Available online at www.sciencedirect.com

ScienceDirect

Journal of Consumer Psychology 24, 3 (2014) 413–431

Research Dialogue

Slim by design: Redirecting the accidental drivers of mindless overeating☆

Brian Wansink [a], Pierre Chandon [b,c,*]

[a] Dyson School of Applied Economics and Management, Cornell University, 110 Warren Hall, Cornell University, Ithaca, NY 14853-7801, USA.
[b] INSEAD, Boulevard de Constance, 77300 Fontainebleau, France
[c] Institute for Cardio-metabolism and Nutrition, Paris, France

Received 11 January 2014; received in revised form 25 March 2014; accepted 30 March 2014
Available online 13 April 2014

Abstract

We first choose what to eat and then we choose how much to eat. Yet as consumer psychologists, we understand food choice much better than food consumption quantity. This review focuses on three powerful drivers of food consumption quantity: 1) Sensory cues (how your senses react), 2) emotional cues (how you feel), and 3) normative cues (how you believe you are supposed to eat). These drivers influence consumption quantities partly because they bias our consumption monitoring—how much attention we pay to how much we eat. To date, consumption quantity research has comfortably focused on the first two drivers and on using education to combat overeating. In contrast, new research on consumption norms can uncover small changes in the eating environment (such as package downsizing, smaller dinnerware, and reduced visibility and convenience) that can be easily implemented in kitchens, restaurants, schools, and public policies to improve our monitoring of how much we eat and to help solve mindless overeating. It is easier to change our food environment than to change our mind.

Keywords: Food; Obesity; Nutrition; Norm; Monitoring; Packaging

Introduction

Food choice decisions are different than food consumption quantity decisions. The former determine *what* we eat (salad or pasta); the latter determine *how much* we eat (half of it or all). Consumer psychologists and health psychologists have often focused on understanding the mechanisms that influence food choice more than on understanding what influences food consumption quantity. Yet at a time of increasing obesity, understanding what influences how much we eat is as relevant as understanding what we eat (Hall et al., 2011; Hill, 2009; Nestle & Nesheim, 2012; Rozin, Ashmore, & Markwith, 1996; Young & Nestle, 2002).

Unfortunately, what consumer researchers have so far discovered about consumption quantities has been largely ignored by public health, nutrition, and medicine. Part of this is due to our process-focus and their outcome-focus. As consumer psychologists, we typically focus on causal antecedents, process mediators, statistical significance, psychological individual traits as moderators, and counter-intuitive short-term effects on food choice. In contrast, public health and community nutrition research largely focuses on outcomes, effect sizes, point estimates, actionable interventions, demographic moderators, and long-term effects on weight gain and health. This outcome-focus is really a solution-focus. It ultimately places a premium on potentially effective even if theoretically unsurprising interventions, such as raising prices and nutrition education (e.g., Block, Chandra, McManus, & Willett, 2010; Ni Mhurchu, Blakely, Jiang, Eyles, & Rodgers, 2010).

A framework that organizes the drivers to overeating (defined as eating more than one realizes) could help spotlight and stimulate overlooked, creative, prescriptive solutions. As seen in Fig. 1, we build on the important distinction between

☆ The authors are grateful to Michel Tuan Pham for his wonderful guidance throughout the review process.
* Corresponding author.
E-mail addresses: wansink@cornell.edu (B. Wansink), pierre.chandon@insead.edu (P. Chandon).

http://dx.doi.org/10.1016/j.jcps.2014.03.006
1057-7408/

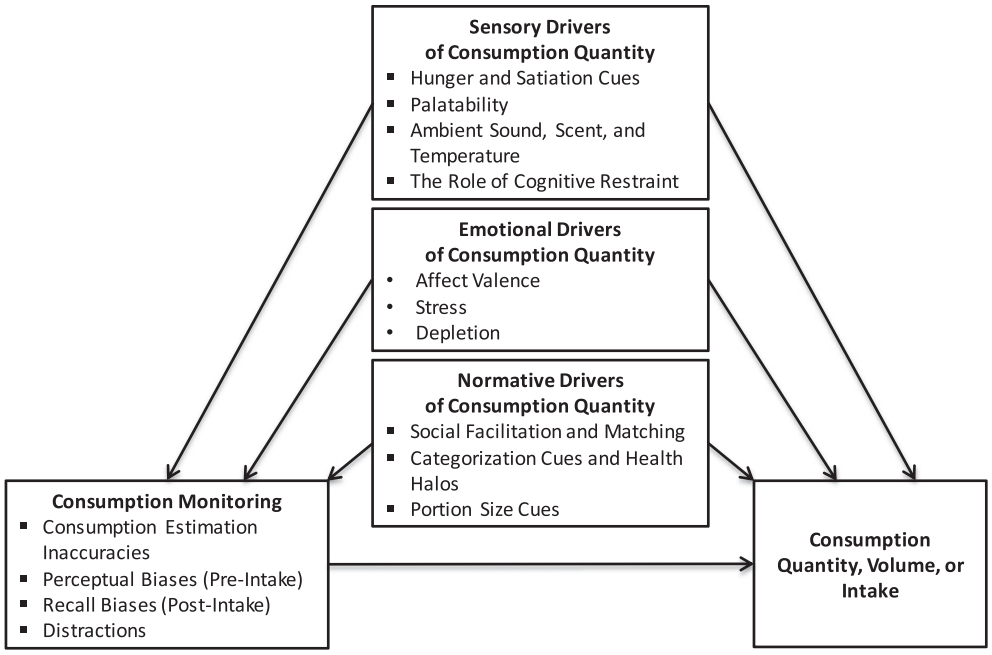

Fig. 1. Drivers of consumption quantity.

sensory and normative influences first made by Herman and Polivy (2005,2008) and suggest that 1) sensory, 2) emotional, and 3) normative drivers influence consumption quantity partly because they either facilitate or interfere with consumption monitoring. Although some consumption quantity research has focused on sensory drivers and emotional drivers, these are sometimes either individually specific or otherwise difficult to change in a way that is scalable and cost-effective for public health. Instead, increased attention needs to be given to consumption norms and to the environmental interventions that can influence them and improve the monitoring of how much we eat (Chandon & Wansink, 2011; Wansink, 2004).

Consumption monitoring

We eat more than 1000 meals a year. We should expertly know how much food we have eaten and it should be easy to know when we are eating past the point when it is no longer pleasurable. Yet when Americans are asked to recall the last time they overate to the point of regret, 83% had done it within the past 10 days (Wansink, 2014). Even after eating 1000 meals year after year, we are remarkably bad estimators of how much we eat, but the errors are not random—they are biased in a systematic way. Herein lie the seeds of a solution: While these errors or biases often lead us to overeat, they can also be leveraged to help us eat less.

Consumption estimation inaccuracies

When we eat standard-sized foods in small quantities—such as two eggs for breakfast—it is relatively easy to monitor how much we have eaten. It becomes much more difficult, however, when we have eaten multiple foods or when the portion sizes are not standard, such as a pasta entrée, a home-made cookie, or a large, two-handed fountain drink with no size information.

Prior research describes a consumption range—a *mindless margin*—in which people can either slightly overeat or slightly under-eat without being aware of it (Wansink, 2006). Over the course of a meal, studies have suggested that a person can appear to eat up to15–20% more or less than they typically do without realizing they have relatively over- or under-eaten. That is, if a person needs 2000 cal to stay in energy balance, they could eat within the 1700–2300 cal without feeling they had eaten less or more than typical. Yet over the course of one year, even 100 fewer or extra calories per day (equivalent to a tablespoon of peanut butter, 8 oz of soda, or 1 small glass of wine) will make the difference between being 6 lb lighter or 6 lb heavier (Hall et al., 2011).[1]

This inability to detect small differences partly explains why people are generally unaware of their inability to monitor their consumption and why so much of our consumption—19.9% according to a meta-analysis (Trabulsi & Schoeller, 2001)—is under-reported. It also explains why people are generally unaware of the influence of the accidental drivers of mindless eating, whose effects tend to be within that 15–20% range. Importantly, this bias repeatedly occurs regardless of one's nutrition knowledge (Bellisle, Dalix, & Slama, 2004; Tooze et al., 2004) and it is exacerbated by the way food is packaged, displayed, and poured (Chandon, 2013). When a person either selects or serves a food (before they eat), these

[1] Forecast obtained from the NIH body weight simulator http://bwsimulator.niddk.nih.gov.

biases are perceptual. After a person has already eaten, these biases are memory-related.

Perceptual biases of portion size (pre-intake)

The visual biases that lead to overeating begin as soon as people pick up a package or plate. Even though volume and weight information are mandatory on most packages, most people visually infer the volume from the size of the package or the size (medium versus large) mentioned on its label (Lennard, Mitchell, McGoldrick, & Betts, 2001; Viswanathan, Rosa, & Harris, 2005). In the case of restaurant portions or convenience store cups, size information is not mandatory and consumers have little choice but to estimate it visually.

Unfortunately, visual cues linked to sizes and shapes can lead to dramatic estimation inaccuracies (Chandon & Wansink, 2007b; Folkes & Matta, 2004; Krider, Raghubir, & Krishna, 2001; Krishna, 2007). First, although people are relatively accurate at estimating small quantities of a food, they underestimate large quantities of food by a surprising large margin (Chandon & Wansink, 2007b). Just as we all underestimate magnitude changes in volume, weight, or brightness, the subjective estimate of an increasing meal or portion size appears much smaller than it really is. As a rule of thumb, doubling the size of a fast food portion or product packages only makes it appear to be 50–70% bigger (Chandon & Ordabayeva, 2009). This helps explain why obese people so dramatically underestimate their consumption—they simply tend to choose larger meals and portion sizes. In other words, meal size, not body size drives errors when estimating the size of meals (Wansink & Chandon, 2006).

These biased perceptions are not a result of people underestimating differences in the height, width, or length of packages or portions. Instead, they are a result of people intuitively believing that these changes in size are additive instead of multiplicative (Ordabayeva & Chandon, 2013). This mistaken use of an additive heuristic to solve a multiplicative size estimation problem explains why elongated packages appear bigger than packages with a lower height to width ratio (Krishna, 2006; Raghubir & Krishna, 1999; Wansink & Van Ittersum, 2003). For example, Ordabayeva and Chandon (2013) showed that an object downsized by 24% appears to have been downsized by only 2% when it has been elongated. Because of the primacy of vision over other senses, elongation strongly biases size perceptions even when people are asked to weigh the product by hand. It even leads people to over-pour wine when holding a glass (versus having it set on a table) or when pouring into a wider red wine glass than a more narrow white wine glass of the same capacity (Walker, Smarandescu, & Wansink, in press).

Recall biases of consumption quantity (post-intake)

Estimating consumption becomes even more difficult once the food has been eaten. Drawing attention to how much food is eaten by leaving residual evidence of consumption in view (such as discarded candy wrappers) facilitates monitoring and decreases consumption quantity (Polivy, Herman, Hackett, & Kuleshnyk, 1986). In one study, people ate a third fewer stackable potato chips out of tube cans when every seventh chip was colored red (Geier, Wansink, & Rozin, 2012). In another setting, Super Bowl fans ate 27% fewer chicken wings when waitresses did not remove the bones from the table compared to when they did bus the table (Wansink & Payne, 2007). Adding unobtrusive partitions (such as colored cellophane in between the cookies inside the package, or having every seventh stacked potato chip colored red) can reduce intake because it facilitates consumption monitoring and because it offers an interruption or a "pause point" for a person to ask themselves if they are really that hungry (Cheema & Soman, 2008; Geier et al., 2012).

Impairing the ability to gage consumption from visual cues increases consumption quantity. In a "dark restaurant" (Dunkelbühne) in Berlin, diners were served regular or larger dinner portions when either eating in total darkness or when eating in a regularly-lit restaurant. Larger portions led to consumption underestimation and to a 36% increase in food consumption in the dark (versus only 22% in the light) yet diners' subjective satiety was largely unaffected by how much they had consumed (Scheibehenne, Todd, & Wansink, 2010).

Distractions that disrupt consumption monitoring

Given how difficult it is to accurately monitor our consumption, it is unsurprising that consumers are as easily distracted from how much they are consuming and this generally leads to overeating. With the few exceptions discussed below, consumer research has generally examined the effects of distraction on food choice, not on consumption quantity (Shiv & Fedorikhin, 1999; Shiv & Nowlis, 2004). For instance, when people are asked to watch television during lunch, they eat 12% more without it having any corresponding impact on their hunger, satiety, or palatability (Bellisle et al., 2004). Another study found that people ate 18% more when asked to eat lunch in front of the television and ate 14% more when assigned to eat with a friend (Hetherington, Anderson, Norton, & Newson, 2006). By videotaping these lunches, it was found that these increases were caused by reduced consumption monitoring. Whereas people who were asked to eat alone spent 85% of the time looking at their meal, this proportion went down to 33% (eating with a friend) and 28% (watching TV).

Distraction also has carryover effects, leading one to forget what they have eaten and to again eat more *after* watching TV (Higgs & Woodward, 2009). Conversely, enhancing memory of one's last meal decreases later snack intake, which may be one reason why keeping a food diary has been so effective in weight loss. Not remembering what one has eaten is a major reason why distractions promote overeating. It does not matter whether they are in the form of television, video games, friends, or a book. In a characteristically clever study, Rozin, Dow, Moscovitch, and Rajaram (1998) even found that amnesiac patients would repeatedly eat the same meal every hour if they were told it was dinner time again.

Interestingly, there may even be an additional sensory explanation for the pronounced impact distractions have on diets. Recent studies suggest that distractions interfere with the

monitoring of specific food attributes, such as flavor, variety, and calorie density (Higgs, 2008), and they also delay the onset of taste monotony or sensory specific satiety, which helps determine when a person will stop eating a particular food (Remick, Polivy, & Pliner, 2009). Its effects can be measured at the physiological level of salivation rate (Epstein, Rodefer, Wisniewski, & Caggiula, 1992).

Although it is clear that distractions can lead us to overeat, they can also promisingly be used to distract us away from food and to therefore eat less. In one snacking study, people were given an average of one-quarter as much of an afternoon snack as they typically ate and were then given a distracting task to do (return a phone call or deliver an envelope to an office down the hall). Fifteen minutes following their snack, they rated themselves equally sated and equally satisfied as a control group who had eaten four times as much of the snacks (van Kleef, Shimizu, & Wansink, 2013).

Summary

In the absence of external stopping points, consumption monitoring largely determines consumption quantity decisions. To date, however, consumer psychology research has merely focused on a) documenting the inaccuracies and systematic biases of our consumption estimates, b) showing how they can be explained by perceptual quantity estimation biases, and c) showing that everyday distracting tasks like watching television strongly interfere with monitoring. So while we know a lot about a narrow slice of consumption monitoring, there are many more promising opportunities. For instance, we have typically focused on the negative consequences of distractions, instead of thinking more creatively about how we can harness these distractions to distract ourselves away from the temptation of food before we overeat.

The next sections examine research on the sensory, emotional, and normative drivers of overeating and highlight how they influence consumption quantities by either directly or indirectly interfering with—or facilitating—accurate consumption monitoring.

Sensory drivers of consumption quantity

Most people wrongly believe that hunger is the biggest determinant of consumption quantity (Glanz, Basil, Maibach, Goldberg, & Snyder, 1998; Vartanian, Herman, & Wansink, 2008). In reality—except in the cases of extreme hunger or extreme satiation—physiological cues (hunger, satiation, and gastric distension) play a surprisingly limited role in how much we eat. Instead of reviewing the physiology of hunger itself, we focus on internal sensory cues (such as palatability) and on ambient sensory cues (such as sounds, scents, lighting, and temperature).

Hunger and satiation cues

A homeostatic model of eating assumes that people eat to balance their energy inputs and output: They are driven to eat because of declining energy resources (they feel hungry) and they stop eating once they have replenished these resources (they feel full). As a result, hunger and satiation (the opposite of hunger) would naively appear to be the most obvious drivers of consumption quantity (Herman & Polivy, 1983). This model seems logically correct at the extremes—such as after a 24-hour fast on one extreme, or after a Thanksgiving dinner on the other extreme. Yet in between these extremes, the main impact of being hungry seems to have less of an influence on *how much* we eat than on *what* we eat. For instance, buffet goers who had been deprived of food for 18 h (which is not uncommon when a person skips breakfast) consumed no more food than those who had eaten breakfast 3 h earlier. Instead, they ate more starches (French fries and bread) than vegetables or fruit (Wansink, Tal, & Shimizu, 2012b). The same is true when grocery shoppers are hungry. They do not buy greater quantities of food when they are hungry, they simply buy a greater proportion of less healthy, ready-to-eat foods, including breakfast cereals, cookies, crackers, and potato chips (Tal & Wansink, 2013).

To underscore this disconnect between one's hunger and how much we eat, one seven-day study had people keep a food diary and to also rate how hungry they were at various times during the day (Mattes, 1990). There was no correlation between how hungry people were and how much they decided to eat. Their eating episodes often occurred when hunger ratings were low or were constant, and very few people displayed any correlation between hunger ratings and number of eating occurrences. Most people eat even when they are not hungry and when eating has stopped becoming pleasurable, and they only stop eating when they reach the point of feeling physically full but short of feeling physically uncomfortable (Poothullil, 2002).[2]

There is a growing body of research suggesting that hunger and satiety are mostly psychological constructs determined by memory and mental simulation (Morewedge, Huh, & Vosgerau, 2010; Redden, 2008). For example, people satiate less when they remember the variety of foods that they have consumed in the past (Redden & Kruger, 2009). The worse one's memory of what they just ate, or the perceived ease of recalling past consumption, the less sated one feels and the more desire they have to continue eating (Redden & Galak, 2013).

[2] In a large part, this gap between when we feel full and when we stop eating exists because these sensations of fullness or satiety are the outcome of a complex integration of physiological, sensory, and contextual inputs influenced by memory and expectations (Epstein, Temple, Roemmich, & Bouton, 2009). The effects of the physical and chemical qualities of the ingested food and of oral and gastric signals such as gastric distention on satiation are complex, vary across people, and are highly interactive depending, for example, on the actual location of the food is in the gastrointestinal tract (Cecil, 2001; Ritter, 2004). For example, the formerly well-established result that liquid foods are less satiating than solid foods has been shown to depend on characteristics such as pre-load volume, the time lag between the pre-load and the next meal, and the quantity and quality of sensory inputs (Almiron-Roig, Chen, & Drewnowski, 2003; de Graaf & Kok, 2010).

Palatability

Palatability—the anticipated and the experienced pleasure of eating or smelling tasty food—is one major reason why hunger and satiation do not fully explain how much we eat. Palatability is the result of complex multisensory interactions between the smell, oral texture, temperature, viscosity, and the sound made by food when they are being shown, served, or eaten (Auvray & Spence, 2008; Rozin, 2009; Zampini & Spence, 2010).

Never before has a wider variety of tasty, affordable food been more easily available to consume. These sensory cues of palatability increase our subjective feelings of hunger and decrease feelings of satiety (Rozin et al., 1998). Multiple studies have also shown that they prime the goal of hedonic eating while disrupting consumption monitoring (Stroebe, Mensink, Aarts, Schut, & Kruglanski, 2008; Stroebe, van Koningsbruggen, Papies, & Aarts, 2013). The mere sight or smell of palatable food makes people simulate consumption, with its pleasure and rewards, eroding a dieter's willpower and leads to overeating (Papies, Barsalou, & Custers, 2012; Rogers & Hill, 1989). Placing candies in clear (versus opaque) dishes and close (versus 6 ft away) to people's desk was found to double actual consumption quantity but not perceived consumption (Wansink, Painter, & Lee, 2006).

Ambient sound, scent, lighting, and temperature

Consider four relevant ambient sensory cues of an eating environment: Sounds, scents, lighting, and temperature. These external (hence non-physiological) sensory cues can have a large impact on consumption quantity because people typically cannot block out, control, or avoid them (Krishna, 2009, 2012; Zampini & Spence, 2010). With sound, for instance, loud background music has been shown to increase the consumption speed of food and drink (McCarron & Tierney, 1989; McElrea & Standing, 1992; Stroebele & de Castro, 2006) and lead to up to 18% increase in food consumption in a fast food restaurant (Wansink & Van Ittersum, 2012). Beyond loudness, in nicer, table-service restaurants, it has been shown that appealing music leads to longer meals and higher calorie consumption because people are more likely to order a dessert or another drink (Caldwell & Hibbert, 2002; Milliman, 1986). At least part of music's influence on overconsumption comes from consumption monitoring failures. Pleasant and familiar background music reduces the perception of time duration (Garlin & Owen, 2006; Morrin, Chebat, & Gelinas-Chebat, 2009) and music distracts from the sensations coming from eating the food itself, which further impairs monitoring (Woods et al., 2011).

Moving on to the other three features of eating environment, the main effects are these: First, pleasant ambient odors that complement a food can increase consumption quantity (Fedoroff, Polivy, & Herman, 1997, 2003) and offensive or inconsistent odors decrease consumption quantity (Wadhwa, Shiv, & Nowlis, 2008). Second, similar to loud sounds, harsh lighting makes people eat faster and reduces the time they stay in a restaurant whereas soft or warm lighting (including candlelight) generally causes people to linger and likely enjoy an unplanned dessert or an extra drink (Lyman, 1989; Stroebele & De Castro, 2004). Third, people eat more when the ambient temperature is below the thermo-neutral zone (Westerterp-Plantenga, van Marken Lichtenbelt, Cilissen, & Top, 2002). Unlike for sound however, it is not clear whether scents, lighting, and temperature impact consumption quantities because they interfere with monitoring or because they make food less attractive or less of a priority compared with physical comfort (Scheibehenne et al., 2010; Wansink, Shimizu, Cardello, & Wright, 2012a).

Individual differences and eating restraint

In the 1960s, Stanley Schachter cleverly demonstrated that obese people (compared with normal weight people) are less influenced by internal physiological cues like hunger and are more influenced by external cues (Herman & Polivy, 2008). In one classic study, obese people ate more food after Schachter and Gross (1968) manipulated a clock to make them believe that it was meal time. They repeatedly ate each time the clock (an external cue) indicated it was the time they usually ate (such as 12:00 and 5:00 PM), and still ate the full consumption quantity eaten by the non-obese (Nisbett & Storm, 1974).

Later work has contended that these individual differences have less to do with obesity and more to do with restrained eating, which is often colloquially referred to as "dieting" but more precisely defined as repeated restraint attempts and failures (Fedoroff et al., 1997; Fishbach, Friedman, & Kruglanski, 2003; Herman & Deborah, 1975). That is, instead of determining when to start and stop eating based on hunger and satiety, restrained eaters use cognitive "dieting" rules to govern what, how much, or how often they should eat. These dieting rules can easily be disrupted by one's mood, by cognitive load, or by dietary violations such as accidently eating a "forbidden" hedonic food. These "shocks" demotivate restrained eaters from monitoring how much they eat, and make them more likely than normal eaters to be influenced by external sensory, emotional, and normative cues.

After a 40-year lull, researchers are again studying the relative impact of internal versus external cues. For example, Wansink, Payne, and Chandon (2007) found that when Americans (versus French) report what led them to stop eating dinner the previous night, they are more likely to report using external cues such as whether their plate was empty or whether the television show they were watching was over. In contrast, the French reported using internal cues such as "I was no longer hungry" or "The food no longer tasted as good." The same results were found when contrasting normal weight people with obese people regardless of their nationality. Recent research on self-control now distinguishes between successful and unsuccessful restrained eaters or dieters (Fishbach et al., 2003). For successful dieters, being exposed to palatable food cues actually primed the *opposite* goal of restraint, enabling them to successfully lose or maintain their weight when faced with temptation. Repeated exposure to temptation actually inoculates them from future self-regulation failures (Dewitte, Bruyneel, & Geyskens, 2009; Geyskens, Dewitte, Pandelaere, & Warlop, 2008).

What is recently becoming of interest is how one's surroundings can help facilitate self-regulation—even in the face of temptation. Environments that are devoid of food-related cues (such as the workplace or church) help people better monitor their consumption (Hofmann, Friese, & Roefs, 2009; Stroebe et al., 2013). These environments are particularly helpful for people with low-working memory capacity, again underscoring the critical importance of consumption monitoring (Hofmann, Gschwendner, Friese, Wiers, & Schmitt, 2008).

A new frontier is the one that shows how the impact of different types of cues would change across different levels of hunger. For example, among normal weight people, moderate hunger actually increases reliance on some external cues (such as social imitation) as well as reliance on sensory and emotional cues (Jansen & van den Hout, 1991; Kaufmann, 1995; Spiegel, Shrager, & Stellar, 1989). In contrast, normative cues such as the size of the portion, the size of the container, or the perception of the amount of food, tend to influence most people more similarly (Herman & Polivy, 2008; Rolls, Morris, & Roe, 2002; Wansink & van Ittersum, 2007), but may have a slightly exaggerated impact on extroverts compared to introverts (van Ittersum & Wansink, 2013).

Summary

In the past, physiological cues have been the natural starting point to study eating. Recently, however, researchers have shown how seemingly straightforward physiological drivers like hunger and satiation only account for a small percentage of how much we eat. In their review paper, even Herman and Polivy (2008) admit that their path-breaking boundary model—which assumes that hungry individuals eat no matter what—may only be true only in extreme cases and that other cues (like palatability and external sensory cues) actually influence consumption quantity to a much larger extent than previously believed. Furthermore, palatability and sensory cues have been shown to influence consumption quantities partially because they short-circuit physiological signals.

Finally, these sensory cues appear to drive consumption quantity more for restrained eaters or dieters than other people. For over 30 years, this has been an unexplained paradox. People who watch what and how much they eat—and therefore should be better monitors of their consumption—are repeatedly more impressionable than people who just eat what they feel like eating. Once palatable food or ambient scents (for example) throw them off balance, their cognitive restraint and dieting rules are no longer effective; their consumption becomes disinhibited, and they lose the motivation to monitor their consumption. This suggests that strict consumption monitoring can actually backfire. On the other hand, because another subset of dieters has found a way to make these temptations actually increase their resolve (Geyskens et al., 2008), there is a rich opportunity to better understand what causes these dramatically different responses, and how new framing, rules of thumb, or in-home interventions might be designed to better help restrained eaters stay restrained.

Emotional drivers of consumption quantity

"Emotional eating" is a term often used to describe the interest that some researchers and most of the popular press appear to have with these eating bouts associated with mood or stress. Such eating bouts are typically defined as involving three or more times the amount of food a person would typically eat in this type of situation (Wansink, 1994). Part of this interest with emotional eating and eating bouts may have to do with the episodes being memorable, definable, and dramatic. People can remember the last time they binged on a pint of ice cream by the light of the freezer door better than they can remember the slightly larger portion of cereal they served themselves a couple days earlier.

It may be, however, that emotional eating is less common than its media mention would lead one to believe. In one self-reported study, when asked to identify the last time they ate to the point of regret, only 12% attributed this overeating episode to stress, mood, or other emotional cues (Wansink & Chandon, 2014), whereas 49% attributed it to hunger and 39% to the palatability of the food. In this section, we review the role of affect valence (positive versus negative emotions) and the impact of stress and ego depletion.

Affect valence

For many years, the key insight regarding mood and food was that the worse you felt, the worse you ate. Nowhere was this clearer than in one's choice of comfort foods. One study found that people were 4.2 times more likely to eat a less healthy food (mainly snack foods) when in a negative mood but were 2.5 times more likely to eat a healthier food, such as a meal-related food, when in a positive mood (Wansink, Cheney, & Chan, 2003). People eat more popcorn and M&M's when they are in a sad mood because they are watching a sad movie but eat more raisins when they are watching a happy movie (Garg, Wansink, & Inman, 2007).

Recently, however, it appears this tendency is most common with restrained and stress eaters (Sproesser, Schupp, & Renner, in press). With unrestrained eaters, there is less of an impact of mood on food (Macht, 1999; 2008). Importantly, this helps explain why most food and mood studies show much smaller effect sizes if they look at a general population and must use an eating restraint measure as a covariate in their analyses (Gardner, Wansink, Kim, & Park, 2014).

More recent studies have looked beyond valence to examine more specific aspects of emotions such as their temporal orientation and function. Winterich and Haws (2011) found that people experiencing hopefulness (a future-focused positive emotion) consumed less of an unhealthy food than those experiencing a past- (pride) or present-focused emotional state (happiness). Finally, recent studies demonstrate the goal-dependence of emotions (Andrade, 2005). In general, sadness increases indulgent eating because it functions as a signal to regulate negative emotions (Gardner et al., in press). When the eating enjoyment goal is salient however, sadness functions as a signal to be more vigilant about future losses and makes

people less likely to indulge (Salerno, Laran, & Janiszewski, in press).

Stress

Overeating research is dominated by studies of stress. Animal studies have examined the effects of physical stressors—such as extended immersion in ice water—and focused on identifying its physiological pathways to subsequent behaviors (Adam & Epel, 2007). These studies suggest that stress increases the reward value of palatable food because it stimulates opioid release which decreases the stress response. Still, these theories assume that stress uniformly leads to overeating.

Human studies have focused on why some people respond differently to stress than others. These studies—which mostly focus on restrained eaters—use a variety of creative manipulations to induce feelings of stress, including threats of shock, watching unpleasant videos, task failures, anticipated public speaking, interpersonal rejection, and remembering negative personal events. One consistent finding has been that restrained (but not unrestrained) female students eat more when stressed, regardless of the particular stressor used. Studies have also found more stress-induced eating among women than men—although this could be explained by the higher prevalence of restrained eating among women (Greeno & Wing, 1994). As an analog, consider the increasing levels of stress college students face throughout the semester. One recent study showed the sales of unhealthy foods sold on a university campus increases across each semester but then drops dramatically back down at the beginning of the next semester (Wansink, Shimizu et al., 2012a; Wansink, Tal et al., 2012b). The opposite pattern was found for healthier foods.

Some studies have examined the link between consumption quantity and depression, which has been linked by some to an extreme form of stress. Because of their strong link with depression, lack of appetite and weight loss have long been considered among the major symptoms of depression (Beck, 1972). Still, more recent studies have shown that between one third and half of depressed people gain weight during depression, showing that weight loss is not the useful diagnostic symptom of depression that it was once thought to be (Greeno & Wing, 1994).

Depletion

Consistent with stress, one of the more engaging and novel streams related to consumption quantity is one showing that threats to a person's identity and ego increase consumption of indulgent, unhealthy foods (Baumeister, Heatherton, & Tice, 1993; Lambird & Mann, 2006). For example, Baumeister, DeWall, Ciarocco, and Twenge (2005) found that people who were told that no one wanted to work with them ate more cookies, and Inzlicht and Kang (2010) found that the experience of stereotype threat—taking a math test—led women who are highly stigma conscious to eat significantly more ice cream. In a nationwide quasi-experiment, Cornil and Chandon (2013) showed that people eat more, and less healthily, after a narrow unexpected defeat of their favorite football team, but they tend to eat less and better after a victory.

Fortunately, recent insights suggest self-affirmation can help counter the negative impact of vicarious losses to one's ego as well as to their favorite football team (Cornil & Chandon, 2013). Logel and Cohen (2012) even found that, after two and half months, women who had been asked to self-affirm their core values had a lower BMI than those who did not. Now that the impact of depletion has been shown to be robust across people and places, what would be most promising is to discover what advice could be given to people to lessen such an impact.

Summary

Despite its popular press presence, negative affect and stress only reliably appear to increase consumption quantity among restrained eaters. Moreover, despite its past clinical use, undereating is not the consistent indicator of depression as it was once thought to be. In contrast to these two misperceptions, depletion appears to influence consumption quantity reliably among both restrained and normal eaters.

While the relationship between depletion and overeating is robust, its explanations are not. Whereas some argue that ego threats deplete people's self-regulation resources or motivate them to escape self-awareness (Mandel & Smeesters, 2008), others have argued it instead merely skirts attention away from goal conflict and toward reward and gratification (Inzlicht & Schmeichel, 2012; Stroebe et al., 2013). Supporting the idea that depletion impacts attention, studies have found that goal conflict influences the perceived size of food portions (Cornil, Ordabayeva, Kaiser, Weber, & Chandon, 2014). All these studies point to the role of attention, and hence of consumption monitoring, to how emotional cues lead to overeating.

Normative drivers of consumption quantity

Whether it is Thanksgiving dinner or a tailgate party, there is a flexible range as to how much food a person can eat and still "make room for more" (Berry, Beatty, & Klesges, 1985; Ferber & Cabanac, 1987; Herman & Polivy, 1984). To complicate this, serving sizes are ambiguous. To many, the correct self-serving size appears to be whatever a person thinks is appropriate, normal, typical, and reasonable for them (Wansink, 2006). Consumption norm theory (Herman & Polivy, 2005; Herman, Roth, & Polivy, 2003) suggests that the amount a person serves oneself is determined by serving norms that can be internally established, such as how much they usually serve, how much they normally buy, or how much product they think they have left in their pantry (Chandon & Wansink, 2006). These norms can also be externally established by the eating behavior of dinner companions (McDowell, 1988), by the size of food packaging (such as the one bag of chips, or 20 oz of soft drinks), or the size of dinnerware (Wansink, 2014).

Social facilitation and social matching

We eat 30–60% more if we eat with others, according to lab studies and food diary studies in free-living conditions (Herman & Polivy, 2005; Herman et al., 2003), and this can increase to as much as 75% when eating with friends or family (de Castro & Brewer, 1992). These social facilitation effects do not impact self-reported hunger, arousal, or emotionality (de Castro, 1990; Patel & Schlundt, 2001) and influence consumption quantities partly by extending how long people eat (Bell & Pliner, 2003; de Castro, 1990; Feunekes, de Graaf, & van Staveren, 1995; Hetherington et al., 2006) and partly by priming impression management goals (Mori, Chaiken, & Pliner, 1987; Pliner, Chaiken, & Flett, 1990). Eating with others also impairs consumption monitoring. Hetherington et al. (2006) showed that eating with familiar others increases consumption quantity by 18% and that this is partly because, when people eat with friends, they only spend 33% of their time looking at their food versus 85% when they eat alone.

In general, people eat more when their eating companions eat more and less when their eating companions eat less (Brunner, 2012; Herman, et al. 2003; Romero, Epstein, & Salvy, 2009). Social matching of food intake is consistent with studies showing that obesity spreads across social networks (Christakis & Fowler, 2007). One explanation is that the amount eaten by others provides a social cue as to how much is an appropriate amount to eat (Herman et al., 2003). Mimicry also contributes to social matching. Real-time observations of dyads of young females showed that they tend to take a bite of their meal at similar times (Hermans et al., 2012). People imitate others also in the belief that they will be more liked and accepted. Ingratiation explains why matching is stronger when people want to be socially accepted (Robinson, Tobias, Shaw, Freeman, & Higgs, 2011) and when the eating companion is similar to them. For example, people with a normal weight are more likely to imitate the serving size of thin than obese people (McFerran, Dahl, Fitzsimons, & Morales, 2010a) and dieters are more persuaded by a heavy than thin server (McFerran, Dahl, Fitzsimons, & Morales, 2010b).

Categorization cues and health halos

"Food is either healthy or unhealthy." People spontaneously categorize food as intrinsically good or bad, healthy or unhealthy, regardless of how much is eaten (Rozin et al., 1996). This is why people often determine their serving size based partly on whether they categorized the food as healthy or unhealthy. This categorization, in turn, is influenced by the type of food, its health or nutrition claims, its brand, packaging, price, promotion, and distribution. If any of these marketing actions imply or lead one to believe the food is healthier than they would otherwise think, it can lead to a "health halo" (Chandon & Wansink, 2007a), whereby people generalize that the food scores favorably on all health and nutrition aspects (including it being lower in calories), leading them eat more calories than they think (Andrews, Netemeyer, & Burton, 1998; Carels, Konrad, & Harper, 2007). When a food has such a health halo, choosing it can lead a person to also choose more indulgent side dishes in the same meal or more indulgent food in following consumption occasions (Chandon & Wansink, 2007a; Finkelstein & Fishbach, 2010; Wilcox, Vallen, Block, & Fitzsimons, 2009). Of course, as shown in Fig. 1 in Chandon (2013), health inferences can also be more negative than they should, an effect referred to as "health horn" by Burton, Cook, Howlett, and Newman (2014). Furthermore, consumers—especially dieters—estimate that a combination of healthy and unhealthy food (such as having a side salad with a hamburger) has fewer calories than the unhealthy food (hamburger) alone. Fortunately, this bias can be eliminated if a consumer can be reminded or primed to think about food quantity (not just quality) and when they estimate calories sequentially (Chernev, 2011; Chernev & Gal, 2010).

Health halo effects happen for at least three reasons: 1) health halos make people think that they can eat more without breaking their dietary goals, 2) health halos make people hungrier, and 3) health halos reduce guilt (for a review, see Chandon, 2013). Health halos robustly operate independently of a person's BMI, gender, or whether they are a restrained or normal eater (Bowen et al., 2003; Provencher, Polivy, & Herman, 2008). Neurological and behavioral responses show that health halos influence the consumption experience itself (and its neural and hormonal effects) and not just its interpretation (Crum, Corbin, Brownell, & Salovey, 2011; Lee, Frederick, & Ariely, 2006; Plassmann, O'Doherty, Shiv, & Rangel, 2008).

Portion size cues

People can infer how much is appropriate to eat from the portion size of the food they are served (Rolls et al., 2002), from the size of the package it comes from (Wansink, 1996), from how much they have left in their pantry (Chandon & Wansink, 2006), and from the size of the dinnerware that is being used—the plates, bowls, glasses, serving containers, and serving spoons (van Ittersum & Wansink, 2012). Smaller packages, smaller restaurant portions, and smaller dinnerware all have one thing in common. They perceptually suggest to us that it is more appropriate, typical, reasonable, and normal to serve and to eat less food than larger versions would instead suggest.

There is considerable evidence that—with perhaps the exception of children under three—larger packages (Wansink, 1996) and serving sizes significantly increase consumption (Chandon & Wansink, 2002; Devitt & Mattes, 2004; Fisher & Kral, 2008; Geier, Rozin, & Doros, 2006; Marchiori, Corneille, & Klein, 2012; Rolls, Engell, & Birch, 2000). These studies have shown that the decrease in calorie intake due to downsizing can often be 30% less (Steenhuis & Vermeer, 2009). For instance, it was recently found that the 104 calorie decrease in the newly revised McDonald's Happy Meals did not result in any corresponding within-meal increases in the selection of more caloric options or in additional purchases (Wansink & Hanks, 2014). Experimentally, Rolls, Roe, and Meengs (2006) found no differences in hunger when people were served 50% or 100% more food than usual, although their consumption had

increased by 16% and 26%, respectively. Indeed, a recent meta-analysis of 104 studies estimates that consumption quantity increases by 35% when serving size is doubled (Zlatevska, Dubelaar, & Holden, in press). Importantly, these changes in consumption due to serving size increases or decreases are typically not followed by caloric compensation for up to 10 days (Levitsky & Pacanowski, 2011; Rolls, Roe, & Meengs, 2007b; Steenhuis & Vermeer, 2009).

Recall earlier that when people were asked to consider the last time they overate and to indicate why they did so, 49% claimed to overeat because they were hungry and 38% said it was because the food tasted really good (Wansink, 2014). When it comes to portion sizes, package sizes, and serving sizes, people overeat even when the food does not taste good and when they are not hungry. Supersized servings can even increase the consumption of bad-tasting foods, such as stale 14-day-old popcorn (Wansink & Kim, 2005). Consumption increases of 30% are reported frequently, even for foods with low palatability and even when the calorie count of the food is also increased, suggesting that it is the perception of volume that drives consumption—not eating enjoyment or actual calorie content (Steenhuis & Vermeer, 2009; Wansink & Park, 2001).

Manipulating the perceived size of the portion, not just its actual size, also leads people to eat more. Labeling products as "small" makes people eat more but think they are eating less (Aydınoğlu & Krishna, 2011; Aydınoğlu, Krishna, & Wansink, 2009). In one study, when restaurant pasta servings were labeled as "Regular" instead of "Double-size," intake increased from 305 to 463 cal (Just & Wansink, in press).

Even if the total amount of available food is the same, changing the size of the food "unit" itself greatly influences how much one takes. For instance, people served themselves 127% more candies and 69% more pretzels when the candies and pretzels were in large units than when they were available in small (e.g., half a pretzel) units (Geier et al., 2006). Even "virtual" partitions such as placing a red potato chip every 7 or 14 regular chips, can serve as a cue for appropriate serving size and influence consumption quantities (Cheema & Soman, 2008; Geier et al., 2012). Size perceptions and preferences can also be manipulated simply by adding or removing extremely large or small sizes even if nobody chooses either of them. By virtue of the compromise effect, adding an extremely small or large size alternative makes the middle size more attractive and more frequently selected. Conversely, about two-thirds of the people who chose a medium size beverage chose a larger size when the small size was eliminated, thereby making their previous "medium" size become the new "small" size of the range (Sharpe, Staelin, & Huber, 2008).

People consume most of their food using serving aids such as bowls, plates, glasses, or utensils (Wansink & Sobal, 2007). Since people seem to serve in rough proportion to the size of their bowl or plate, larger dinnerware leads to larger serving sizes and larger calorie intake for at least the 54% of Americans who say eat until they "clean their plate" (Collins, 2006). For instance, even leading nutritional science professors who were given 24 oz bowls of ice cream, served and consumed about 39% more ice cream than those given 16 oz bowls (Wansink, van Ittersum, & Painter, 2006b).

Both packaging and dinnerware can serve as consumption norms because most people, not just "plate-cleaners," rely on visual cues to stop eating. If a person decides to eat half a bowl of cereal, the size of the bowl acts as a visual cue that influences how much they serve, consume, and waste (van Ittersum & Wansink, 2012). To illustrate this, when diners were served tomato soup in bowls that were unknowingly being refilled from tubing that ran through the table and into the bottom of the bowls, they unknowingly ate 73% more soup (Wansink, Painter, & North, 2005). The effects of perceived consumption become stronger with delay. Another study manipulated both actual and perceived intake by using refillable bowls and showed that actual intake predicts hunger more strongly than perceived intake immediately after consumption, but the opposite occurs 2 h after consumption (Brunstrom et al., 2012).

Glass sizes and shapes also lead nearly all people—even professional bartenders—to over-pour everything from milk to juice to whiskey. Because elongated glasses appear to fill up faster than short, fat glasses with the same volume (Krishna, 2006; Raghubir & Krishna, 1999), people pour less volume into them and drink less from elongated glasses (Wansink & Van Ittersum, 2003). This elongation bias caused summer campers to unknowingly pour and drink 88% more juice or soft drinks into a short, wide glass than into a tall, narrow one of the same volume. Even Philadelphia bartenders poured an average of 32% more gin, vodka, and whiskey into tumblers than highball glasses holding the same volume (Wansink and van Ittersum 2003). Even when shown their bias and asked to pour again 2 min later, they still exhibited an average 21% bias. Volume perception biases also explain why cylindrical glasses (whose volume increases with both the height and width poured) appear to fill up faster than conical glasses, leading people to over-pour when given "Martini"-shaped conical glasses (Chandon & Ordabayeva, 2009). Visual illusions also operate for plates. Because of the Delboeuf illusion, the same amount of food seems smaller on larger plates or on plates with thin rims (McClain et al., 2013) and this leads people to overserve on larger plates and underserve on smaller ones (van Ittersum & Wansink, 2012).

Although decreasing the size of packaging, portions, and plates can appear to robustly decrease same-meal or within-meal food intake without other forms of calorie compensation, there were initially some questions about whether this would persist long enough to have a measureable impact on weight loss (Caine-Bish, Feiber, Gordon, & Scheule, 2007; Rolls, Roe, Halverson, & Meengs, 2007a). Pedersen, Kang, and Kline (2007) conducted a six-month trial with Type 2 diabetics who were given portion-controlling dinner plates and cereal bowls. Although people were aware of the manipulation, they still lost 4.4 lb more than the control condition. A study for an NIH trial (Robinson & Matheson, 2014) showed that decreasing plate sizes decreased average meat intake by 34% for adults and 5% for children over a three month period. A second NIH study investigated 216 households in Syracuse, New York, who had been randomly given either 25 or 30.5-cm plates (Hanks,

Kaipainen, & Wansink, 2013). Those who used these plates 10 or more times each week lost 3 lb or 1.4% of their BMI over the four month study.

Summary

To understand the extent to which consumption monitoring mediates the effects of normative cues on consumption quantity, it is important to distinguish between visual and social cues. Visual cues operate at an almost unknowing level, influencing expert dieticians and novices alike (Chandon & Wansink, 2007b). Even when pointed out, people generally deny they were influenced by such cues. For instance, when 1214 people in six studies were told how they were biased by a manipulated consumption norm (a package size, plate size, etc.), 94% persistently and wrongly maintained that they were unaffected (Wansink & Sobal, 2007). Moreover, even when they can be convinced, the bartender data reported earlier show that people are still biased the next time they serve themselves. With misleading visual cues, it would appear that consumption monitoring is almost hopeless. The easiest solution would simply be to discreetly switch to smaller portions or to use taller glasses or smaller plates which mislead people in the direction of healthier, smaller portions.

In contrast, social cues—such as social facilitation and social matching—provide people with a reference of how much to consume. Eating with others appears to primarily influence our consumption by impairing consumption monitoring by drawing attention away from the food, outside our awareness. However, because drawing attention to social influences generally reduces their effects (Cialdini & Goldstein, 2004; Hammond, 2010), alerting people that they are being influenced by what others are eating should reduce these normative effects.

New directions for promising solutions

Nowhere in consumer psychology could a researcher have a more immediate, measurable impact on a mother tomorrow morning than when discovering solutions to eating problems. Yet publishing our research results is not the same as solving useful problems. Sometimes we solve interesting theoretical problems that are not practical. Sometimes we solve practical problems with non-scalable answers.

What we seldom do is to ask what implications our research has for consumers who want to change a target behavior. Consider many of the findings reviewed in this paper. One group who would find these—or the derivation of their principles—potentially useful are dieters who want to lose weight or parents who want their family to eat better. Being very specific about the changes they should make would be a useful way to translate our discoveries into action. When we think in terms of specific advice—how it could be used—it can change how we design studies, discuss results, and disseminate the related implications to consumers, companies, or policy makers (Wansink, 2011).

As example, consider the main finding that when chocolate candy dishes were moved off of desks of secretaries and put in opaque containers, they ate half as many (Painter, Wansink, & Hieggelke, 2002). Although the theoretical point of the research was that food convenience and salience interfere with consumption monitoring, the main relevance to a dieter is the main effect: the closer the candy dish, the more you eat. As a main effect, this basic principle can be extrapolated to provide advice to these people in other areas of their life. For instance, dieters could be advised to:

[] Place snacks in the TV room on a table 6 ft farther than where you sit.
[] Eliminate the cookie bowl from the kitchen.
[] Move cereal boxes off of the kitchen counter.
[] Pre-plate entrées and starches in kitchen (don't serve them family style).
[] Place a fruit bowl within 3 ft of your most traveled kitchen pathway.
[] Serve salad and vegetables family style.

As an illustration, we took the evidence-based findings reported in this paper—and relevant extrapolations of their principles—and developed a Self-Assessment Scorecard with 100 simple tips for dieters (see Table 1—Wansink, 2014). The goal of this scorecard is to be both diagnostic and prescriptive. The recommended changes are unambiguous, binary, and objectively measurable. This self-assessment would give a person a score between 0 and 100 that shows whether they control their eating environment to facilitate healthy eating or whether their environment and habits negatively control their eating. The lower the score, the more they are negatively influenced by their eating environment; the higher their score, the more they are using their environment to help them eat healthier. But in addition to being diagnostic, this scorecard also points out exactly what immediate changes they can make to turn their immediate environment around, so that it works for them rather than against them.

What prevents consumer psychologists from providing clear, objective, simple advice to consumers based on their research? Part of it may be that we cannot often imagine how our research could be used. Because of our interest in theoretical explanations, interactions, and mediations, we often overlook the power that main effects can have in the lives of consumers. Whereas our reputations benefit and our papers are published because of their theoretical contributions, their value to consumers could come from these simple, basic main effect findings that we typically disregard as "uninteresting."

Table 1 offers one possible take on what we consumer psychologists have discovered and how it might easily fit into people's lives as solutions. To move toward more refined solutions, we will need to 1) view our research as a potential solution to people's problems, but also to 2) conduct our research in a theoretically rigorous way that yields general principles. While the Self-Assessment Scorecard in Table 1 offers a first approximation at such solutions, it also suggests dozens of follow-up opportunities for theoretical rigor that would investigate boundary conditions and mediating mechanisms. Knowing the mediating mechanisms will be useful in

Table 1
Slim by design in-home 100 self-assessment scorecard.

Dishware
- [] Plates are between 9 and 10-in. in diameter
- [] Plates have a colored rim
- [] Plates are sectioned
- [] Cereal bowls are smaller than 20 oz
- [] Juice glasses are 8 oz
- [] Glasses are tall and narrow
- [] Water glasses are 16 oz or larger

Dining table
- [] Children under 12 have smaller plates than parents
- [] Children under 12 have smaller bowls than parents
- [] Children under 12 have smaller glasses than parents
- [] Serving bowls are small enough to have to be refilled
- [] Salad and vegetables are served first
- [] Salad and vegetables are served family style (on the table)
- [] The serving bowls for starches and entrées are not setting on the table
- [] The serving bowls for starches and entrées are located on the kitchen stove
- [] Serving spoons tablespoon-sized or smaller
- [] Serving tongs are not used
- [] At least one person at the table is drinking milk
- [] Everyone has a glass of water
- [] No wine is being drunk or it is being drunk from tall narrow wine glasses
- [] No soft drinks are being drunk
- [] No food packages (other than condiments) are on the table
- [] Lights are dimmed
- [] Soft music is being played
- [] Everyone stays seated until everybody is through eating
- [] The family eats together at the same time

Kitchen
- [] No television
- [] No comfortable chairs
- [] Earth-tone painted walls (neither too bright nor too dark)
- [] Blender is on the counter
- [] Toaster is not on the counter
- [] Breakfast cereal is not visible
- [] Cookies are not visible
- [] Snacks are not visible
- [] A full fruit bowl is visible
- [] Fruit bowl contains 2 or more types of fruit
- [] Fruit bowl is within 3 ft of the most common kitchen pathway
- [] Kitchen has a floral scent
- [] Kitchen is the major room you enter upon entering home

Refrigerator
- [] Fruit and vegetables are on the center shelf
- [] Cut fruit and vegetables are bagged or in a container
- [] Healthiest leftovers are in transparent containers
- [] Healthiest leftovers are wrapped in transparent wrap
- [] Less healthy leftovers are stored in opaque containers
- [] Less healthy leftovers are wrapped in aluminum foil
- [] Refrigerator has at least 6 non-fat yogurts in it
- [] A second low-calorie, high protein snack is available (e.g., string cheese)
- [] Healthiest snacks are in the front middle
- [] Less healthy snacks are in the back or the lower sides
- [] Low-fat milk is in the refrigerator
- [] Less healthy leftovers are stored in the produce drawers
- [] No more than 2 cans of soft drinks
- [] A full pitcher of cold water is always available

Freezer
- [] Healthiest leftovers are in transparent containers
- [] Less healthy leftovers are stored in opaque containers
- [] Less healthy leftovers are wrapped in aluminum foil

Cupboards
- [] Healthiest foods are in the front middle
- [] Healthiest foods are eye level
- [] Less healthy foods are in the back or the lower sides

Table 1 *continued*

Cupboards
- [] Less healthy foods are stored on the bottom or the top
- [] There is a designated snack cupboard that is inconvenient
- [] Snack cupboard has a child-proof lock on it (even if no children)

Pantries
- [] Healthiest foods are in the front middle
- [] Healthiest foods are eye level
- [] Less healthy foods are in the back or the lower sides
- [] Less healthy foods are stored on the bottom or the top
- [] Pantry is not located in the kitchen

Counters
- [] Cookies are not visible
- [] Snacks are not visible
- [] Candy is not visible
- [] Regular soft drinks are not visible
- [] Diet soft drinks are not visible
- [] Nuts are not visible
- [] Breakfast cereal is not visible

TV room
- [] Full glass or water or water bottle is always next to the chair
- [] Snacks are located at least 6 ft from seating area
- [] All snacks are eaten out of bowls, not bags or original containers
- [] Snacks are eaten from small bowls, 8 oz or less
- [] Candy wrappers are left on coffee table
- [] Beverage containers—cans or bottles—are left on coffee table

Home office
- [] Full glass of water or water bottle is always on the desk
- [] Snacks are located at least 6 ft from seating area
- [] All snacks are eaten out of bowls, not bags or original containers
- [] Snacks are eaten from small bowls, 8 oz or less
- [] Candy wrappers are left on coffee table
- [] Beverage containers—cans or bottles—are left on coffee table

Car
- [] Never take breakfast, lunch, or dinner in the car.
- [] No candy.
- [] No cookies.
- [] No high-calorie snack.
- [] Bag of nuts or other healthy snacks available for adults and children.
- [] Always carry water bottle.
- [] No soft drink.
- [] Choose concentrated energy shots over energy drinks to avoid high-calorie intake.

Night stand
- [] No candy.
- [] No cookies.
- [] No high-calorie snack.
- [] Glass or bottle of water handy.

Purse
- [] No high-calorie snack.
- [] Bag of nuts or other healthy snacks available for adults and children.
- [] Water bottle.

(Reprinted, with permission from Slim by Design, Wansink, 2014).

generating entirely new sets of interventions. Knowing the boundary conditions of various interventions will be useful in developing different assessment tools for different people and situations.

Although Table 1 suggests basic changes that might work for most people, some of these changes will work better for some people than for others. For example, as noted earlier, smaller portion sizes do not influence consumption of children under three and do not reduce consumption when the sizes are so small that restrained eaters view the food as healthy. Similarly, although health halos generally increase consumption quantities,

their effectiveness is lower when health claims negatively influence flavor expectations (Kiesel, McCluskey, & Villas-Boas, 2011; Kozup, Creyer, & Burton, 2003), of people who care more about taste than nutrition (Irmak, Vallen, & Robinson, 2011; Vadiveloo, Morwitz, & Chandon, 2013), of men (Bowen, Tomoyasu, Anderson, Carney, & Kristal, 1992), and of familiar brands or expert consumers (Hoegg & Alba, 2007). Future research needs to examine the robustness of health halos for diverse socio-economic groups and outside the US, where the negative association between health and taste is less pronounced because people associate "healthy" with "fresh" and "high quality" (Fischler, Masson, & Barlösius, 2008; Werle, Trendel, & Ardito, 2013).

More generally, research is needed to integrate food choice and consumption decisions. Most of the studies on food choices examine what to eat and not how much is eaten. Conversely, most of the studies reviewed here examined how much to eat *after* the decision of what to eat had already been made. Future research must examine the effects of proposed interventions on both what and how much to eat. For example, downsizing a package—say a soft drink bottle—by elongating it can hide the true extent of the size reduction and thus increase purchasing, yet it could backfire if people finish it earlier than anticipated and decide to consume a second.

Ultimately, learning how to change consumption norms—particularly those resulting from visual cues—holds tremendous promise for researchers for three reasons: 1) Their impact is magnified because of repeated actions, 2) they can be found in an endless number of forms, and 3) their perceptual nature makes consumers more vulnerable to them than they believe. From an intervention standpoint, changing the size of a cafeteria tray or the size label on a restaurant menu can change consumption in an automatic way that does not necessitate willpower or an expensive public health education campaign.

Implications for policy makers, companies, and consumers

Giving people objective nutrition knowledge about the health costs of overconsumption is necessary but unlikely to be sufficient to change behavior. Exhorting people to change their dietary habits through moralizing and guilt-inducing appeals is not a credible alternative solution. Both ideas fall short because we cannot expect that most people will adopt a cognitively-costly mindful eating approach for the over 200 automatic food decisions that they make every day (Wansink & Sobal, 2007). Even though mindful consumption strategies can be learned (Papies et al., 2012; Peter & Brinberg, 2012), it is not clear that most people will be willing to sustain this over the three years that are usually required to lose weight and establish a new equilibrium (Hall et al., 2011).

This suggests another complementary approach: focusing on changing the choice environment at both the time of purchase and the time of consumption (Thaler & Sunstein, 2003). This relies less on persuasion and more on environmental interventions that lead consumers into making slightly better but repeated food choices without thinking about each of them. This is done mostly by altering the eating environment in the ways suggested in Table 1 for one's home environment and in similar ways in the four other places where people purchase or consume food: their most frequented restaurants, their favorite grocery store, where they work, and where their children go to school (Wansink, 2014). This small-steps approach is not designed to achieve major weight loss among the obese, but rather to prevent obesity among the 90% of the population that is gradually becoming fat by consuming an excess of less than 100 cal per day (Hill, Wyatt, Reed, & Peters, 2003).

Leveraging our research in medicine, nutrition, and public health

Although consumer psychologists have been uncovering an increasing number of insights about food consumption behavior, many of these insights have not had their deserving impact on the field of public health, nutrition, or medicine. In addition to what has already been noted, consumer psychology research is often overlooked because of our general lack of interest in consumer heterogeneity. Public health researchers are keenly interested in the differences between men and women, educated and less educated people, old and young, rich and poor, both in the US and abroad. These same researchers—and reviewers—are often disconcerted when we acknowledge that we did not find these distinctions theoretically interesting enough to analyze or even collect. What we see as a conceptually uninteresting null effect (such as the lack of differences between genders) or a confounded or over-determined strong effect (such as strong differences between income levels or ethnicities) can inform key interventions they may be considering.

To have an impact beyond our field, we need to examine how our short-term, cross-sectional results hold across time. Longer time-horizons are particularly important because habituation and compensation can offset short-term effects. Just as the link between behavioral intentions and actual behavior is not perfect, neither is the link between how much a person decides to serve and how much they decide to subsequently eat. Most of our studies measure what someone takes or how much they take, but seldom how much they eat. While there is early evidence that a large percentage of what a person self-serves is eaten—perhaps as much as an average of 92% (Wansink & Johnson, in press), this is not precise enough for the standards of medicine, nutrition, and public health and may vary across people and situations (such as school cafeterias versus lab studies). Our results might make strong cases, but they do not make precise cases. Because medicine, nutrition, and public health are focused on measurable, tangible behaviors, they consider many of these studies to be the equivalent of behavioral intention studies with no clear proof of impact.

Ideally, new studies would combine the best characteristics of consumer research (including rich psychological insights and multi-method testing), nutrition (including longitudinal designs, representative participants, biomarkers of calorie intake and expenditures), and economics (including population-level interventions and analyses, and policy implications).

Table 2
Value-added research opportunities of consumer psychologists studying consumption behavior.

	Competitive advantages for consumer psychology researchers	Competitive disadvantages for consumer psychology researchers	Where are some of the greatest opportunities?
Consumption monitoring	• Fits well into existing and comfortable research paradigms • Numerous theories and methods are available to determine the source of cognitive and perceptual biases	• Necessitates studies that involve actual eating behavior (versus choice studies or computer studies) • To be most influential, studies will need to involve realistic field situations and validation	• While most research has focused on bias, it has not focused on the reasons behind why such cognitive or perceptual biases exist. • Generating rules of thumb and monitoring short-cuts would be useful to legions of dieters and clinicians.
Sensory drivers of consumption quantity	• We are well suited to conceive and test psychological mechanisms that could interact with physiological factors	• Tools and facilities for physiological research are often costly and more accessible in medical schools • IRB delays • High subject costs	• Isolating common or more general psychological states that mediate and environmental stimuli and eating • Articulating a greater range of environmental conditions that could influence behavior (such as crowding, type of noise level, lighting variation, and so on).
Affective drivers of consumption quantity	• Wide range of theories are available • Sophisticated tools/skills for investigating relevance of theories to a behavior	• Too much focus on isolating a single mechanism often makes the research question too narrow and the research context too stylized and unrealistic • Often results in studies with little apparent field validity	• Determining how thought processes or feelings interact with physiology to alter eating behavior • Explaining general findings in the field and showing how the interventions could be modified or targeted to be more effective.
Normative drivers of consumption quantity	• Strong conceptual training in both the perceptual, behavioral, and social drivers of consumption norms • Tools and emphasis on internal validity enable to disclose subtle effects	• An overemphasis on research precedent limits the creativity of interventions • An overemphasis on internal validity can generate interventions that are not scalable or generalizable	• Determine how internal norms are established and when these are dominated by external norms • Developing a new taxonomy for consumption norms would aid in identifying a wider range of norms that could be useful intervention points in personal life and in public health.

To summarize these concerns and the way forward, we can go back to Michel Pham's (2013) presidential address about the seven sins of consumer psychology. We must expand the scope of our research from buyer behavior to actual (repeated) consumption behavior (Sin 1). We need to adopt multiple theoretical lenses (Sin 2). We must go beyond theory testing and do more phenomenon-based and descriptive research and empirical generalization (Sin 3). We must go beyond research by convenience and do more grounded field work (Sin 6). And, more generally, we need to do research that is more externally relevant (Sin 7). As noted throughout this review—this requires moving our focus from statistical significance to effect size, from theory testing to prediction models, and from tests of associations to point estimates. Policy makers are not interested in counter-intuitive findings that demonstrate consumer irrationality—these findings are typically small and often occur under narrow, stylized, "hot house" conditions.

Of all academics, consumer psychologists are perhaps in the best position to have a real impact on how people, companies, and legislators think about healthy eating. First, we understand people's full motivations and choices better than nutritionists. Second, we do not demonize the food industry in the same way that many public health and medical researchers do (therefore we have the ability to partner with the players with the biggest impact on consumption). Third, thanks to the multidisciplinary nature of most marketing departments, we can easily collaborate with colleagues across the hall who know how to sophisticatedly model supply—and not just demand—effects, who know how to analyze archival data and estimate policy effects, who understand the importance of consumer heterogeneity and who, most importantly, understand and generally appreciate the contribution of experimental research. Table 2 outlines the areas in which we—as consumer psychologists—have a key methodological, theoretical, or dispositional edge to powerfully change this domain.

Helping companies make healthy profits

A wide range of people and institutions would like to better control a person's consumption of food for a wide range of reasons. Those in the hospitality industry want to decrease food costs (via serving size) without decreasing satisfaction. Those in public policy want to decrease waste, health expenditures, and lost productivity which influence wellbeing. Those in health and nutrition want to decrease obesity and its associated diseases. Those in strenuous field situations, such as combat military and deployed rescue workers, want to decrease *under*-consumption. Those on restricted diets want to decrease calories, fat, or sugar intake.

It is important to realize that food companies are not focused on making people fat; they are focused on making money. Take the notion of single-serving packaging. Although such packaging can increase production costs, the $43 billion spent in 2013 on diet-related products is evidence that there is a portion-predisposed segment that would be willing to pay a premium for packaging that enabled them to eat less of a food in a single serving and to enjoy it more. For instance, results

from a survey of 770 North Americans indicated that 57% of them would be willing to pay up to 15% more for these portion-controlled items (Wansink & Huckabee, 2005). Although targeting this "portion-prone" segment will not initially address the immediate needs of all consumers, it can provide the critical impetus that companies need to develop profitable win–win solutions.

There are many more of these win–win solutions that can profitably benefit both companies and consumers; many of which can offer a wide range of profitable segmentation opportunities for companies. One answer to the obesity issue lies in market-based changes that help consumers develop a new appetite for healthy foods. Innovative solutions for de-marketing obesity will be solutions that leverage the basic reasons why we eat the way we eat. In this context, consumer psychology can help companies develop a wide range of solutions, just as has been done with the decrease of portion sizes in Unilever's Seductive Nutrition program, or the reformulation and relaunch of McDonald's Happy Meals (Wansink & Hanks, 2014). In a previous article, we outlined dozens of innovative actions taken by food producers, grocers, and restaurants to continue to grow without contributing to the obesity epidemic (Chandon & Wansink, 2012).

Bringing research home . . . to consumers

Consumption is a context where understanding fundamental behavior has immediate implications for consumer welfare (Cutler, Glaeser, & Shapiro, 2003). People are often surprised at how much they consume, and this indicates they may be influenced at a basic level of which they are not aware or do not monitor. Similar to the fundamental attribution error, this explains why simply knowing these environmental traps does not typically help one avoid them (Baranowski, Cullen, Nicklas, Thompson, & Baranowski, 2003). Moreover, relying only on cognitive control and on willpower is often disappointing (Boon, Stroebe, Schut, & Jansen, 1998). Yet, consistently reminding people to vigilantly monitor their actions around food is unrealistic. Continued cognitive oversight is already difficult for people who are focused, disciplined, and concentrated. It is nearly impossible for those of us who are not. The studies reviewed here—and their Scorecard manifestation in Table 1—illustrate how an individual can alter his or her personal environment to help make their family slim by design.

Conclusion

As our consumer psychology studies show, our senses, affect, and norms can all entice and contribute to our mindless overconsumption of food. Yet, these studies also show that a personally altered environment can help people more effortlessly control their consumption in a way that does not necessitate the discipline of dieting or the governance by someone else.

If changing the behavior of consumers, food marketers, opinion leaders, and policy makers, is one objective of our research, it is important to realize that it may not happen naturally. Unfortunately, this has been the approach of consumer psychologists over the last decades, and it has led to a disappointing impact outside our field—especially as it relates to changing consumers, companies, and policy. Instead it is important to more actively visualize who will use our research and how they will use it *before* we begin conducting our studies (Mick, 2011). Consider the following example discussed by Parmar (2007). Suppose researchers have a working hypothesis that consumers pour more liquid into short, wide glasses than tall, narrow glasses of the same volume. Before conducting that research, the researchers might ask themselves the following questions: 1) Who should use this? Managers of bar and restaurant chains and the beverage companies that provide glassware to them. 2) What change could they make? Replace short, wide bar glasses with tall, thin ones to reduce beverage consumption while improving margins. 3) What independent variables are realistic? Barware in sizes and shapes most commonly used by the largest casual dining chains. 4) What would make this compelling? Real bartenders in real bars in a real city who pour the four most commonly-poured drinks into the most common glass sizes. Mapping out possible answers to these questions—even though the results of the study are not yet known—will direct the research design to be most potentially impactful. Referred to as "activism research" (Wansink, 2011), these answers can suggest a new context, a different population, or overlooked independent variables that can ignite unanticipated, but rewarding change. It is easier to change our food environment than to change our mind.

References

Adam, T. C., & Epel, E. S. (2007). Stress, eating and the reward system. *Physiology and Behavior*, *91*, 449–458.

Almiron-Roig, E., Chen, Y., & Drewnowski, A. (2003). Liquid calories and the failure of satiety: How good is the evidence? *Obesity Reviews*, *4*, 201–212.

Andrade, E. B. (2005). Behavioral consequences of affect: Combining evaluative and regulatory mechanisms. *Journal of Consumer Research*, *32*, 355–362.

Andrews, J. C., Netemeyer, R. G., & Burton, S. (1998). Consumer generalization of nutrient content claims in advertising. *Journal of Marketing*, *62*, 62–75.

Auvray, M., & Spence, C. (2008). The multisensory perception of flavor. *Consciousness and Cognition*, *17*, 1016–1031.

Aydınoğlu, N. Z., & Krishna, A. (2011). Guiltless gluttony: The asymmetric effect of size labels on size perceptions and consumption. *Journal of Consumer Research*, *37*, 1095–1112.

Aydınoğlu, N. Z., Krishna, A., & Wansink, B. (2009). Do size labels have a common meaning among consumers? In A. Krishna (Ed.), *Sensory marketing: Research on the sensuality of products* (pp. 343–360). New York, NY: Routledge.

Baranowski, T., Cullen, K. W., Nicklas, T., Thompson, D., & Baranowski, J. (2003). Are current health behavioral change models helpful in guiding prevention of weight gain efforts? *Obesity Research*, *11*, 23S–43S.

Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Twenge, J. M. (2005). Social exclusion impairs self-regulation. *Journal of Personality and Social Psychology*, *88*, 589–604.

Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1993). When ego threats lead to self-regulation failure—Negative consequences of high self-esteem. *Journal of Personality and Social Psychology*, *64*, 141–156.

Beck, A. T. (1972). *Depression; causes and treatment.* Philadelphia: University of Pennsylvania Press.

Bell, R., & Pliner, P. L. (2003). Time to eat: the relationship between the number of people eating and meal duration in three lunch settings. *Appetite*, *41*, 215–218.

Bellisle, F., Dalix, A. M., & Slama, G. (2004). Non food-related environmental stimuli induce increased meal intake in healthy women: Comparison of television viewing versus listening to a recorded story in laboratory settings. *Appetite*, *43*, 175–180.

Berry, S. L., Beatty, W. W., & Klesges, R. C. (1985). Sensory and social influences on ice cream consumption by males and females in a laboratory setting. *Appetite*, *6*, 41–45.

Block, J. P., Chandra, A., McManus, K. D., & Willett, W. C. (2010). Point-of-purchase price and education intervention to reduce consumption of sugary soft drinks. *American Journal of Public Health*, *100*, 1427–1433.

Boon, B., Stroebe, W., Schut, H., & Jansen, A. (1998). Food for thought: Cognitive regulation of food intake. *British Journal of Health Psychology*, *3*, 27–40.

Bowen, D., Green, P., Vizenor, N., Vu, C., Kreuter, P., & Rolls, B. (2003). Effects of fat content on fat hedonics: Cognition or taste? *Physiology and Behavior*, *78*, 247–253.

Bowen, D. J., Tomoyasu, N., Anderson, M., Carney, M., & Kristal, A. (1992). Effects of expectancies and personalized feedback on fat consumption, taste, and preference. *Journal of Applied Social Psychology*, *22*, 1061–1079.

Brunner, T. A. (2012). Matching effects on eating. Individual differences do make a difference! *Appetite*, *58*, 429–431.

Brunstrom, J. M., Burn, J. F., Sell, N. R., Collingwood, J. M., Rogers, P. J., Wilkinson, L. L., et al. (2012). Episodic memory and appetite regulation in humans. *PLoS ONE*, *7*, e50707.

Burton, S., Cook, L., Howlett, E., & Newman, C. (2014). Broken halos and shattered horns: overcoming the biasing effects of prior expectations through objective information disclosure. *Journal of the Academy of Marketing Science*, *1–17*.

Caine-Bish, N., Feiber, L., Gordon, K. L., & Scheule, B. (2007). Does plate size effect portion sizes when children self-select food and drink? *Journal of Nutrition Education and Behavior*, *39*, S114–S115.

Caldwell, C., & Hibbert, S. A. (2002). The influence of music tempo and musical preference on restaurant patrons' behavior. *Psychology & Marketing*, *19*, 895–917.

Carels, R. A., Konrad, K., & Harper, J. (2007). Individual differences in food perceptions and calorie estimation: An examination of dieting status, weight, and gender. *Appetite*, *49*, 450–458.

Cecil, J. E. (2001). Oral, gastric and intestinal influences on the control of appetite and feeding in humans. *Appetite*, *36*, 235–236.

Chandon, P. (2013). How package design and packaged-based marketing claims lead to overeating. *Applied Economic Perspectives and Policy*, *35*, 7–31.

Chandon, P., & Ordabayeva, N. (2009). Supersize in one dimension, downsize in three dimensions: Effects of spatial dimensionality on size perceptions and preferences. *Journal of Marketing Research*, *46*, 739–753.

Chandon, P., & Wansink, B. (2002). When are stockpiled products consumed faster? A convenience–salience framework of postpurchase consumption Incidence and quantity. *Journal of Marketing Research*, *39*, 321–335.

Chandon, P., & Wansink, B. (2006). How biased household inventory estimates distort shopping and storage decisions. *Journal of Marketing*, *70*, 118–135.

Chandon, P., & Wansink, B. (2007a). The biasing health halos of fast-food restaurant health claims: Lower calorie estimates and higher side-dish consumption intentions. *Journal of Consumer Research*, *34*, 301–314.

Chandon, P., & Wansink, B. (2007b). Is obesity caused by calorie underestimation? A psychophysical model of meal size estimation. *Journal of Marketing Research*, *44*, 84–99.

Chandon, P., & Wansink, B. (2011). Is food marketing making us fat? A multidisciplinary review. *Foundations and Trends in Marketing*, *5*, 113–196.

Chandon, P., & Wansink, B. (2012). Does food marketing need to make us fat? A review and solutions. *Nutrition Reviews*, *70*, 571–593.

Cheema, A., & Soman, D. (2008). The effect of partitions on controlling consumption. *Journal of Marketing Research*, *45*, 665–675.

Chernev, A. (2011). The dieter's paradox. *Journal of Consumer Psychology*, *21*, 178–183.

Chernev, A., & Gal, D. (2010). Categorization effects in value judgments: Averaging bias in evaluating combinations of vices and virtues. *Journal of Marketing Research*, *47*, 738–747.

Christakis, N. A., & Fowler, J. H. (2007). The spread of obesity in a large social network over 32 years. *New England Journal of Medicine*, *357*, 370–379.

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, *55*, 591–621.

Collins, K. (2006). *New survey on portion size: Americans still cleaning plates.* Washington, DC: American Institute for Cancer Research.

Cornil, Y., & Chandon, P. (2013). From fan to fat? Vicarious losing increases unhealthy eating but self-affirmation is an effective remedy. *Psychological Science*, *24*, 1936–1946.

Cornil, Y., Ordabayeva, N., Kaiser, U., Weber, B., & Chandon, P. (2014). The acuity of vice: Attitude ambivalence improves visual sensitivity to increasing portion sizes. *Journal of Consumer Psychology*, *24*, 177–187.

Crum, A. J., Corbin, W. R., Brownell, K. D., & Salovey, P. (2011). Mind over milkshakes: Mindsets, not just nutrients, determine ghrelin response. *Health Psychology*, *30*, 424–429.

Cutler, D. M., Glaeser, E. L., & Shapiro, J. M. (2003). Why have Americans become more obese? *Journal of Economic Perspectives*, *17*, 93–118.

de Castro, J. M. (1990). Social facilitation of duration and size but not rate of the spontaneous meal intake of humans. *Physiology and Behavior*, *47*, 1129–1135.

de Castro, J. M., & Brewer, E. M. (1992). The amount eaten in meals by humans is a power function of the number of people present. *Physiology and Behavior*, *51*, 121–125.

de Graaf, C., & Kok, F. J. (2010). Slow food, fast food and the control of food intake. *Nat Rev Endocrinol*, *6*, 290–293.

Devitt, A. A., & Mattes, R. D. (2004). Effects of food unit size and energy density on intake in humans. *Appetite*, *42*, 213–220.

Dewitte, S., Bruyneel, S., & Geyskens, K. (2009). Self-regulating enhances self-regulation in subsequent consumer decisions involving similar response conflicts. *Journal of Consumer Research*, *36*, 394–405.

Epstein, L. H., Rodefer, J. S., Wisniewski, L., & Caggiula, A. R. (1992). Habituation and dishabituation of human salivary response. *Physiology and Behavior*, *51*, 945–950.

Epstein, L. H., Temple, J. L., Roemmich, J. N., & Bouton, M. E. (2009). Habituation as a determinant of human food intake. *Psychological Review*, *116*, 384–407.

Fedoroff, I., Polivy, J., & Herman, C. P. (1997). The effect of pre-exposure to food cues on the eating behavior of restrained and unrestrained eaters. *Appetite*, *28*, 33–47.

Fedoroff, I., Polivy, J., & Herman, C. P. (2003). The specificity of restrained versus unrestrained eaters' responses to food cues: General desire to eat, or craving for the cued food? *Appetite*, *41*, 7–13.

Ferber, C., & Cabanac, M. (1987). Influence of noise on gustatory affective ratings and preference for sweet or salt. *Appetite*, *8*, 229–235.

Feunekes, G. I. J., de Graaf, C., & van Staveren, W. A. (1995). Social facilitation of food intake is mediated by meal duration. *Physiology and Behavior*, *58*, 551–558.

Finkelstein, Stacey R., & Fishbach, A. (2010). When healthy food makes you hungry. *Journal of Consumer Research*, *37*, 357–367.

Fischler, C., Masson, E., & Barlösius, E. (2008). *Manger: Français, Européens et Américains face à l'alimentation.* Paris: O. Jacob.

Fishbach, A., Friedman, R. S., & Kruglanski, A. W. (2003). Leading us not into temptation: Momentary allurements elicit overriding goal activation. *Journal of Personality and Social Psychology*, *84*, 296–309.

Fisher, J. O., & Kral, T. V. E. (2008). Super-size me: Portion size effects on young children's eating. *Physiology and Behavior*, *94*, 39–47.

Folkes, V., & Matta, S. (2004). The effect of package shape on consumers' judgments of product volume: Attention as a mental contaminant. *Journal of Consumer Research*, *31*, 390–401.

Gardner, M. P., Wansink, B., Kim, J., & Park, S. -B. (2014). Better moods for better eating?: How mood influences food choice. *Journal of Consumer Psychology*, *24*, 320–335.

Garg, N., Wansink, B., & Inman, J. J. (2007). The influence of incidental affect on consumers' food intake. *Journal of Marketing*, *71*, 194–206.

Garlin, F. V., & Owen, K. (2006). Setting the tone with the tune: A meta-analytic review of the effects of background music in retail settings. *Journal of Business Research*, *59*, 755–764.

Geier, A. B., Rozin, P., & Doros, G. (2006). Unit bias. *Psychological Science*, *17*, 521–525.

Geier, A., Wansink, B., & Rozin, P. (2012). Red potato chips: Segmentation cues can substantially decrease food intake. *Health Psychology*, *31*, 398–401.

Geyskens, K., Dewitte, S., Pandelaere, M., & Warlop, L. (2008). Tempt me just a little bit more: The effect of prior food temptation actionability on goal activation and consumption. *Journal of Consumer Research*, *35*, 600–610.

Glanz, K., Basil, M., Maibach, E., Goldberg, J., & Snyder, D. A. N. (1998). Why Americans eat what they do: taste, nutrition, cost, convenience, and weight control concerns as influences on food consumption. *Journal of the American Dietetic Association*, *98*, 1118–1126.

Greeno, C. G., & Wing, R. R. (1994). Stress-induced eating. *Psychological Bulletin*, *115*, 444–464.

Hall, K. D., Sacks, G., Chandramohan, D., Chow, C. C., Wang, Y. C., Gortmaker, S. L., et al. (2011). Quantification of the effect of energy imbalance on bodyweight. *Lancet*, *378*, 826–837.

Hammond, R. A. (2010). Social influence and obesity. *Current Opinion in Endocrinology, Diabetes and Obesity*, *17*, 467–471.

Hanks, A., Kaipainen, K., & Wansink, B. (2013). The Syracuse Plate: Reducing BMI by introducing smaller plates in households. *Journal of Nutrition Education and Behavior*, *45*, S41.

Herman, C. P., & Deborah, M. (1975). Restrained and unrestrained eating. *Journal of Personality*, *43*, 647–660.

Herman, C. P., & Polivy, J. (1983). A boundary model for the regulation of eating. *Psychiatric Annals*, *62*, 141–156.

Herman, C. P., & Polivy, J. (1984). *A Boundary Model for the Regulation of Eating.* In S. A. B., & S. E. (Eds.), *Eating and its Disorders* (pp. 141–156). New York: RavenNew York: Raven.

Herman, C. P., & Polivy, J. (2005). Normative influences on food intake. *Physiology and Behavior*, *86*, 762–772.

Herman, C. P., & Polivy, J. (2008). External cues in the control of food intake in humans: The sensory-normative distinction. *Physiology and Behavior*, *94*, 722–728.

Herman, C. P., Roth, D. A., & Polivy, J. (2003). Effects of the presence of others on food intake: A normative interpretation. *Psychological Bulletin*, *129*, 873–886.

Hermans, R. C. J., Lichtwarck-Aschoff, A., Bevelander, K. E., Herman, C. P., Larsen, J. K., & Engels, R. C. M. E. (2012). Mimicry of food intake: The dynamic interplay between eating companions. *PLoS ONE*, *7*, e31027.

Hetherington, M. M., Anderson, A. S., Norton, G. N. M., & Newson, L. (2006). Situational effects on meal intake: A comparison of eating alone and eating with others. *Physiology and Behavior*, *88*, 498–505.

Higgs, S. (2008). Cognitive influences on food intake: The effects of manipulating memory for recent eating. *Physiology and Behavior*, *94*, 734–739.

Higgs, S., & Woodward, M. (2009). Television watching during lunch increases afternoon snack intake of young women. *Appetite*, *52*, 39–43.

Hill, J. O. (2009). Can a small-changes approach help address the obesity epidemic? A report of the Joint Task Force of the American Society for Nutrition, Institute of Food Technologists, and International Food Information Council. *The American Journal of Clinical Nutrition*, *89*, 477–484.

Hill, J. O., Wyatt, H. R., Reed, G. W., & Peters, J. C. (2003). Obesity and the environment: Where do we go from here? *Science*, *299*, 854–855.

Hoegg, J., & Alba, J. W. (2007). Taste perception: More than meets the tongue. *Journal of Consumer Research*, *33*, 490–498.

Hofmann, W., Friese, M., & Roefs, A. (2009). Three ways to resist temptation: The independent contributions of executive attention, inhibitory control, and affect regulation to the impulse control of eating behavior. *Journal of Experimental Social Psychology*, *45*, 431–435.

Hofmann, W., Gschwendner, T., Friese, M., Wiers, R. W., & Schmitt, M. (2008). Working memory capacity and self-regulatory behavior: Toward an individual differences perspective on behavior determination by automatic versus controlled processes. *Journal of Personality and Social Psychology*, *95*, 962–977.

Inzlicht, M., & Kang, S. K. (2010). Stereotype threat spillover: How coping with threats to social identity affects aggression, eating, decision making, and attention. *Journal of Personality and Social Psychology*, *99*, 467–481.

Inzlicht, M., & Schmeichel, B. J. (2012). What is ego depletion? Toward a mechanistic revision of the resource model of self-control. *Perspectives on Psychological Science*, *7*, 450–463.

Irmak, C., Vallen, B., & Robinson, S. R. (2011). The impact of product name on dieters' and nondieters' food evaluations and consumption. *Journal of Consumer Research*, *38*, 390–405.

Jansen, A., & van den Hout, M. (1991). On being led into temptation: "Counterregulation" of dieters after smelling a "preload". *Addictive Behaviors*, *16*, 247–253.

Just, D. R., & Wansink, B. (2014). One man's tall is another man's small: How the framing of portion size influences food choice. *Health Economics* (In press), http://onlinelibrary.wiley.com/doi/10.1002/hec.2949/abstract.

Kaufmann, N. (1995). Antécédents et conséquences de la typicalité: un essai de conceptualisation. *Actes du XI° Congrès de l'Association Française du Marketing*, *11*, 557–586.

Kiesel, K., McCluskey, J. J., & Villas-Boas, S. B. (2011). Nutritional labeling and consumer choices. *Annual Review of Resource Economics*, *3*, 141–158.

Kozup, J. C., Creyer, E. H., & Burton, S. (2003). Making healthful food choices: The influence of health claims and nutrition information on consumers' evaluations of packaged food products and restaurant menu items. *Journal of Marketing*, *67*, 19–34.

Krider, R. E., Raghubir, P., & Krishna, A. (2001). Pizzas: Pi or square? Psychophysical biases in area comparisons. *Marketing Science*, *20*, 405–425.

Krishna, A. (2006). Interaction of senses: The effect of vision versus touch on the elongation bias. *Journal of Consumer Research*, *32*, 557–566.

Krishna, A. (2007). Spatial perception research: An integrative review of length, area, volume and number perception. In M. Wedel, & R. Pieters (Eds.), *Visual marketing: From attention to action* (pp. 167–193). New York: Lawrence Erlbaum Associates.

Krishna, A. (2009). *Sensory marketing: Research on the sensuality of products.* New York, NY: Routledge.

Krishna, A. (2012). An integrative review of sensory marketing: Engaging the senses to affect perception, judgment and behavior. *Journal of Consumer Psychology*, *22*, 332–351.

Lambird, K. H., & Mann, T. (2006). When do ego threats lead to self-regulation failure? Negative consequences of defensive high self-esteem. *Personality and Social Psychology Bulletin*, *32*, 1177–1187.

Lee, L., Frederick, S., & Ariely, D. (2006). Try it, you'll like it: The influence of expectation, consumption, and revelation on preferences for beer. *Psychological Science*, *17*, 1054–1058.

Lennard, D., Mitchell, V. -W., McGoldrick, P., & Betts, E. (2001). Why consumers under-use food quantity indicators. *International Review of Retail, Distribution & Consumer Research*, *11*, 177–199.

Levitsky, D. A., & Pacanowski, C. (2011). Losing weight without dieting. *Use of commercial foods as meal replacements for lunch produces an extended energy deficit. Appetite*, *57*, 311–317.

Logel, C., & Cohen, G. L. (2012). The role of the self in physical health: Testing the effect of a values-affirmation intervention on weight loss. *Psychological Science*, *23*, 53–55.

Lyman, B. (1989). *A psychology of food: More than a matter of taste.* New York: Van Nostrand Reinhold Co.

Macht, M. (1999). Characteristics of eating in anger, fear, sadness and joy. *Appetite*, *33*, 129–139.

Macht, M. (2008). How emotions affect eating: A five-way model. *Appetite*, *50*, 1–11.

Mandel, N., & Smeesters, D. (2008). The sweet escape: Effects of mortality salience on consumption quantities for high- and low- self-esteem consumers. *Journal of Consumer Research*, *35*, 309–323.

Marchiori, D., Corneille, O., & Klein, O. (2012). Container size influences snack food intake independently of portion size. *Appetite*, *58*, 814–817.

Mattes, R. (1990). Hunger ratings are not a valid proxy measure of reported food intake in humans. *Appetite*, *15*, 103–113.

McCarron, A., & Tierney, K. J. (1989). The effect of auditory stimulation on the consumption of soft drinks. *Appetite*, *13*, 155–159.

McClain, A., van den Bos, W., Matheson, D., Desai, M., McClure, S. M., & Robinson, T. N. (2013). *Visual illusions and plate design: The effects of plate rim widths and rim coloring on perceived food portion size: International Journal of Obesity.*

McDowell, J. (1988). Matching theory in natural human environments. *The Behavior Analyst*, *11*, 95–109.

McElrea, H., & Standing, L. (1992). Fast music causes fast drinking. *Perceptual and Motor Skills*, *75*, 362-362.

McFerran, B., Dahl, D. W., Fitzsimons, G. J., & Morales, A. C. (2010a). I'll have what she's having: Effects of social influence and body type on the food choices of others. *Journal of Consumer Research*, *36*, 915–929.

McFerran, B., Dahl, D. W., Fitzsimons, G. J., & Morales, A. C. (2010b). Might an overweight waitress make you eat more? How the body type of others is sufficient to alter our food consumption. *Journal of Consumer Psychology*, *20*, 146–151.

Mick, D. G. (2011). *Transformative consumer research for personal and collective well-being.* New York: Routledge.

Milliman, R. E. (1986). The influence of background music on the behavior of restaurant patrons. *Journal of Consumer Research*, *13*, 286–289.

Morewedge, C. K., Huh, Y. E., & Vosgerau, J. (2010). Thought for food: Imagined consumption reduces actual consumption. *Science*, *330*, 1530–1533.

Mori, D., Chaiken, S., & Pliner, P. (1987). "Eating lightly" and the self-presentation of femininity. *Journal of Personality and Social Psychology*, *53*, 693–702.

Morrin, M., Chebat, J. -C., & Gelinas-Chebat, C. (2009). The impact of scent and music on consumer perceptions of time duration. In A. Krishna (Ed.), *Sensory marketing: Research on the sensuality of products* (pp. 123–134). New York, NY: Routledge.

Nestle, M., & Nesheim, M. C. (2012). *Why calories count: From science to politics.* Berkeley: University of California Press.

Ni Mhurchu, C., Blakely, T., Jiang, Y., Eyles, H. C., & Rodgers, A. (2010). Effects of price discounts and tailored nutrition education on supermarket purchases: A randomized controlled trial. *The American Journal of Clinical Nutrition*, *91*, 736–747.

Nisbett, R. E., & Storm, M. D. (1974). Cognitive and social determinants of food intake. In H. London, & R. E. Nisbett (Eds.), *Thought and feeling: Cognitive alteration of feeling states* (pp. 190–208). Chicago: Aldine.

Ordabayeva, N., & Chandon, P. (2013). Predicting and managing consumers' package size impressions. *Journal of Marketing*, *77*, 123–137.

Painter, J. E., Wansink, B., & Hieggelke, J. B. (2002). How visibility and convenience influence candy consumption. *Appetite*, *38*, 237–238.

Papies, E. K., Barsalou, L. W., & Custers, R. (2012). Mindful attention prevents mindless impulses. *Social Psychological and Personality Science*, *3*, 291–299.

Parmar, N. (2007). 10 Things your bartender won't tell you. *Smart Money*, *31–32*.

Patel, K. A., & Schlundt, D. G. (2001). Impact of moods and social context on eating behavior. *Appetite*, *36*, 111–118.

Pedersen, S. D., Kang, J., & Kline, G. A. (2007). Portion control plate for weight loss in obese patients with type 2 diabetes mellitus: A controlled clinical trial. *Archives of Internal Medicine*, *167*, 1277–1283.

Peter, P. C., & Brinberg, D. (2012). Learning emotional intelligence: An exploratory study in the domain of health. *Journal of Applied Social Psychology*, *42*, 1394–1414.

Pham, M. T. (2013). The seven sins of consumer psychology. *Journal of Consumer Psychology*, *23*, 411–423.

Plassmann, H., O'Doherty, J., Shiv, B., & Rangel, A. (2008). Marketing actions can modulate neural representations of experienced pleasantness. *Proceedings of the National Academy of Sciences of the United States of America*, *105*, 1050–1054.

Pliner, P., Chaiken, S., & Flett, G. L. (1990). Gender differences in concern with body weight and physical appearance over the life span. *Personality and Social Psychology Bulletin*, *16*, 263–273.

Polivy, J., Herman, C. P., Hackett, R., & Kuleshnyk, I. (1986). The effects of self-attention and public attention on eating in restrained and unrestrained subjects. *Journal of Personality and Social Psychology*, *50*, 1253-1224.

Poothullil, J. M. (2002). Role of oral sensory signals in determining meal size in lean women. *Nutrition*, *18*, 479–483.

Provencher, V., Polivy, J., & Herman, C. P. (2008). Perceived healthiness of food. If it's healthy, you can eat more! *Appetite*, *52*, 340–344.

Raghubir, P., & Krishna, A. (1999). Vital dimensions in volume perception: Can the eye fool the stomach? *Journal of Marketing Research*, *36*, 313–326.

Redden, Joseph P. (2008). Reducing satiation: The role of categorization level. *Journal of Consumer Research*, *34*, 624–634.

Redden, J. P., & Galak, J. (2013). The subjective sense of feeling satiated. *Journal of Experimental Psychology: General*, *142*, 209–217.

Redden, J. P., & Kruger, J. (2009). Variety amnesia: Recalling past variety can accelerate recovery from satiation. *Journal of Consumer Research*, *36*, 575–584.

Remick, A. K., Polivy, J., & Pliner, P. (2009). Internal and external moderators of the effect of variety on food intake. *Psychological Bulletin*, *135*, 434–451.

Ritter, R. C. (2004). Gastrointestinal mechanisms of satiation for food. *Physiology and Behavior*, *81*, 249–273.

Robinson, T. N., & Matheson, D. (2014). *Environmental interventions to reduce overeating in children: Working Paper.*

Robinson, E., Tobias, T., Shaw, L., Freeman, E., & Higgs, S. (2011). Social matching of food intake and the need for social acceptance. *Appetite*, *56*, 747–752.

Rogers, P. J., & Hill, A. J. (1989). Breakdown of dietary restraint following mere exposure to food stimuli: Interrelationships between restraint, hunger, salivation, and food intake. *Addictive Behaviors*, *14*, 387–397.

Rolls, B. J., Engell, D., & Birch, L. L. (2000). Serving portion size influences 5-year-old but not 3-year-old children's food intakes. *Journal of the American Dietetic Association*, *100*, 232–234.

Rolls, B. J., Morris, E. L., & Roe, L. S. (2002). Portion size of food affects energy intake in normal-weight and overweight men and women. *American Journal of Clinical Nutrition*, *76*, 1207–1213.

Rolls, B. J., Roe, L. S., Halverson, K. H., & Meengs, J. S. (2007). Using a smaller plate did not reduce energy intake at meals. *Appetite*, *49*, 652–660.

Rolls, B. J., Roe, L. S., & Meengs, J. S. (2006). Larger portion sizes lead to a sustained increase in energy intake over 2 days. *Journal of the American Dietetic Association*, *106*, 543–549.

Rolls, B. J., Roe, L. S., & Meengs, J. S. (2007). The effect of large portion sizes on energy intake is sustained for 11 days. *Obesity*, *15*, 1535–1543.

Romero, N. D., Epstein, L. H., & Salvy, S. -J. (2009). Peer modeling influences girls' snack intake. *Journal of the American Dietetic Association*, *109*, 133–136.

Rozin, P. (2009). Psychology and sensory marketing, with a focus on food. In A. Krishna (Ed.), *Sensory marketing: Research on the sensuality of products* (pp. 303–322). New York, NY: Routledge.

Rozin, P., Ashmore, M., & Markwith, M. (1996). Lay American conceptions of nutrition: Dose insensitivity, categorical thinking, contagion, and the monotonic mind. *Health Psychology*, *15*, 438–447.

Rozin, P., Dow, S., Moscovitch, M., & Rajaram, S. (1998). What causes humans to begin and end a meal? A role of memory for what has been eaten, as evidenced by a study of multiple meal eating in amnesic patients. *Psychological Science*, *9*, 392–396.

Salerno, A., Laran, J., & Janiszewski, C. (2014). Hedonic eating goals and emotion: When sadness decreases the desire to indulge. *Journal of Consumer Research* (In press), http://www.jstor.org/stable/info/10.1086/675299?__redirected.

Schachter, S., & Gross, L. P. (1968). Manipulated time and eating behavior. *Journal of Personality and Social Psychology*, *10*, 98–106.

Scheibehenne, B., Todd, P. M., & Wansink, B. (2010). Dining in the dark. *The importance of visual cues for food consumption and satiety. Appetite*, *55*, 710–713.

Sharpe, Kathryn M., Staelin, R., & Huber, J. (2008). Using extremeness aversion to fight obesity: Policy implications of context dependent demand. *Journal of Consumer Research*, *35*, 406–422.

Shiv, B., & Fedorikhin, A. (1999). Heart and mind in conflict: The interplay of affect and cognition in consumer decision making. *Journal of Consumer Research*, *26*, 278–292.

Shiv, B., & Nowlis, S. M. (2004). The effect of distractions while tasting a food sample: The interplay of informational and affective components in subsequent choice. *Journal of Consumer Research*, *31*, 599–608.
Spiegel, T. A., Shrager, E. E., & Stellar, E. (1989). Responses of lean and obese subjects to preloads, deprivation, and palatability. *Appetite*, *13*, 45–69.
Sproesser, G., Schupp, H. T., & Renner, B. (2014). The bright side of stress-induced eating: Eating more when stressed but less when pleased. *Psychological Science*, *25*.
Steenhuis, I., & Vermeer, W. (2009). Portion size: Review and framework for interventions. *International Journal of Behavioral Nutrition and Physical Activity*, *6*, 58–67.
Stroebe, W., Mensink, W., Aarts, H., Schut, H., & Kruglanski, A. W. (2008). Why dieters fail: Testing the goal conflict model of eating. *Journal of Experimental Social Psychology*, *44*, 26–36.
Stroebe, W., van Koningsbruggen, G. M., Papies, E. K., & Aarts, H. (2013). Why most dieters fail but some succeed: A goal conflict model of eating behavior. *Psychological Review*, *120*, 110–138.
Stroebele, N., & De Castro, J. M. (2004). Effect of ambience on food intake and food choice. *Nutrition*, *20*, 821–838.
Stroebele, N., & de Castro, J. M. (2006). Listening to music while eating is related to increases in people's food intake and meal duration. *Appetite*, *47*, 285–289.
Tal, A., & Wansink, B. (2013). Fattening fasting: Hungry grocery shoppers buy more calories, not more food. *JAMA Internal Medicine*, *173*, 1146–1148.
Thaler, R. H., & Sunstein, C. (2003). Libertarian paternalism. *The American Economic Review*, *93*, 175–179.
Tooze, J. A., Subar, A. F., Thompson, F. E., Troiano, R., Schatzkin, A., & Kipnis, V. (2004). Psychosocial predictors of energy underreporting in a large doubly labeled water study. *The American Journal of Clinical Nutrition*, *79*, 795–804.
Trabulsi, J., & Schoeller, D. A. (2001). Evaluation of dietary assessment instruments against doubly labeled water, a biomarker of habitual energy intake. *American Journal of Physiology - Endocrinology and Metabolism*, *281*, E891–E899.
Vadiveloo, M., Morwitz, V., & Chandon, P. (2013). The interplay of health claims and taste importance on food consumption and self-reported satiety. *Appetite*, *71*, 349–356.
van Ittersum, K., & Wansink, B. (2012). Plate size and color suggestibility: The Delboeuf illusion's bias on serving and eating behavior. *Journal of Consumer Research*, *39*, 215–228.
van Ittersum, K., & Wansink, B. (2013). Extraverted children are more biased by bowl sizes than introverts. *PLoS ONE*, *8*, e78224.
van Kleef, E., Shimizu, M., & Wansink, B. (2013). Just a bite: Considerably smaller snack portions satisfy delayed hunger and craving. *Food Quality and Preference*, *27*, 96–100.
Vartanian, L. R., Herman, C. P., & Wansink, B. (2008). Are we aware of the external factors that influence our food intake? *Health Psychology*, *27*, 533–538.
Viswanathan, M., Rosa, J. A., & Harris, J. E. (2005). Decision making and coping of functionally illiterate consumers and some implications for marketing management. *Journal of Marketing*, *69*, 15–31.
Wadhwa, M., Shiv, B., & Nowlis, S. M. (2008). A bite to whet the reward appetite: The influence of sampling on reward-seeking behaviors. *Journal of Marketing Research*, *45*, 403–413.
Walker, D., Smarandescu, L., & Wansink, B. (2014). Half full or empty: Cues that lead wine drinkers to unintentionally overpour. *Substance Use and Misuse*, *49*, 295–302.
Wansink, B. (1994). Antecedents and mediators of eating bouts. *Family and Consumer Sciences Research Journal*, *23*, 166–182.
Wansink, B. (1996). Can package size accelerate usage volume? *Journal of Marketing*, *60*, 1–14.
Wansink, B. (2004). Environmental factors that increase the food intake and consumption volume of unknowing consumers. *Annual Review of Nutrition*, *24*, 455–479.
Wansink, B. (2006). *Mindless eating: Why we eat more than we think.* New York, NY: Bantam Books.
Wansink, B. (2011). Activism research: Designing research that intends to transform. In D. G. Mick, S. Pettigrew, J. L. Ozanne, & C. Pechmann (Eds.), *Transformative consumer research for personal and collective well-being* (pp. 67–88). New York: Routledge.
Wansink, B. (2014). *Slim by design: Mindless eating solutions for everyday life.* New York: William Morrow.
Wansink, B., & Chandon, P. (2006). Meal size, not body size, explains errors in estimating the calorie content of meals. *Annals of Internal Medicine*, *145*, 326–332.
Wansink, B., & Chandon, P. (2014). *Slim by design: Redirecting the accidental drivers of mindless overeating: Journal of Consumer Psychology*, *24*, 413–431.
Wansink, B., Cheney, M. M., & Chan, N. (2003). Exploring comfort food preferences across age and gender. *Physiology and Behavior*, *79*, 739–747.
Wansink, B., & Hanks, A. S. (2014). Calorie reductions and within-meal calorie compensation in children's meal combos. *Obesity*, *22*, 630–632.
Wansink, B., & Huckabee, M. (2005). De-marketing obesity. *California Management Review*, *47*, 6–18.
Wansink, B., & Johnson, K. A. (2014). What percentage of self-served food is eaten? A preliminary investigation of how serving size and other factors influence intake. *International Journal of Obesity* (In press).
Wansink, B., & Kim, J. (2005). Bad popcorn in big buckets: Portion size can influence intake as much as taste. *Journal of Nutrition Education and Behavior*, *37*, 242–245.
Wansink, B., Painter, J. E., & Lee, Y. -K. (2006). The office candy dish: proximity's influence on estimated and actual consumption. *International Journal of Obesity*, *30*, 871–875.
Wansink, B., Painter, J. E., & North, J. (2005). Bottomless bowls: Why visual cues of portion size may influence intake. *Obesity Research*, *13*, 93–100.
Wansink, B., & Park, S. (2001). At the movies: How external cues and perceived taste impact consumption volume. *Food Quality and Preference*, *12*, 69–74.
Wansink, B., & Payne, C. R. (2007). Counting bones: Environmental cues that decrease food intake. *Perceptual and Motor Skills*, *104*, 273–276.
Wansink, B., Payne, C. R., & Chandon, P. (2007). Internal and external cues of meal cessation: The French paradox redux? *Obesity*, *15*, 2920–2924.
Wansink, B., Shimizu, M., Cardello, A. V., & Wright, A. O. (2012). Dining in the dark: How uncertainty influences food acceptance in the absence of light. *Food Quality and Preference*, *24*, 209–212.
Wansink, B., & Sobal, J. (2007). Mindless eating—The 200 daily food decisions we overlook. *Environment and Behavior*, *39*, 106–123.
Wansink, B., Tal, A., & Shimizu, M. (2012). First foods most: After 18-hour fast, people drawn to starches first and vegetables last. *Archives of Internal Medicine*, *172*, 961–963.
Wansink, B., & Van Ittersum, K. (2003). Bottoms up! The influence of elongation on pouring and consumption volume. *Journal of Consumer Research*, *30*, 455–463.
Wansink, B., & van Ittersum, K. (2007). Portion size me: Downsizing our consumption norms. *Journal of the American Dietetic Association*, *107*, 1103–1106.
Wansink, B., & Van Ittersum, K. (2012). Fast food restaurant lighting and music can reduce calorie intake and increase satisfaction. *Psychological Reports*, *111*, 228–232.
Wansink, B., van Ittersum, K., & Painter, J. E. (2006). Ice cream illusions: Bowls, spoons, and self-served portion sizes. *American Journal of Preventive Medicine*, *31*, 240–243.
Werle, C. O. C., Trendel, O., & Ardito, G. (2013). Unhealthy food is not tastier for everybody: The "healthy ≠ tasty" French intuition. *Food Quality and Preference*, *28*, 116–121.
Westerterp-Plantenga, M. S., van Marken Lichtenbelt, W. D., Cilissen, C., & Top, S. (2002). Energy metabolism in women during short exposure to the thermoneutral zone. *Physiology and Behavior*, *75*, 227–235.
Wilcox, K., Vallen, B., Block, L., & Fitzsimons, Gavan J. (2009). Vicarious goal fulfillment: When the mere presence of a healthy option leads to an ironically indulgent decision. *Journal of Consumer Research*, *36*, 380–393.
Winterich, K. P., & Haws, K. L. (2011). Helpful hopefulness: The effect of future positive emotions on consumption. *Journal of Consumer Research*, *38*, 505–524.

Woods, A. T., Poliakoff, E., Lloyd, D. M., Kuenzel, J., Hodson, R., Gonda, H., et al. (2011). Effect of background noise on food perception. *Food Quality and Preference*, *22*, 42–47.

Young, L. R., & Nestle, M. (2002). The contribution of expanding portion sizes to the US obesity epidemic. *American Journal of Public Health*, *92*, 246–249.

Zampini, M., & Spence, C. (2010). Assessing the role of sound in the perception of food and drink. *Chemosensory Perception*, *3*, 57–67.

Zlatevska, N., Dubelaar, C., & Holden, S. S. (2014). Sizing up the effect of portion size on consumption: A meta-analytic review. *Journal of Marketing* (in press), http://journals.ama.org/doi/abs/10.1509/jm.12.0303.