Out of Proportion? the Effect of Leftovers on Eating-Related Affect and Behavior

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As portion sizes have been growing, so have consumers’ food leftovers. We find that, holding actual consumption constant, larger amounts of leftovers increase subsequent eating and decrease exercising by reducing perceived consumption and bolstering self-evaluative feelings. Leaving more food as leftovers may, counterintuitively, backfire and instead contribute to weight gain.

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EXTENDED ABSTRACT

Food leftovers are commonplace, and have become more so. Average portion size has increased over time (Nielsen and Popkin 2003; Smiciklas-Wright et al. 2003). While these increased portion sizes brought along increased consumption (for a review see Herman, Pliner, Polivy, and Vartanian 2015), the increase in consumption has not kept up with the increase in portion size: a recent meta-analysis found that when portion sizes are expanded by 100%, people eat only about 35% more (Zlatevska, Dubelaar, and Holden 2014). As such, on average, consumers today tend to have greater amounts of food leftover.

Much prior work has investigated how larger portions directly lead to greater consumption, such as through visual biases (Chandon and Orzubayeva 2009; Krider, Raghurib, and Krishna 2001) or inferences about portion appropriateness (Diliberti et al. 2004; Herman et al. 2015). However, no attention has been given to how the larger leftovers that stem from larger portions may impact consumer behavior. Clearly, eating more food is an important and intuitive cause of weight gain. But is it possible that having more food leftover could also contribute to obesity, by giving consumers the sense that they didn’t consume all that much after all?

As mentioned before, when portion size increases, consumption increases to a much smaller degree, effectively leading to more leftovers. This paper is the first to examine whether giving equal actual consumption merely having more food leftover changes consumers’ perception of how much they ate and consequently impacts subsequent eating and exercising behavior—an important and timely question that has, to our knowledge, not yet been studied. By holding constant the amount of food eaten and only varying the amount of leftovers, we are able to isolate any effects of amount leftover from amount consumed—two variables that are typically confounded in food consumption studies.

In brief, we propose that, holding actual consumption constant, larger amounts of food leftovers may increase subsequent eating and decrease subsequent exercising by reducing perceived consumption and thus bolstering consumers’ self-evaluative feelings. The rationale for this proposition is as follows. Theories of perception (for a review see Stewart, Brown, and Chater 2005) and judgment and decision making (Hsee 1996; Tversky and Kahneman 1991), in one way or another, suggest that people perform relative rather than absolute judgments. For equal absolute consumption, having more food leftover means that the relative proportion of food eaten from the whole portion is smaller, and thus we predict that larger leftovers lead people to perceive they consumed less. Given that many consumers have a goal to curb their consumption or at least not overeat (Bublitz, Peracchio, and Block 2010; Vohs and Heatherton 2000) and feel bad when they overindulge (Ramanathan and Williams 2007), we predict that perceiving lower consumption may bolster people’s self-evaluation. Based on findings that feeling better about one’s current status regarding a goal can decrease efforts towards that goal (Amodio, Devine, and Harmon-Jones 2007; Carver 2003), we predict that the bolstered self-evaluation reduces consumers’ motivation to compensate for their prior eating later on, as manifested in eating more and exercising less afterwards. Four experiments provide evidence in support of these predictions.

In study 1, people were asked to eat six squares of chocolate from a chocolate bar, either from an eight-square-bar (small leftovers) or an 18-square-bar (large leftovers). People who ate six squares but had large leftovers rated their absolute consumption as lower than those who ate six squares but had small leftovers.

Study 2A replicated this finding and also examined its impact on compensatory behaviors, as manifested in increased subsequent consumption. Students were presented with a cookie and asked to eat a designated equally sized area, either from a small cookie (small leftovers) or a large cookie (large leftovers). Afterwards, they could participate in an optional additional tasting of mini cookies. People with large leftovers rated their absolute consumption as lower and also ate more cookies afterwards than people with small leftovers. Study 2B replicated study 2A with a different type of compensatory behavior: exercising. People with large leftovers rated their absolute consumption as lower and walked fewer steps during a subsequent stepper task than people with small leftovers.

Study 3 tested the whole process model. Participants saw an image of the remainder of a chocolate bar resting on its wrapper with six squares had been eaten from the whole, and either three, six, 14, or 22 squares left. They were asked to imagine vividly having eaten the chocolate bar down to what they left of it. The larger the amount leftover, the lower was participants’ perceived consumption the lower were their negative self-evaluative feelings (guilty/regretful/shameful), and the lower was their motivation to compensate (eat less/work out/work out longer). Indeed, perceived consumption and negative self-evaluative feelings serially mediated the effect of leftovers on motivation to compensate.

In sum, across real and imagined consumption, we find that, holding actual consumption constant, larger amounts of food leftovers lead people to feel they consumed less. Importantly, this reduces real consequential compensatory behaviors—larger leftovers lead people to eat more and exercise less because perceiving lower consumption bolsters self-evaluative feelings, which in turn undermines their motivation to compensate.

This research reveals that food leftovers—that is, unconsumed food—can exert meaningful influence on consumers’ perceptions, affect, motivation, and important health-related behavior. Aside from making yet another case against growing portion sizes, these findings highlight that proudly foregoing half one’s meal may actually backfire and subtly undermine subsequent healthy behaviors. Implications for how consumers may better deal with leftovers to prevent or reduce this effect should be investigated.

REFERENCES


