Eating Behaviors 16 (2015) 23–30

Contents lists available at ScienceDirect

Eating Behaviors

Creating a measure of portion control self-efficacy

Lindsey C. Fast [a,*], Jennifer J. Harman [b], Julie A. Maertens [b], Jeni L. Burnette [c], Francesca Dreith [b]

[a] Department of Psychology, Western State Colorado University, Gunnison, CO, United States
[b] Department of Psychology, Colorado State University, Fort Collins, CO, United States
[c] Department of Psychology, University of Richmond, Richmond, VA, United States

ARTICLE INFO

Article history:
Received 23 November 2013
Received in revised form 20 August 2014
Accepted 24 October 2014
Available online 1 November 2014

Keywords:
Portion control self-efficacy
Eating behaviors
Obesity
Weight loss
Health behaviors
Food consumption

ABSTRACT

Objective: Over the last few decades, food portion sizes have steadily increased by as much as 700% (Young & Nestle, 2002). Food portions are often much larger than dietary guidelines recommend, leaving individuals to manage their food consumption on their own and making it necessary to understand individual factors impacting food consumption. In the current paper, we focus on self-efficacy for portion control.
Method: Specifically, across three studies, we developed and validated a new measure of portion control self-efficacy (PCSE).
Result: The PCSE measure yielded good fit statistics and had acceptable test–retest reliability using two cross-sectional surveys (Studies 1(a) and 1(b)). Results from Study 2 demonstrated construct and predictive validity of the PCSE using the Food Amount Rating Scale (FARS; Dohm, & Striegel-Moore, 2002). Study 3 offered additional support for reliability and validity with a sample of overweight and obese adults currently trying to lose weight.
Conclusions: Overall, findings indicate that the new PCSE measure is reliable and valid. Individuals often make inaccurate food portion estimates (Slawson & Eck, 1997; Yuhas, Bolland, & Bolland, 1989) which can lead to overeating and weight-gain. Thus, the discussion centers on the need to incorporate PCSE in future research and intervention work targeting weight loss, health, and food consumption.

1. Introduction

In the past 30 years, obesity levels have increased dramatically from 14% in 1970 to 34% in 2006; by the year 2020, if trends continue, it is estimated that 70% of the population will be overweight or obese (Ruhm, 2007; Wang, Beydoun, Liang, Caballero, & Kumanyika, 2008). In the United States, obesity is the secondary cause of premature death after smoking (in some states it is the number one cause), with 110,000–365,000 deaths per year (Corsica & Perri, 2013). Furthermore, obesity increases the risk of coronary heart disease, hypertension, diabetes, and other diseases (Flegal, Graubard, Williamson, & Gail, 2005). It is also estimated that type II diabetes, hypothesized to be largely influenced by eating habits and obesity, now affects nearly 21 million Americans, or about 7% of the U.S. population (Centers for Disease Control, Prevention, 2008). Increasing dramatically from 1995, the total economic costs of obesity (both direct and indirect) reached nearly $130 billion in 2008 (Wang et al., 2008; Wolf & Colditz, 1998), making obesity and food related diseases a major public health concern within the U.S. as well as on a global scale (Cutler, Glaeser, & Shapiro, 2003; Friedrich, 2002).

Although there are a myriad of contributing factors associated with the rapid increase in obesity rates, eating behavior has been cited as an important component to understand (O'Neill et al., 2012). However, considering our obesogenic environment, food consumption is difficult to manage and change (Mattsson & Helmersson, 2007, Stroebe et al., 2013). Despite the widespread availability of nutritional information provided in school curricula, doctors' offices (provider education, pamphlet or newsletters), on the internet, and on food packaging, overeating remains a substantial problem (Centers for Disease Control, Prevention, 2008; O'Neill et al., 2012). Increases in energy intake (but not expenditure) has been implicated in the rise of obesity (Kral & Rolls, 2004), with fast-food consumption and increases in food portion sizes playing a large role (French, Story, & Jeffery, 2001; Kral & Rolls, 2004; Levitsky, Halbmaier, & Mrdjenovic, 2004). Between the years 1977 and 1996, food portion sizes consumed have risen steadily, both inside and outside of the home (Nielsen & Popkin, 2003) by as much as 700% (Young & Nestle, 2002). Currently, restaurants routinely serve portions that contain up to 60% more calories than government-recommended servings (Hellmich, 2002). With the average American eating outside of the home between 4 and 8 times a week (Driskell, Meckna, & Scales,

* Corresponding author at: Department of Psychology, Western State Colorado University, 500 N. Adams St., Gunnison, CO 81230, United States. Tel.: +1 800 876 5309; fax: +1 970 943 2363.
E-mail address: lfast@western.edu (L.C. Fast).

http://dx.doi.org/10.1016/j.eatbeh.2014.10.009
1471-0153/

2006), a behavior such as portion control is an important behavior to target in the fight against obesity (Logue, Sutton, Jarjoura, & Smucker, 2000).

In targeting health behaviors, such as food consumption, social cognitive theory (SCT; Bandura, 2004) has proved valuable. SCT specifies that possessing knowledge about health risks and benefits serves as a precursor for change; however *self-efficacy* is necessary to translate this knowledge into practice (Bandura, 2004). According to SCT, expectations of self-efficacy determine what activities people will engage in, how much effort they will expend, and how long they will persevere in face of adversity. General self-efficacy (GSE) refers to an individual's belief in his or her ability to perform a behavior (Scherbaum, Cohen-Charash, & Kern, 2006). General self-efficacy is important because it directly affects behavior and it influences other behavioral determinants such as goals and expectations. For example, individuals with greater GSE tend to consume more healthy food such as fruits and vegetables (De Oliveira, Anderson, Auld, & Kendall, 2005). While GSE has been very predictive for a variety of behaviors, numerous researchers have also argued that self-efficacy should be task specific (Bandura, 2006; Pajares, 1996), and that even within many specific domains there may be a wide variety of self-efficacy beliefs. For example, self-efficacy for cooking healthy food may differ from self-efficacy for controlling food portions. Therefore, there is a need to further explore specific self-efficacies such as portion control self-efficacy, as this type of self-efficacy may aid in the understanding of eating and other behaviors related to the development of overweight and obesity.

To date, little research attention has been paid to the role of self-efficacy in portion control behaviors. The primary purpose of the current set of studies is to develop a reliable and valid measure of self-efficacy toward portion control (PCSE; see Graphical abstract). The PCSE measure can be used by researchers and practitioners to examine the impact of self-efficacy for portion control on eating behaviors and subsequent weight-loss and health outcomes. In Study 1(a), we developed a pool of items for the PCSE measure and produced the initial version of the scale.

2. Study 1(a) method

2.1. Participants

One-hundred-eight undergraduate students volunteered to complete the questionnaire for course credit. Participants who indicated having a medical concern that would impact food consumption (e.g., diabetic, $n = 22$) were excluded from this first stage of survey development. Therefore, the initial development of the measure was tested on a total of 86 participants (56 females, 25 men, and 5 who did not indicate gender).

2.2. Procedure and measures

The survey was administered using a paper-pencil questionnaire that consisted of three sections assessing (1) portion control self-efficacy (PCSE), (2) GSE, and (3) basic demographic questions assessing gender and medical concern. All participants were debriefed after completing the survey.

2.2.1. Portion control self-efficacy (PCSE)

The original PCSE scale contained 20 items (see Table 1), answered using a five-point Likert scale such that 1 = *strongly disagree* and 5 = *strongly agree*. These twenty items were created by modifying all ten items from the GSE scale created by Schwarzer and Jerusalem (1995) in order to specifically target an individual's overall level of ability to control food portions. For example, the PCSE items "I can handle eating the right food portions no matter what comes my way" and "I am certain that I can consider smaller portion sizes when eating" were derived out of the GSE item "I can always manage to solve difficult problems if I try hard enough." Reliability and other information regarding the development and reduction to a final twelve-item scale (see Table 1) are presented in the Study 1(a)'s results section.

2.2.2. General self-efficacy (GSE)

A 10-item measure of GSE (Schwarzer & Jerusalem, 1995) was used to assess an individual's overall level of general ability/control. The items were answered using a five-point Likert scale such that 1 = *strongly disagree* and 5 = *strongly agree*. Overall reliability was considered good at $\alpha = .90$.

3. Study 1(a) results

3.1. Tests of assumptions

Because there are certain assumptions of the data that must be met prior to running confirmatory factor analyses and structural equation models (e.g., normality, linearity; Kline, 1998), all variables were analyzed to test them. Prior to model estimation, normality of the variables

Table 1
Items dropped and retained in the development of the 12-item portion control self-efficacy scale.

Item description		Dropped (D) or retained (R) (item reliability coefficient avg)
1.	I believe I can eat standard food portions when served portions that are too large.	R (0.98)
2.	I feel insecure about my ability to eat the right food portion.	D
3.	I am certain that I can consider smaller portion sizes when eating.	R (0.99)
4.	When I establish food portion goals from myself, I rarely achieve them.	R (0.94)
5.	I can handle eating the right food portions no matter what comes my way	R (0.98)
6.	I avoid difficult situations such as, eating out where food portions are abnormally large.	D
7.	When I prepare food for myself, I am able to estimate portion sizes easily	D
8.	It would be easy for me to control the size of the portions that I eat at social events.	R (0.97)
9.	I feel confident that I can leave food on my plate if I think a serving size is too large.	R (98)
10.	I often feel uncomfortably full after a meal.	D
11.	I don't know if I can control the size of the portions that I eat at social events.	R (0.86)
12.	I am confident that I know how much food I should eat to follow nutritional guidelines	D
13.	When eating at home, I am able to avoid overeating	D
14.	I am confident that I can control the size of the portions that I eat when out with friends.	R (0.91)
15.	I am confident I can judge whether a restaurant serving is appropriate when out with others.	R (0.92)
16.	When ordering meals with others, I am certain that I can consider smaller portion sizes.	R (0.94)
17.	Whether I control the amount I eat at social events is up to me.	R (0.96)
18.	When eating out with friends, they influence how much I eat.	R (0.96)
19.	When I am upset, I am more likely to lose control over how much I eat	D
20.	I believe I can eat out at restaurants less often.	D