



Research report

The Attitudes to Chocolate Questionnaire. Psychometric properties and relationship with consumption, dieting, disinhibition and thought suppression ☆



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ARTICLE INFO

Article history:

Received 27 June 2013

Received in revised form 13 January 2014

Accepted 30 January 2014

Available online 12 February 2014

Keywords:

Attitudes to Chocolate Questionnaire

Craving

Factor analysis

Dieting

Disinhibition

Food-thought suppression

ABSTRACT

We examined the psychometric properties of the Dutch version of the Attitudes to Chocolate Questionnaire (ACQ), comparing the original three-factor model to a later-suggested two-factor model. We evaluated the construct validity of the ACQ by investigating the associations between the resulting factors and other eating-related questionnaires such as the Three Factor Eating Questionnaire and the Food Thought Suppression Inventory. Finally, we compared the scores on several scales regarding eating behavior between different groups (men versus women, dieters versus non-dieters and cravers versus non-cravers). A confirmatory factor analysis of the Dutch ACQ indicated the best global fit indices for the two-factor model, with the resulting factors being “Negative consequences and Guilt” and “Craving and emotional eating”. Both factors were associated with other eating-related dimensions. However, craving seemed to be uniquely associated with the amount of chocolate consumed per week, whereas guilt correlated strongly with restraint. Finally, women scored higher on nearly all scales, but there was no significant gender difference with regard to chocolate consumption. Dieters reported more disinhibition, restraint, food-thought suppression and guilt, but they did not significantly differ from non-dieters with regards to their levels of craving, hunger nor consumption.

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Introduction

Chocolate is the most frequently craved food in Western cultures (e.g., Rogers & Smit, 2000), so for many people, experiencing craving for chocolate is a very common yet unharmed phenomenon (Lafay et al., 2001). Excessive chocolate consumption, however, can become a serious problem and even lead to binge eating (Kales, 1990). Even in the absence of clinically elevated pathology, chocolate cravers can feel “addicted” (Rogers & Smit, 2000).

Given the high rates of chocolate craving and the potential risks and downsides involved, appropriate assessment instruments for

chocolate craving in the general population are needed. Craving is a shared characteristic across disturbed eating behavior and addictive behavior (e.g., Cooper, 1989). Unlike binge eating and alcohol dependency (Jansen, 1998), chocolate craving has little to no association with psychiatric disorders, and it can be easily studied in accessible, high-functioning populations (Weingarten & Elston, 1991). Understanding of chocolate craving can then be used as a basis for better insights into the mechanisms that underlie cravings in general. Findings about the mechanisms of chocolate craving can then be translated to other addictive behaviors, which can provide insights into new prevention and treatment programs.

Benton, Greenfield, and Morgan (1998) developed the Attitudes to Chocolate Questionnaire (ACQ) to measure and quantify the response to chocolate. Using exploratory factor analysis, three factors were identified by the authors: (1) craving for chocolate, (2) guilt and negative feelings when eating chocolate, and (3) a functional approach to chocolate eating (3). This three-factor (3F) model, however, was not replicated in a follow-up study by Cramer and Hartleib (2001), who found that only the first two factors – craving

☆ Acknowledgements: Dinska Van Gucht and James W. Griffith (GP.035.11N) were supported by an FWO-grant of the Research Foundation – Flanders (FWO), Belgium. The authors would like to thank Karen De Winter and Jolien Van Loven for their assistance in collecting the data.

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and guilt – were stable. This two-factor (2F) model was later replicated using the German version of the questionnaire (Müller, Dettmer, & Macht, 2008). The first aim of the current study was to examine the psychometric properties of the Dutch version of the ACQ, comparing the original 3F-model to the 2F-model.

There are several associations between the factors of the ACQ and dimensions of emotionality and personality. For example, higher scores on both craving and guilt are associated with higher depression (Benton et al., 1998; Cramer & Hartleib, 2001), with lower self-esteem (Cramer & Hartleib, 2001), with higher neuroticism (Müller et al., 2008), and with higher obsession scores (Cramer & Hartleib, 2001). In addition, emotional eaters score higher on both craving and guilt (Müller et al., 2008). There are, however, clear differences between both factors in their association with other variables. For example, craving seems to be the only factor that correlates with the amount of chocolate consumption (Benton et al., 1998; Müller et al., 2008) as well as with higher scores on the external eating scale of the Dutch Eating Behaviour Questionnaire (DEBQ; Müller et al., 2008). External eating encompasses a tendency to overeat, driven by external factors such as the mere sight or smell of palatable foods (Van Strien, Herman, & Verheijden, 2009). Thus, chocolate cravings may generalize to these other eating tendencies. Experiencing higher levels of guilt is found to be uniquely associated with more bingeing and vomiting symptoms (Benton et al., 1998) and most strongly with higher scores on the restrained eating scale of the DEBQ (Müller et al., 2008).

The second aim of this study was to investigate whether previously-found differential associations between the guilt versus craving factors can be replicated and extended. More precisely, we examined the associations between craving and two common indicators of food intake: weekly chocolate intake and the amount of hunger. We measured hunger using the hunger factor of the Three Factor Eating Questionnaire (TFEQ; Stunkard & Messick, 1985). The other TFEQ scales (Disinhibition and Restraint) were included to determine whether the observed correlations between disinhibition and craving (Müller et al., 2008) and between dietary restraint and guilt (Müller et al., 2008) are found across different measures. In previous studies, the restraint scales of both the DEBQ and the TFEQ were found to be indications of more successful dieting, including both motivational components such as a drive for thinness, as well as questions about actual dieting behavior (Laessle, Tuschl, Kotthaus, & Pirke, 1989; Van Strien et al., 2009). Disinhibition on the other hand, is more associated with unsuccessful dieting in previous studies (Van Strien, 1997). In this study, we expected to replicate the previously established association between restraint and guilt and between disinhibition and craving (Müller et al., 2008).

We also examined the relationships among craving, guilt, and other disordered eating patterns that have hitherto not been directly linked to the factors of the ACQ. For that purpose, we included the Food Thought Suppression Inventory (FTSI; Barnes, Fisak, & Tantleff-Dunn, 2010) and the Interoceptive Awareness scale of the Eating Disorder Inventory (EDI-IA; Van Strien, 2002). The first scale, the FTSI, measures thought suppression attempts for food-related thoughts. Thought suppression denotes the tendency to suppress unwanted thoughts in favor of more welcome thoughts (Wegner, 1989, 1994). Previous findings have indicated that these attempts can rebound and actually lead to more, rather than fewer, unwanted thoughts (see Abramowitz, Tolin, & Street, 2001 for a review). Moreover, it can cause and strengthen preoccupations with food (Wegner, 1994). If food-related thought suppression indeed fails, then these strengthened food-related thoughts may act as a trigger for craving and food intake (Kavanagh, Andrade, & May, 2005; Soetens, Braet, Van Vlierberghe, & Roets, 2008). Indeed, Erskine et al. showed that suppression of smoking thoughts led to elevated smoking (Erskine, Georgiou, &

Kvavilashvili, 2010) and that suppression of chocolate thoughts led to a subsequent increase in consumption of chocolate in restrained eaters (Erskine & Georgiou, 2010). May, Andrade, Batey, Berry, and Kavanagh (2010), in turn, found that craving and thought frequency were positively correlated. Therefore, we expected to find a correlation between food-related thought suppression and the craving factor.

The EDI-IA, measures recognition and accurate identification of both appetite and emotional signals (Van Strien, 2002). When the disconnection from internal signals of hunger and satiety becomes profound, eating decisions can become based on other cues such as external, emotional cues, and/or dietary rules. Previous studies have indeed indicated that interoceptive awareness is dysfunctional in individuals with eating pathology ranging from dietary restriction to overeating (Engler, Crowther, Dalton, & Sanftner, 2006; Peck & Lightsey, 2008). As such, we also explored how a lack of interoceptive awareness is associated with the ACQ.

Finally, we examined sex differences on the ACQ and other variables of interest. Given that previous studies (Benton et al., 1998; Cramer & Hartleib, 2001; Müller et al., 2008) revealed that women scored higher on the ACQ factors, we sought to replicate this pattern with the Dutch ACQ. Previous studies in obese and overweight individuals, for example, established that women tend to employ food-related thought suppression more frequently than men, as do dieters compared to non-dieters (Barnes & Tantleff-Dunn, 2010). In the current study, we wanted to see whether we could replicate these findings in a sample with a broader weight range and we explored potential differences between current dieters versus non-dieters and between cravers versus non-cravers on all included measures.

Method

All questionnaires were administered as part of a larger battery of paper-and-pencil assessments. The Ethical Committee of the Faculty of Psychology and Educational Sciences, KU Leuven, approved all of the measures and procedures used in this study.

Participants

The sample consisted of Dutch-speaking undergraduate psychology students ($N = 430$) at KU Leuven who participated in return for partial course credit and who all gave written consent. We excluded 12 respondents who were missing data on age and/or gender, leaving a sample of $N = 418$. Of this sample, 81% were women ($n = 338$). Respondents were, on average, 19.3 years ($SD = 1.8$; ranging from 17 to 45) with a mean Body Mass Index (BMI) of 21.1 ($SD = 2.6$, range 14.4–42.7).

Instruments

Respondents answered questions about their gender, age, height, and weight, as well as past and current diets (yes/no), food and snack consumption per day, and chocolate consumption in terms of frequency and amount per week.

We included three questions to identify chocolate cravers, the first one being: “How good are you at postponing eating chocolate when you are craving it?”. Respondents had to mark a number from 1 (*very bad*) to 7 (*very good*). On the second question, “To what extent would you like to gain more control over your chocolate craving?”, they could circle a number from 1 (*not at all*) to 4 (*very much*). Finally, on the third question “How hard would it be for you to gain more control over your chocolate craving?”, one of the numbers between 1 (*not difficult at all*) and 5 (*very difficult*) could be chosen. We labeled respondents as chocolate cravers

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