ceasing the effort terminates usage. The basic difference in design has an obvious consequence for water conservation. Products requiring exertion of effort to initiate use and cessation of effort to terminate use will lead to lower consumption than those for which continued usage requires no effort.

Product design also facilitates the calibration of amounts so that they are consistent with one’s intentions. “Garbology” studies examining the kind and amount of refuse discarded by individual households find considerably more waste when people buy prepared foods than when they buy fresh foods that can be more finely calibrated into portions at purchase (Rathje 1992).

More research is needed on product design issues, a subject rarely addressed in the marketing literature (Bloch 1995).

Consumption Atmospherics

The intensity of sensory factors such as lighting, odor, and noise in the consumption environment seem to influence consumption quantity in an inverted U-shaped fashion, though sometimes the absence of controls makes this conclusion conjectural. Dimmed or soft lighting, when compared to harsh or bright illumination in restaurants, increases eating duration and also increases comfort and disinhibition (Lyman 1989; Ragneskog et al. 1996), hence contributing to increased consumption. An inverted U-shaped relationship between lighting and the amount consumed seems probable because very dim lighting seems likely to decrease the salience of food.

Rolls and Rolls (1997) find that food odors can stimulate consumption of a food, but may also decrease consumption of that food if people experience sensory-specific satiety when exposed to the odor of that food for a period of time (experiment 2). An implication of this finding is that within a single meal, consumers’ intake of food can be limited if presented with the same odor for a period of at least several minutes before the eating starts or during the initial part of the meal. Therefore, slow eating, which allows olfactory and gustatory sensory-specific satiety to build up, may tend to reduce consumers’ meal size. Conversely, odor variety in a meal can enhance consumption of food.

Music is another atmospheric variable that seems to influence the amount of food consumed.

Liked music appears to encourage longer meal duration and greater consumption of food in a restaurant compared to no music or disliked music (Caldwell and Hibbert 2002; North and Hargreaves 1996, 1998). Similarly, Milliman (1986) suggests that background music tempo influences the rate and quantity of consumption in a restaurant.

Perhaps these sensory effects are partly due to alterations in mood that lead consumers to revise their beliefs about products and time allocations to eating. Consumers in a positive mood have improved expectations about products that are not evaluated negatively (e.g., candy would create a positive mood, which would in turn improve expectations about the consequences of consuming it; Kahn and Isen 1993). More favorable product expectations might increase the amount consumed so that once consumers experience mood elevation from consuming the product, they would use more than they anticipated before initiating consumption.

Social Facilitators

Consumers can facilitate adherence to their selected course of action by creating usage environments that reward such activities. Research shows that social support from one's family is an important factor in influencing whether a patient complies with a medical regimen (Aaronson 1989; Dunbar-Jacob, Dwyer, and Dunning 1991). Such support makes following through on the action easier and so facilitates goal striving in the execution phase.

Other social factors facilitating consumption include the presence of others and social modeling. Eating with familiar people can lead to an extended meal and greater consumption of food (cf. Bell and Pliner 2003; de Castro and Brewer 1992; de Castro 1994). In a study that had respondents maintain a seven-day detailed diary of everything they ate or drank and those consumption episodes, de Castro (1994) found that meals eaten with other people were larger and longer in duration compared to meals eaten alone. The relationship with one's companion also influenced consumption. Meals eaten with spouse and family were larger and eaten faster than with others. Meals eaten with friends were larger and of longer duration than with less intimate others. Those results suggest that the presence of others at a meal increases consumption by extending the duration of the meal, and that familiar others have a stronger effect, probably by providing a relaxed atmosphere and disinhibition. In another study, de Castro and Brewer (1992) found that meals eaten with one other person were, on average, 33 percent larger than those eaten alone, and that meals eaten with seven other people present were as much as 96 percent larger than those eaten alone. Similarly, Bell and Pliner (2003), in an observational study of consumers in a variety of settings (a worksite cafeteria, a fast-food restaurant, and a moderately priced restaurant), found a significant positive relationship between meal duration and the number of people eating at each table.

On the other hand, consuming food with unfamiliar others can reduce consumption quantity in situations where self-monitoring is high (e.g., first dates, job interviews, etc.) (cf. Pliner and Chaiken 1990; Mori, Chaiken, and Pliner 1987). Women targets who consumed relatively small meals were rated as more feminine (Chaiken and Pliner 1987) and more socially appealing (Basow and Kobrynowicz 1993) than their counterparts who consumed larger amounts of food. Further, research has also shown that women tend to consume less food in the presence of others, particularly in the presence of attractive males (Mori, Chaiken, and Pliner 1987), suggesting the effect of self-presentational concerns on consumption quantity. Indeed, social modeling has been shown to enhance consumption of water (Engell et al. 1996, experiment 2) such that respondents who were in the presence of a confederate drinking a large amount of water consumed a larger amount of water when compared to those who were alone or in the presence of a confederate who consumed a smaller amount of water.

Social disapproval, even when it comes from a stranger, can stop an individual from a consumption habit. In one study, when signs forbidding smoking in a cafeteria were accompanied by verbal requests to stop smoking, the mean minutes spent smoking fell dramatically from the level observed when only signs were posted (Jason and Liotta 1982).

Effort Exertion

More effort required to use the product generally decreases consumption, though whether the user perceives effort exertion positively or negatively can depend on the user's intrinsic interest in the activity. People can define tasks in ways that increase their intrinsic interest in the activity and therefore their consumption (Sansone et al. 1992). An activity that is conducive to embellishment in a fantasy context can generate increased interest (Parker and Lepper 1992). For example, when the use of a car care product is associated with a race-car driver, the user might elaborate on a racing fantasy, consequently enjoying using the product more and valuing the effort invested in consuming the product.

Effort, when conceptualized as the difficulty or inconvenience in accessing food products, has been shown to affect the amount of food that is consumed by consumers. Overall, studies have found that lower effort increases consumption. Engell et al. (1996) showed that respondents drank more water when the water was available on the dining table versus when it was 20 or 40 feet away (experiment 1). Painter, Wansink, and Hieggelke (2002) examined the consumption of candy in a study of secretaries who were given access to candy either on their desks or at a distance of 2 meters away from their desks. They found that, on average, when the candies were placed on their desks, the secretaries ate about 5 more candies than when they had to exert more effort, that is, stand up and walk 2 meters to eat them.

Hearn et al. (1998) examined data from two school nutrition projects and found that availability and accessibility of fruits and vegetables at school and home increased school children's consumption of fruits and vegetables. Wing and Jeffery (2001) find that consumers who were given low-calorie food provisions and menus were more likely to consume those low-calorie foods compared to consumers in other study conditions (control group and other intervention techniques). They conclude that reducing the effort in having access to low-calorie foods increases diet compliance and weight loss.

Distractions from Usage Execution

Effort plays a role in another factor influencing the execution of a usage decision. Distraction from using a product can influence the amount consumed. The effect of a distractor can differ with the task. When effort must be exerted to terminate consumption, a repetitive consumption cycle leads to overconsumption. Research suggests that concentrating on nonconsumption tasks that require information-processing effort increases repetitive consumption rather than distracting from it. When engaging in a task that required their constant attention, people ate more snacks as the task increased in difficulty (Cantor, Smith, and Bryan 1982).

Distraction Product Features

Product features that interrupt the behavioral chain of consumption should decrease consumption amounts more than those that do not interrupt usage. The beginning of the action sequence of

consumption provides cues that remind the user of the alternative of termination. The division of a product into small units seems likely to prompt more frequent assessment of the quantity to use. Kirschenbaum and Tomarken (1982) examined serving size effects by offering unlimited amounts of ice cream but varying the size of the bowl in which it was served. Their women subjects ate less when given small bowls than when given large ones, perhaps because the decision to stop was cued more frequently by the small bowl.

Some studies suggest that variety or lack of product uniformity can act as a distractor, increasing the amount of food consumed at a single meal. In other words, product variety in an assortment can affect consumption quantity. In some of the early psychological research on the effect of variety on consumption quantity, Rolls, van Duijvenvoorde, and Rolls (1984) gave participants a four-course meal that was either varied or homogenous (one each of sausages, bread and butter, chocolate dessert, and bananas, or four courses of one of these foods), and found that respondents given the varied meal consumed 44 percent more food than those who received the same food for each course. Similarly, when offered a succession of sandwiches for lunch, students ate 33 percent more when the sandwiches had four different fillings than when they all had the same filling (Rolls et al. 1981). In another study in that series, respondents consumed significantly more grams of yogurt when provided with three flavors over successive courses as compared with participants provided with the same flavor of yogurt in all courses (Rolls et al. 1981). Moreover, mere changes in the shape of food increase the amount ingested. When students were offered in succession a variety of pasta shapes (bow ties, hoops, and spaghetti), they ate more than they did when they were offered only their favorite shape (Rolls, Rowe, and Rolls 1982).

These effects of variety on consumption could be moderated by cognitive processing difficulty. Kahn and Wansink (2004) identified three moderators—organization, symmetry, and size of assortment—that affect consumption. In one study, they gave respondents an assortment of M&M candies in either seven or ten different colors, with taste being identical among all colors. They also manipulated symmetry of the assortment by varying the frequency of one color (10 percent vs. 30 percent dark brown). Increasing the number of colors of M&M candies increased respondents' consumption of the candies only when the assortment was asymmetric. This occurs because asymmetric distributions are easier to process compared to symmetric distributions. In an asymmetric assortment the dominant items are processed and appreciated first, before the remaining items. On the other hand, when the assortment is symmetrically distributed, there is no easy heuristic for processing the variety. Respondents who received the high variety (10 colors) rated the candies more fun to eat when the assortment was asymmetric (30 percent brown) than when symmetric (10 percent brown). Hence, increasing assortment variety may increase consumption only when the assortment is not too complex.

The tendency to consume more of heterogeneous products may be limited to ones with sensory properties, such as food (sensory-specific satiety; see Rolls, Rowe and Rolls 1982). However, a desire for stimulation might contribute to such an effect for nonfood products. Product heterogeneity (e.g., multicolored toothpaste) may evoke the consumer's curiosity, reducing self-imposed constraints on consumption and encouraging impulsivity (cf. Loewenstein 1994).

Distraction in the Environment

Distraction can occur not only as a result of product attributes, but also as a result of participating in multiple tasks at the same time. Research has shown that such distraction can affect an individual's ability to monitor the quantity consumed (Bellisle and Dalix 2001). This research found that healthy women who listened to a detective story when eating (i.e., distracted respondents) consumed more

food than did healthy women who ate alone (baseline group), those who ate alone and listened to instructions on the sensory characteristics of food, or those who ate in groups of four. Respondents' cognitive restraint as indicated by their monitoring of satiety was found to correlate with the difference in the food consumed between the baseline and distraction conditions.

Cognitive distraction affects the attention individuals pay to oral sensory signals when consuming food. In a study conducted by Poothullil (2002), lean female respondents ate cereal when they felt hungry under baseline and three other conditions: eating until the pleasantness of the flavor of the cereal subsided, eating until the stomach felt full, and eating while watching television. Results showed that cereal consumption was significantly higher than baseline when respondents ate until they felt full and while watching television. Recognition of oronasal sensory cues while eating was offset by cognitive distraction in monitoring satiety, leading to an increase in consumption quantity.

Similarly, Stroebele and de Castro (2004) found that respondents in a two-week diary study reported being less hungry when they ate meals or snacks while watching television than when they were not watching television. Although the meals with the television on were smaller, the frequency of meals increased. They concluded that normal internal cues regulating food intake may not be as effective while watching TV (p. 113). This is consistent with prior research that suggests that people consume more food and snacks when watching television and may do so even when not actually hungry (Tucker and Friedman 1989; Tucker and Bagwell 1991).

The Postactional Phase (Phase 4)

The task in the final, postactional phase is evaluation of goal achievement (Gollwitzer 1996). Feedback may reveal that the outcome of the course of action has fallen short of one's desires. Consequently, standards of performance may be lowered or alternative goals pursued.

The evaluative processes in the final phase often involve elaborative inference, explanation, and prediction, which can form a distinct knowledge base from the practical knowledge associated with implementation ("how to" use the product; Ohlsson 1996). Acquiring, interpreting, and using feedback can be complex. Consumers may need to monitor amounts as they are being consumed to determine whether consumption meets their goals and to know how much has been consumed in the past if the past is to be used as a standard in the present. When a person is drawing complex inferences about why amounts are effective, knowledge of the effects of using certain amounts can influence consumption (e.g., knowledge of the results from using various amounts of detergent). Further, consumers need to be able to retrieve such information at the appropriate time. Although few studies have explored how memory for feedback influences judgment and how consumers weigh and integrate these various types of information, researchers have explored the effect of feedback about quantity decisions on usage. Several studies have addressed the effects of providing various types of information about energy use on conservation and about the amount of food ingested on dieting.

Feedback about Usage

Research on food consumption indicates that type of feedback is an important influence on consumption. Sometimes the type of feedback conducive to making quantity judgments is different from what might be expected. Contrary to everyday notions, physiological cues seem to be insufficient to enable people to specify the amount they ingested at a meal (Jordan 1969). The amount eaten by an adult at a single meal is not just physiologically determined by stomach capacity or

sensations of fullness, but is also psychologically influenced so that eating sometimes continues beyond sensations of fullness and sometimes ceases before capacity is reached (Booth 1994). In addition, the rate of consumption can also influence capacity, either increasing or decreasing the amount ingested. For example, fast eaters tend to overeat because physiological feedback from stomach fullness is delayed by about 20 minutes.

Consumption experience probably accounts for the important role of visual cues in influencing how much people eat. When not given visual cues about the amount of food eaten, even undistracted eaters are poor judges of the amount they have consumed. In addition to simple cues, calorie labels on foods help reduce the amount consumed (Kirschenbaum and Tomarken 1982). Multiple cues of different types may enhance the effectiveness of feedback because they increase its credibility and are likely to attract attention or facilitate recall of the information. People can be helped to monitor consumption if they are reminded to do so and monitoring is made salient. In one study, women who were easily able to monitor the amount of candy they had eaten by counting candy wrappers and women who were encouraged to count the number of cookies eaten ate less than those who could not monitor or were not encouraged to monitor the amounts (Polivy et al. 1986). Behavioral treatments for eating disorders commonly include regimens that encourage monitoring of the amount ingested (Stunkard and Mahoney 1974).

Research on energy consumption also supports the notion that feedback must be in a form that consumers can easily comprehend and relate to their own actions. When information about energy consumption is immediately available and detailed, people conserve more. Feedback on individual as opposed to group energy usage promotes conservation (Kasulis, Huettner, and Dikeman 1981), as does feedback on a daily versus a monthly basis (Hutton et al. 1986; Van Houwelingen and Van Raaij 1989).

The preceding points about the form of feedback may seem obvious, but feedback about quantities consumed is often difficult to comprehend and relate to one's behavior. The utility meter outside most homes provides immediate feedback, but not in a form most homeowners understand. Consumers conceive of energy consumption in terms of dollars and respond best when feedback is given in such terms (Kempton and Montgomery 1982). However, feedback in terms of dollars is misleading when inflation raises energy costs despite reductions in use. The household's conservation is not reinforced in the expected way when the bill arrives.

The literature on decision making in general supports the notion that feedback about the consequences of one's actions improves judgment. Yates (1990) suggests that detailed feedback about such factors as discrimination and slope of effects would be likely to improve judgment even more. Yet increasing the amount of information generally calls for a corresponding increase in the consumer's effort to process and use that information.

In sum, the amount and quality of feedback as well as the consumer's ability and motivation to use feedback influence the amount consumed. Most studies show that feedback helps consumers reduce consumption but that directional influence may be due to the products typically examined (food and energy). Depending on the consumers' goals when using the product, feedback might also increase consumption. Knowledge of quantities can make salient any discrepancies between amounts consumed and goals sought. Feedback can also stimulate consumers to formulate targeted amounts before usage so that intentions control behavior before the onset of action (cf. Heckhausen and Beckman 1990).

Important Issues in the Postactional Phase

More research is needed on motivational or directional biases in the search for, interpretation of, and use of consumption quantity feedback. "Garbology" studies in which actual usage was moni-

tored by analyzing refuse have shown that consumers underreport their own alcohol intake by 40 to 60 percent, whereas nondrinkers in the same household gauge others' alcohol intake with only about a 10 percent error (Rathje 1992). Comparing survey results with evidence from discards reveals that people overestimate the volume of healthy food they eat (e.g., liver, cottage cheese, tuna) and underestimate the volume of unhealthy food (e.g., sugar, candy, bacon) (Hudson 1984; Rathje 1992). The self-reports may reflect self-presentational strategies but also sincerely held beliefs based on biased search, interpretation, and use of feedback.

Another unexplored issue is related to whether the source of feedback is from usage or disposal. A consumer's product evaluation, and therefore usage, may be influenced by the act of disposing of a product. Discarding what are perceived as surplus amounts of a product may lead to a diminished evaluation of it. Disposing of a product may also interrupt the repetitive sequence of usage and prompt evaluation. Factors influencing the amount consumed should be examined across stages of consumer behavior (purchase, consumption, disposal).

Methodological Issues Pertinent to the Action-Goal Model

The action-goal model presented here organizes factors influencing usage decisions sequentially into one of four phases: the predecisional phase, the preactional phase, the execution phase, and the postactional phase. An alternative way to classify variables is into those that relate to the product (what is consumed), the person (who consumes), temporal factors (when it is consumed), and the locus of consumption (where it is consumed). Table 2.2 illustrates how some of the variables described in our chapter could be classified using the latter framework. The action-goal model seems a superior conceptual framework in its focus on the role of goals in motivating and regulating usage behavior. Nevertheless, the sequential nature of the model brings to the fore certain methodological issues that might not be as problematic for other frameworks. A particular challenge is identifying the beginning and termination of each phase. Additionally, the model's focus on the discrepancy between goals set for usage and factors causing consumers to deviate from those goals leads the researcher to anticipate differences between a consumer's cognitions about usage and actual behavior and to value measures of both. Accurate measures of the amount consumed require unobtrusive observation of the amount an individual uses during a single occasion.

Identifying Single Usage Occasions

Determining the unit of analysis when measuring the quantity consumed can be problematic when products are not used within narrow contexts. For example, measuring the amount of toothpaste applied on a single usage occasion is easy because usage is compressed into a short time period and occurs at regular intervals. Such patterns are less distinct for other products where diversity in the situation eliciting usage and temporal patterns vary. For example, a bottle of water in a person's car may be consumed at irregular intervals, so identifying the termination of the usage occasion is difficult for the researcher.

Collecting Usage Data

Another potential difficulty in usage quantity research is related to the measures used. Among the numerous obstacles to usage observation are privacy concerns. Observation of behavior is more feasible in public settings than private settings, but social influences on usage are more likely in public settings, which must be taken into account when drawing conclusions.

Table 2.2

Examples of Product, Person, Temporal, and Locus Factors Influencing Usage Quantity

<p>Product Price Instruction labels and warnings Packaging Inventory size and unit size</p>	<p>Person Knowledge Ownership of the product Materialism Impulse control</p>
<p>Temporal Time pressure Continuous episodes Contiguous with feedback Contiguous with purchase</p>	<p>Locus Presence of others Salience of alternatives Atmospheric Variety of other products</p>

Alternatively, the researcher might ask for recall of amounts used or predictions of amounts one would use. Many surveys include items designed to identify the amounts of products consumed by respondents. However, as noted in the review of research on food intake and energy consumption, people often lack knowledge about the amounts they have consumed. Instead of retrieving specific usage instances, an individual may rely on general knowledge to provide a response (Smith and Jobe 1994).

Further, recall of amounts used is hampered when measurement units are subjective. For example, the amount of food constituting a large portion to one person is only a moderate portion to another. Additionally, some populations may have different norms for portion sizes. College students define standard alcoholic drink volumes as being larger than the amounts commonly used by researchers (White et al. 2003). The overestimations varied by type of product. When students poured alcoholic beverages into a variety of cup sizes, they overestimated the amount they should pour for a serving size by 26 percent for shots, 80 percent for mixed drinks, and 25 percent for beer.

Consumption quantity researchers can sometimes estimate usage amounts by knowing the total quantity the individual consumed and the frequency of use, especially when the amount used is believed to be constant across occasions. In some cases, usage frequency data are sufficient to identify high-quantity users. Frequency and quantity are often correlated simply because the same factors can influence both. People who enjoy using a product will purchase more and have a larger supply on hand, which is likely to increase both the frequency and quantity of usage. However, frequency and single usage amounts can differ in their antecedents and consequences. Although correlated, frequency and quantity of drug use relates differentially to problem behaviors (Stein, Newcomb, and Bentler 1988).

Clearly, difficulties in obtaining precise measurements of quantities consumed can hamper research. Purchase quantity, in contrast, is relatively easy to monitor unobtrusively. However, unless consumption is contiguous with purchase, purchase quantity provides insight only into supplies available to the user.

Implications of Usage Research for Marketing and Public Policy

Our conclusions about the usage literature have implications for interventions by public policy makers and marketers. Although many of the behaviors described here may seem trivial and mundane, usage

quantity issues can have serious implications for consumers' safety and well-being. One study found that many physicians treating pulmonary tuberculosis prescribe insufficient amounts of drugs, thus imposing considerable financial costs for salvaging therapy (medical regimens that compensate for previous mistreatment) and causing detriment to the patients' health (Mahmoudi and Iseman 1993). Increasing the quantity of drugs used in that case would yield incalculable benefits.

Usage quantity has become increasingly linked with social policy concerns, which in turn attracts the attention of regulators and consequently can affect marketers. For example, the federal government's 1995 Dietary Guidelines for Americans suggest health benefits from drinking moderate amounts of alcohol, restricting consumption of frozen convenience foods and high-fat processed meats, increasing the amount of vegetables eaten, and exercise (*New York Times* 1996). Those guidelines influence school lunch programs, nutritionists' advice, and the food industry. Environmentalists' emphasis on reducing consumption (one of their three R's) has had wide influence (e.g., effects on taxation policies, public utility rates, marketing communications, and product design).

Besides relating to social policy concerns, usage quantity is relevant for firms' profits. Firms may want to increase sales by increasing the quantity of their offerings that purchasers consume. Profits can sometimes be increased by selectively increasing the quantity consumed of some products and decreasing that of others (e.g., a restaurant might profit by increasing the amount of beverages customers drink but decreasing the amount of condiments they use). Marketers may want to influence the quantity consumed because of its link with customer satisfaction. If consumers use amounts that are perceived to yield benefits (which could involve either an increase or a decrease in amounts), satisfaction will increase with corresponding gains for the marketer.

As is clear from the literature reviewed, firms generally can influence usage most easily by modifying aspects of the product (for examples, see Table 2.2). Governments can sometimes affect quantities consumed by influencing product factors (e.g., taxation policies influence price), the usage setting (e.g., restricted pub hours designed to decrease alcohol consumption), and a person's ability to use products (e.g., restricting teenagers' access to tobacco products). However, product factors may interact with other factors in the usage situation, so intervention may not be as simple as it seems. For example, increasing the amount prescribed for use on package instructions has the intended effect of increasing the amount the consumer believes should be used to gain the desired outcome. Yet when consumers have other sources of knowledge about product usage, they are likely to ignore instructions (Celuch, Lust, and Showers 1992). Previous government regulations restricting pub hours in England were intended to decrease the quantity of alcohol consumed. Those regulations were changed because they seemed to increase the amount consumed just prior to closing, leading to more social problems rather than fewer. Affecting the amount consumed requires thinking beyond simple product or situational modifications.

In sum, whereas many organizations have an interest in influencing consumers' usage quantity, doing so may be difficult because of lack of control over how consumers use products. Further, sometimes baseline consumption levels are present that are not easily changed. The amount of energy consumed, for example, is heavily influenced by house characteristics (Tienda and Abrampan 1981; Verhallen and Van Raaij 1981).

Nevertheless, even small changes in numerous individuals' behaviors can have large effects in the aggregate, especially for frequently consumed items. This point is readily acknowledged by those intent on the conservation of natural resources and is the basis for many ecologically sanctioned programs (e.g., recycling). The principle also is relevant for many consumer products. For example, small increases in the amount of catsup, dishwashing detergent, and toothpaste used can cumulate across individuals and occasions. A fast food firm increased its drinking straw size

and found that consumption of beverages increased. Apparently, customers reordered beverages because they finished their first drinks too quickly.

In short, even though consumption can be constrained by the capacity to consume, incremental changes can have an impact. The selection of a particular strategy to influence usage is likely to be a function of numerous factors, including the cost of implementing the strategy, the malleability of the behavior, and the magnitude of the change. However, costs can be influenced by the durability of the behavioral intervention (e.g., creating product variety might have only a temporary influence), the immediacy of the change, the compatibility of the usage message with other marketing efforts (e.g., with pricing strategies and advertising intended to influence purchase), and generality across consumers who have different decision-making strategies for usage.

Conclusions

Although many scholars have called for more attention to consumer behaviors other than product purchase, consumption has remained under-researched in the marketing literature. Among the aspects of consumption that warrant investigation is the quantity consumed. The relatively few marketing studies examining usage quantity issues may be due partly to the lack of a framework for integrating previous research on apparently disparate consumption quantity topics. Our chapter addresses that deficiency by providing an integrative framework for understanding usage quantity. Gollwitzer's (1996) action-goal model offers a means of understanding how various factors influence the quantity of consumption and identifying unresolved issues related to the quantity of consumption. Further, the model indicates the ways in which some factors may precede and therefore influence the impact of other factors.

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