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Research report

Development and validation of a measure of food choice values ☆

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ABSTRACT

Food choice values (FCVs) are factors that individuals consider when deciding which foods to purchase and/or consume. Given the potentially important implications for health, it is critical for researchers to have access to a validated measure of FCV. Though there is an existing measure of FCV, this measure was developed 20 years ago and recent research suggests additional FCVs exist that are not included in this measure. A series of four studies was conducted to develop a new expanded measure of FCV. An eight-factor model of FCV was supported and confirmed. In aggregate, results from the four studies indicate that the measure is content valid, and has internally consistent scales that also demonstrated acceptable temporal stability and convergent validity. In addition, the eight scales of the measures were independent of social desirability, met criteria for measurement invariance across income groups, and predicted dietary intake. The development of this new measure of FCV may be useful for researchers examining FCVs (FCVs) in the future, as well as for use in intervention and prevention efforts targeting dietary choices.

Introduction

The food that people choose to consume has important implications for their health. From a nutrition standpoint, for example, fruits and vegetables have a higher nutrient density than sweet foods and fats (Drewnoswki, 2005; Drewnowski & Fulgoni, 2008). Differences in the consumption of nutrient rich versus nutrient poor foods have been linked with differences in weight status in children (Vernarelli, Mitchell, Hartman, & Rolls, 2011) and adults (Ledikwe et al., 2006). Additionally, certain aspects of diet have been linked with preventing or contributing to chronic diseases such as diabetes and cardiovascular disease (Bucher, Hengstler, Schindler, & Meier, 2002; Malik et al., 2010; Mente, de Koning, Shannon, & Anand, 2009). As such, there is great interest in understanding both the distal (e.g., culture, geography, genetics, etc.) and proximal (e.g., taste preferences, availability, beliefs, knowledge, etc.) factors that influence food choices.

Among the proximal antecedents of food choice, researchers have increasingly embraced the concept of food choice values (FCVs), defined as factors that individuals consider when deciding which foods to purchase and/or consume. Spurred in large part by the Food Choice Process Model (Furst, Connors, Bisogni, Sobal, & Falk, 1996), FCVs are often posited to be the proximal influence on food choice conveying the effects of more distal determinants (e.g., life course factors, socio-cultural resources, cognitive resources, etc.). For example, Connors, Bisogni, Sobal, and Devine (2001) reported finding five key values of health, taste, cost, convenience, and acceptance by others as critical influences on deciding what foods to purchase or consume. Similarly, Glanz, Basil, Maibach, Goldberg, and Snyder (1998) studied how the FCVs of taste, nutrition, cost, convenience, and weight control influence food choice among Americans. Several studies have examined FCVs in lower socioeconomic groups or how FCVs differ between socioeconomic groups (Dammann & Smith, 2009; Inglis, Ball, & Crawford, 2009; Lawerence et al., 2009; Sealy, 2010). Additionally, FCVs have been the focus of numerous studies examining factors and characteristics of individuals who purchase organic foods (e.g., Honkanen, Verplanken, & Olsen, 2006; Michaelidou & Hassan, 2008). Thus, creating a valid scale to measure FCV would be useful to researchers examining FCV in a variety of contexts.

Theoretical grounding of FCV (e.g., Furst et al., 1996), and the fact that FCVs have been the topic of recent research, increases the need for a well-validated psychometrically vetted measure of FCV. Currently, there is only one scale for assessing FCV (Steptoe, Pollard, & Wardle, 1995). Although that scale has been shown to be a valid and reliable measure, it was developed 20 years ago. An updated scale may be needed. First, recent research by Lusk and Briggeman (2009) identified additional FCVs, such as safety and fairness, which are not included in that scale. As such, the Steptoe et al. measure may be deficient in covering the full construct space of FCV. Second, as theorized by Sobal and Bisogni (2009), changes in environmental contexts such as social, political, and economic conditions are expected to shape FCV. Thus, we would expect that, for example, the expansion of the organic food market in the past two decades

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(Sahota, 2009) may result in the emergence of an 'organic' FCV or higher endorsement of this value in recent years. Therefore, the purpose of the current study is to (a) revisit the construct space of FCV to ensure it is fully conceptualized, and (b) develop a new measure of food choice values that includes FCVs not currently assessed by the existing measure. Standard processes for scale development outlined by Clark and Watson (1995), Crocker and Algina (1986), Downing (2006), and Hinkin (1995) were followed.

Study One: initial development

The purpose of Study One was to first revisit the construct space of FCV and then develop and pilot-test an initial pool of items designed to cover this conceptual domain. Formally, we define the construct space of FCV as the collection of values that individuals consider when deciding what foods they want to purchase and/or consume (Furst et al., 1996; Sobal & Bisogni, 2009). As noted above, Steptoe et al. (1995) originally identified nine values: health (prevention of chronic disease and general nutrition and well-being), mood (alertness, mood, stress control, and relaxation), convenience (ease of purchase and preparation of food), sensory appeal (smell, taste, and appearance), natural content (use of additives and natural ingredients), price (cost), weight control (dietary restraint and preference for thinness), familiarity (foods that align with accustomed diet), and ethical concern (environment and political issues). Since this initial work, there has been reason to consider expansion of the construct space. For example, Lusk and Briggeman (2009) suggested that safety (consumption of food will not cause illness) and fairness concerns (all parties involved in food production benefit equally) are additional values not identified previously, and defined taste and appearance as separate values. In contrast to Steptoe et al., however, they did not identify mood or weight control as FCV. For our purposes, we tentatively accepted all of the previously suggested dimensions as potentially relevant to the larger construct space.

To generate specific item content, we started by adapting items from Steptoe et al. (1995) and creating additional items based on definitions given by Lusk and Briggeman (2009). Adaptations to these items included stating values in a neutral way (e.g., how long it takes to prepare) instead of suggesting a value in a particular direction (e.g., it takes no time to prepare) (Whitley & Kite, 2013). In total, 53 items were created. Next, content validity of the item pool was evaluated to ensure that the measure adequately sampled behaviors from the domain of interest and did not include content that was outside of the construct domain. Content validity was assessed by asking subject matter experts (SMEs) to rate the degree to which they perceived each item to be relevant to the construct domain. Specifically, the SMEs were asked to match each item to one of 11 FCVs listed, or indicate that it could not be classified. SMEs were divided into two groups: a "measurement experts" group consisting of eight doctoral students with expertise in scale development, and a "content experts" group consisting of three individuals with expertise in nutrition, which was also used as an independent evaluation. An item was retained only if at least six out of the eight measurement experts and two out of the three content experts identified the item as reflecting the same FCV. This criterion resulted in a total of 46 items that were retained for pilot testing.

Participants and procedure

The pilot version of the FCV scale was administered to 155 participants who were recruited via Amazon's MTurk. MTurk is a participant recruitment website that is open to a worldwide popoulation and has been found to be more representative of the national population than college student samples or other Internet samples (Buhrmester, Kwang, & Gosling, 2011). For the current study, we restricted the survey to participants living in the US. MTurk registrants had the opporunity to view the recruitment page on MTurk and complete the survey on QuestionPro.com. They received $0.25 (consistent with MTurk payment policies) for completion of the survey. Participants who completed the survey in less than 150 seconds ($N = 4$) were removed, leaving a total sample size of 151 participants. On average, participants took approximately six minutes to complete the survey ($M = 5.84$, $SD = 2.79$). Demographic characteristics of the sample are presented in Table 1. Participants responded to the 46 items using the following instruction head: "When deciding what foods to buy or eat on a daily basis, how important are each of the following. . .?" The response scale was a Likert scale ranging from 1 to 5 (1 – not at all, 2 – a little, 3 – moderately, 4 – quite a bit, 5 – very).

Table 1
Participant demographic information.

	Study 1	Study 2	Study 3	Study 4
	$N = 151$	$N = 91$	$N = 235$	$N = 162$
Female (%)	57.3	72.4	62.0	63.6
Age (%)		M = 23.09 SD = 6.28	M = 36.39 SD = 12.76	M = 41.18 SD = 12.87
19–24	23.3			
25–34	27.3			
35–44	25.3			
45–54	10.7			
55–64	8.7			
65+	4.7			
Race (%)				
White	70.0	59.0	77.7	74.7
African American	9.3	18.1	7.7	8.0
Latino	8.7	7.6	5.2	6.2
Asian	7.3	4.8	8.2	6.8
Biracial	3.3	7.6	1.3	4.3
Native American	1.3	0.0	0.0	0.0
Other	0.0	1.9	0.0	0.0
Education (%)				
<High school	0.7	N/A	0.9	1.2
High school or GED	13.3		15.4	13.0
Associate degree	28.0		30.8	30.2
Bachelor's degree	45.3		37.6	50.6
Master's degree	10.0		13.7	4.3
Terminal degree	2.7		1.7	0.6
Income (%)				
<$15,000	12.7	N/A	23.9	16.7
$15,000–29,999	26.0		23.9	29.6
$30,000–44,999	13.3		22.5	17.3
$45,000–59,999	16.7		11.3	14.2
$60,000–74,999	8.7		8.6	9.3
$75,000–89,999	7.3		3.6	7.4
> $90,000	12.7		6.3	5.6
Child under 18 living in home (%)	25.0	17.8	27.2	29.6

Results and discussion

All item statistics are shown in Table 2. Prior to entering items into the factor analysis, all items were screened for appropriate item endorsement rates (i.e., item means) and variability (i.e., standard deviation). The majority of items had moderate means (i.e., between 2 and 4 on the 5-point scale), suggesting that ceiling or floor effects were not a problem (Clark & Watson, 1995). Similarly the standard deviations suggested sufficient variability. Given a 5-point response scale, an SD ≥1 (assuming a mean near the center of the scale) would indicate that responses cover the range of the scale (Whitley & Kite, 2013). Only a few items failed to meet these ideal item parameters (e.g., Item 1 and Item 5). Given the small number of items and small departures from ideal, we retained these items for initial analyses.