



## How do people define moderation?



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### ABSTRACT

Eating in moderation is considered to be sound and practical advice for weight maintenance or prevention of weight gain. However, the concept of moderation is ambiguous, and the effect of moderation messages on consumption has yet to be empirically examined. The present manuscript examines how people define moderate consumption. We expected that people would define moderate consumption in ways that justified their current or desired consumption rather than view moderation as an objective standard. In Studies 1 and 2, moderate consumption was perceived to involve greater quantities of an unhealthy food (chocolate chip cookies, gummy candies) than perceptions of how much one should consume. In Study 3, participants generally perceived themselves to eat in moderation and defined moderate consumption as greater than their personal consumption. Furthermore, definitions of moderate consumption were related to personal consumption behaviors. Results suggest that the endorsement of moderation messages allows for a wide range of interpretations of moderate consumption. Thus, we conclude that moderation messages are unlikely to be effective messages for helping people maintain or lose weight.

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### 1. How Do People Define Moderation?

During the last 30 years Americans have become more accepting of being overweight and Americans are less likely to be on weight-loss diets (NPD Group, 2013). Besides shifting beliefs about appearance and weight (Bacon, 2013; NPD Group, 2013), people may abandon diets due to displeasure at the often slow results of dieting and skepticism about the effectiveness of diets. Skepticism about the effectiveness of diets is warranted. Although diets can lead to short-term weight loss, most people regain all (or more than) the weight they lose through diets (for a review, see Mann et al., 2007). With a shift away from dieting, people may be more likely to endorse weight-maintenance strategies that promote lifestyle changes such as eating unhealthy foods in moderation. Many places people turn to for weight-management advice promote the concept of eating unhealthy foods in moderation (e.g., the American Dieting Association; Freeland-Graves & Nitzke, 2002). Even places where people may not be looking for advice, such as fast food restaurants, promote the idea that consuming unhealthy

food in moderation is in line with a healthy lifestyle. For example, Chick-fil-A's to-go paper bag states "Moderation is Key: All foods can fit within a healthy diet if consumed in moderation. With appropriate portion sizes and physical activity, you can enjoy treats like our Frosted Lemonade."

At first glance, moderation messages seem likely to promote healthy, or at least healthier, consumption. However, advice such as 'eat unhealthy foods in moderation' leaves decisions about serving size and frequency of consumption up to the individual, requiring accurate and unbiased estimation of concepts such as 'a little' and 'appropriate.' Because moderation is an ambiguous standard, it allows for a broad range of definitions of what might be deemed appropriate—or moderate—consumption (Leone, Pliner, & Herman, 2007). People are notoriously poor judges of portion sizes, the caloric content of food, and even the amount of food they have just consumed (Blake, Guthrie, & Smiciklas-Wright, 1989; Carels, Harper, & Konrad, 2007; Wansink, Painter, & North, 2005; Wansink & Sobal, 2007), making it unlikely they will make estimations of moderate consumption accurately.

Given that people are unlikely to know what amounts of consumption should be considered moderate, what information might they use to estimate moderation? People are likely to look to their own consumption and the consumption of others around them (Clement & Krueger, 2000; Herman & Polivy, 2005; Leone et al.,

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2007; Ross, Greene, & House, 1977; Roth, Herman, Polivy, & Pliner, 2001). They may also look to their social networks and close others as guides for what consumption might be considered moderate. Of course, close others' health behaviors are often similar to one's own health behaviors (Christakis & Fowler, 2007; Feunekes, de Graaf, Meyboom, & van Staveren, 1998; Kassem & Lee, 2004), and are therefore unlikely to provide clear additional information about how to properly define moderation.

In addition to using self-referent information to define moderation, people may actually be motivated to construe moderation as similar to what they already consume. People tend to adopt beliefs that favor the self (Brown, 1986; Campbell & Sedikides, 1999; Kunda, 1990; Sanitioso & Wlodarski, 2004), potentially leading them to be inclined to consider their own consumption as well within the scope of moderation. Furthermore, people tend to organize information in ways that provide meaning (Proulx & Inzlicht, 2012). Given that moderation is a prevalent cultural idea, people are likely to believe they are consuming foods and beverages in line with the idea of moderation. Therefore, we expect definitions of moderation to be biased by one's own consumption: the more of an item a person typically consumes, the greater amount of that item would be considered moderate consumption.

## 2. The current studies

In the present work, we empirically investigate what consumption people consider to be moderate. In two studies, we examined definitions of what amount of consumption of an unhealthy food item (i.e., chocolate chip cookies, gummy candies) would be considered moderation in comparison to what amount of the unhealthy food item people believe they should consume. In an additional study, with two samples, we measured participants' definitions of moderation for a series of food and drink items, their personal consumption of those food and drink items, and their beliefs about whether their personal consumption could be considered moderate. Across these studies, we test two hypotheses concerning people's beliefs about the amount of food that constitutes moderation:

Hypothesis 1 (H1): Definitions of moderation differ from definitions of limited consumption. That is, participants will define moderation as greater quantities of food than the amount of that food they believe they should eat. We compare definitions of moderation to (a) definitions of 'should' consumption (i.e., the amount of an item people believe they should eat; Studies 1–2) and (b) actual consumption (Study 3).

Hypothesis 2 (H2): Definitions of moderation are biased by personal consumption and preferences. The more people like an item, the greater consumption of that item they consider to be moderate (Study 2) and the more people consume of an item, the more consumption of that item they believe to be moderate (Studies 2–3).

## 3. Study 1

Study 1 provided a test of H1, that definitions of moderation differ from definitions of limited consumption. In this study, we compared definitions of moderation to definitions of should consumption and definitions of indulgence.

### 3.1. Method

#### 3.1.1. Participants

We recruited 89 female participants ( $M_{BMI} = 22.71$ ) from a large public university in the Southeastern United States. Only participants without dairy, gluten, or chocolate allergies or restrictions

were recruited.

#### 3.1.2. Procedure

Participants completed the study in a campus laboratory. All participants were seated in front of a table presenting a plate piled with 24 chocolate chip cookies. Participants were asked to report the number of cookies one should eat, the number of cookies they would consider to be moderate consumption, and the number of cookies that would be considered indulgent. The presentation order of these three questions was counterbalanced for each participant.

## 3.2. Results and discussion

Using dependent samples *t*-tests, we first compared definitions of moderation to perceptions of what one should eat. Moderation was defined as more cookies ( $M = 3.17$ ,  $SD = 1.45$ ) than what one should consume ( $M = 2.25$ ,  $SD = 1.02$ ),  $t(89) = 7.51$ ,  $p < 0.0001$ ; 95% CI: 0.68, 1.17. Of all participants, 8.99% defined moderation as less than what one should consume, 23.60% defined moderation as the same as what one should consume, and the remaining 67.41% defined moderation as greater than what they believed one should consume. Additional analyses confirmed that definitions of indulging ( $M = 5.92$ ,  $SD = 2.58$ ) were larger than both definitions of what one should consume,  $t(88) = 16.9$ ,  $p < 0.0001$ , 95% CI: 3.23, 4.09, and moderate consumption,  $t(88) = 14.72$ ,  $p < 0.0001$ , 95% CI: 2.37, 3.11.

Note that the confidence intervals of indulgence versus 'should' consumption and indulgence versus moderation do not overlap, suggesting that people thought of indulgence as greater than 'should' consumption to a greater degree than they thought of indulgence as greater than moderation. Despite the fact that participants thought they should consume cookies (i.e., the mean number of cookies participants reporting they should eat was greater than 2 cookies), they perceived moderate consumption of cookies as greater than what they should eat. Thus, the idea of moderation may not limit consumption as much as other messages about eating.

## 4. Study 2

Study 1 provided an initial test of H1, that moderation would be perceived as a greater quantity of food than perceptions of what one should eat. However, the context of Study 1 had limitations that we address in a conceptual replication in Study 2. First, in Study 1 participants were exposed to a large quantity of a particular food item in the laboratory. This paradigm included exposure to overconsumption (8 servings with a total of 1200 calories) and the exposure to strong cues of indulgence may have driven down perceptions of should consumption disproportionately to that of moderate consumption (Fishbach & Shah, 2006; Myrseth & Fishbach, 2009). Thus, in Study 2, we reduced the strength of the temptation by exposing participants to an image rather than an actual food item. Additionally, we selected an alternative food item (i.e., fruit-shaped gummy candies) and presented 24 pieces (2 serving sizes with a total of 160 calories). Second, the within-subjects design of Study 1 may have produced contrast effects where participants reported greater numbers for moderate consumption after considering should consumption. Thus, in Study 2 we employed a between-subjects design where participants were asked to make only one decision. Third, in Study 2 we examined other perceptions that may be likely to be misrepresented, namely perceptions of a 'reasonable quantity' of a food item. Although we had no strong predictions, we suspected ideas of reasonable consumption to be just as abstract as perceptions of moderation and

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