



## Research report

Development and validation of an eating norms inventory. Americans' lay-beliefs about appropriate eating<sup>☆</sup>Robert J. Fisher<sup>a,\*</sup>, Laurette Dubé<sup>b</sup><sup>a</sup>School of Business, University of Alberta, Edmonton, AB, T6G 2R6 Canada<sup>b</sup>Desautels Faculty of Management of McGill University, Montreal, Quebec, H3A 1G5 Canada

## ARTICLE INFO

## Article history:

Received 9 November 2010

Received in revised form 11 May 2011

Accepted 12 May 2011

Available online 19 May 2011

## Keywords:

Social norms

Eating beliefs

Eating behaviors

Socialization

## ABSTRACT

What do American adults believe about what, where, when, how much, and how often it is appropriate to eat? Such normative beliefs originate from family and friends through socialization processes, but they are also influenced by governments, educational institutions, and businesses. Norms therefore provide an important link between the social environment and individual attitudes and behaviors. This paper reports on five studies that identify, develop, and validate measures of normative beliefs about eating. In study 1 we use an inductive method to identify what American adults believe are appropriate or desirable eating behaviors. Studies 2 and 3 are used to purify and assess the discriminant and nomological validity of the proposed set of 18 unidimensional eating norms. Study 4 assesses predictive validity and finds that acting in a norm-consistent fashion is associated with lower Body Mass Index (BMI), and greater body satisfaction and subjective health. Study 5 assesses the underlying social desirability and perceived healthiness of the norms.

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“When we feel the need to eat we are reacting to a physiological sensation—stomach contractions—brought about by a lowering of blood sugar. Satisfying hunger is clearly a biological process. But the way we react to this sensation cannot be predicted by physiology alone. What, when, how, and how often we eat are all matters of cultural forces we learn over time. When you say something like, “I’m starving, but it’s too early to eat dinner” you’re signaling the power of cultural training overriding physiological demands” (Newman, 2009, p. 56).

Social norms have profound effects on eating behaviors. Recent research has demonstrated that norms affect how much is consumed (Herman, Roth, & Polivy, 2003; Leone, Pliner, & Peter Herman, 2007; Roth, Herman, Polivy, & Pliner, 2001), food preferences (Ariely & Levav, 2000), and even how hungry we feel (Herman et al., 2003). The effects of eating norms on behavior are complex because they are influenced by characteristics of the social environment including the relationship between those involved (Christakis & Fowler, 2007; Salvy, Jarrin, Paluch, Irfan, & Pliner 2007), their genders (Mori, Chaiken, & Pliner, 1987), and their relative body masses (Salvy, Coelho, Kieffer, & Epstein, 2007). The present research focuses on social injunctive norms (hereafter

simply referred to as “norms”), which are shared beliefs about what is appropriate that lead to an obligation to behave in a specified way (Cialdini, 2007; Cialdini & Trost, 1998). Such norms affect behavior when individuals seek social approval for acting in a way that is consistent with what they believe are others’ expectations (Cialdini, Reno, & Kallgren, 1990).

Norms are important not only because they shape behavior, but also because they have detrimental effects when they are violated. Although most norm violations produce no more than mild social censure, norm-inconsistent behaviors can lead to serious consequences including teasing, bullying, and even physical violence (Wooten, 2006). Violations of internalized norms can also have negative effects on self-esteem because they create a perceived inconsistency between the individual’s actual and desired self. The result can be shame, self-criticism, and depression (Dunkley & Grilo, 2007; Lazarus, 1991; Sanftner & Crowther, 1998). Norm violations also have well-documented effects on subsequent behaviors. For example, self-regulation is often lost once a dieter has broken a dietary norm, and binge eating can result (Herman & Polivy, 2005; Mills & Palandra, 2008).

Eating norms also have implications for our quality of life through their effects on health and well-being. Such norms have been identified as an underlying cause of unhealthy eating behaviors (Salvy, Coelho, et al., 2007), which lead to health problems associated with obesity including diabetes and cardiovascular disease (Sullivan, Morrato, Ghushchyan, Wyatt, & Hill, 2005; Willett, Dietz, & Colditz, 1999). If the trend from 1970 to 2004 persists, 86.3% of American adults will be overweight or

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obese by 2030, with total health-care costs attributable to excess weight reaching \$900 billion (Wang, Beydoun, Liang, Caballero, & Kumanyika, 2008).

The present research is the first to develop and validate a comprehensive inventory of eating norms, that is, beliefs about what are appropriate or desirable eating behaviors. Beyond its practical importance, the development of an eating norms inventory provides a foundation for future research in two fundamental ways. First, a comprehensive inventory of eating norms is necessary to assess the relative influence of various reference groups and the processes through which they shape behavior. Norms are group dependent—we are simultaneously members of family, friendship, employment, education, recreational, community, religious, and other groups that often have different and sometimes conflicting norms (Roth et al., 2001). Consider the eating behaviors undertaken by a teenager in a typical day. The teen's breakfast and lunch are made at home and therefore influenced, or even determined, by his or her parents. What is consumed at school, however, is a function of whether the teen eats alone, with a same-sex friend, in view of teachers, or while interacting with opposite-sex peers. Norms underlie all social influence processes because what is appropriate, desirable, or typical within a group defines the use of power and influence, self-presentation concerns, and conformity processes. A comprehensive inventory of normative beliefs is needed to facilitate research on topics including how people resolve normative conflict, the conditions under which norms become salient, norm enforcement within groups, and the emotional and behavioral consequences of norm violations.

Second, little is known about the extent to which interventions by social institutions influence behavior by changing what people believe is appropriate or desirable. Governments and the healthcare system want to promote healthy eating, and they do so through a variety of means including the publication of healthy eating guides, the design of school health curricula, and public service announcements. Food retailers and restaurants seek competitive advantage and profit by promoting specific types of foods, managing portion sizes, increasing food access through vending machines and convenient restaurant locations, and by optimizing relative prices. At issue is the degree to which peoples' normative beliefs are shaped and influenced by these institutions and to what extent they affect actual eating behaviors. Understanding what people believe about when, where, why, how, and how much they eat is a necessary first step to designing effective interventions and measuring their subsequent effects.

We present a series of five studies designed to identify, purify, and validate unidimensional measures of the eating norms held by Americans. We use an inductive method in study 1 to generate a list of normative beliefs about eating from a sample of 380 American adults. An inductive approach is used because identifying people's lay-beliefs is a critical step in predicting actual eating preferences and behaviors. Lay beliefs have been studied in health care (Frosch, Kimmel, & Volpp, 2008), social psychology (Furnham, 1995; Pinazo, Peris, & Gamez, 2010), and consumer behavior (Friestad & Wright, 1995) because they represent people's most salient and influential judgments about how to behave. Studies 2 and 3 are used to purify the resulting set of 18 unidimensional eating norm measures. In study 4 we provide evidence of the nomological validity of the inventory. Our tests are consistent with both the structuralist-functional (Parsons & Smelser, 1956) and evolutionary perspectives on norms (Axelrod, 1986), which assert that norms are established and maintained within a social system because they serve a functional purpose. As argued by Axelrod (1986), norms that are effective will tend to be reinforced and propagate through imitation whereas norms that are ineffective will be discarded. Within the present context this suggests that the

most widely held norms are those that contribute to valued outcomes such as physical fitness and health. We therefore test the predictive validity of the normative belief measures through their associations with Body Mass Index (BMI), body satisfaction, and subjective health in study 4. Finally, we use a factor-analytic approach in study 5 to assess the social desirability and healthiness of the eating norms.

### Study 1: identifying eating-related normative beliefs

The objective of study 1 was to generate a comprehensive inventory of Americans' lay beliefs about desirable or appropriate eating behaviors. Three hundred and eighty members of an online panel of American adults were recruited to participate in a study on "eating behaviors" in return for \$5. Participants were asked to identify any "rules or guidelines related to eating that come to mind" and were provided with space to type as many or as few responses as they wished. We used the term "rules" rather than "social norms" to simplify the task, and because the two terms are used interchangeably in everyday language (Dubois, 2003). After completing the unaided component of the survey, respondents were sequentially prompted for rules they might have in 10 eating situations (dining out, at night, with other people, watching television, snacking, on vacation, on weekends, on special occasions, on religious observances or holidays), three types of meals (breakfast, lunch, dinner), and two emotional states (when celebrating, when feeling sad). The unaided component is designed to capture respondents' most salient beliefs, whereas the aided component reduces errors in recall by improving memory (Sudman & Bradburn, 1973).

The sample was similar to the general U.S. population in terms of age and ethnicity (United States Census, 2000), although it was skewed towards females (75.1%) and slightly younger participants (18–29 years of age, 25.9% study versus 22.2% census; 30–39 years of age, 25.7% study versus 20.7% census; 40–49 years of age, 24.6% study versus 20.3% census; 50–59 years of age, 14.1% study versus 14.8% census; 60 or older, 5.2% study versus 21.9% census). Similar demographic characteristics were found for the remaining studies using the online panel.

#### Study 1: results and discussion

A total of 4562 unaided and aided normative beliefs were generated in study 1 for an average of 12.0 beliefs per participant, although some beliefs were identified in more than one situation. For example, avoiding snacks between meals was identified frequently as an eating rule both between meals and in the evening. The unaided recall portion of the survey produced 998 beliefs for an average of 2.62 per participant. We present the frequency distribution of the unaided norms generated per respondent in Table 1. Two coders were hired to place statements

**Table 1**  
Unaided eating norms per respondent: study 1.

Number of norms mentioned	Raw count	Percentage of respondents	Cumulative percentage of respondents
0	19	5	5
1–4	73	19.2	24.2
5–9	89	23.4	47.6
10–14	71	18.7	66.3
15–19	49	12.9	79.2
20 or more	79	20.8	100
	380	100	

Note:  $n=380$ .

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