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Easy-going, rational, susceptible and struggling eaters: A segmentation study based on eating behaviour tendencies

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ABSTRACT

Eating behaviour tendencies, *emotional eating* (*EE*), *uncontrolled eating* (*UE*) and *cognitive restraint* (*CR*), are associated with various indicators of physical and mental health. Therefore, it is important to understand these tendencies in order to design interventions to improve health. Previous research has mostly examined eating behaviour tendencies individually, without considering typical combinations of these tendencies or their manifestation in well-being and food choices. This study aimed to understand the interactive occurrence of *EE*, *UE* and *CR* in two independent populations. Finnish (n = 1060) and German (n = 1070) samples were segmented on the basis of their responses to a modified Three-Factor Eating Questionnaire (TFEQ-R15). Well-being, coping strategies and food consumption habits of the segments were studied.

Segmentation revealed four segments: "Susceptible", "Easy-going", "Rational" and "Struggling". These segments were similar in both countries with regard to well-being, coping strategies and food choices. *EE* and *UE* co-occurred, and these tendencies were mainly responsible for differentiating the segments. Members of the "Rational" and "Easy-going" segments, who had low scores for *EE* and *UE*, tended to experience vitality and positive emotions in life, and contentment with their eating. By contrast, the "Susceptible" and "Struggling" segments, with more pronounced tendencies towards *EE* and *UE*, experienced lower levels of vitality and less frequently positive emotions, applied less adaptive coping strategies and experienced more discontent with eating.

The results of the current study suggest that it is possible to identify segments, with differing eating habits, coping strategies and well-being on the basis of the eating behaviour tendencies *EE, UE* and *CR*. We discuss possible viewpoints for the design of interventions and food products to help people towards psychologically and physiologically healthier eating styles.

1. Introduction

The need to solve eating-related problems, such as disordered eating or obesity, has inspired eating behaviour research over the past decades (French, Epstein, Jeffery, Blundell, & Wardle, 2012). However, combining the information provided by standard scales in novel ways may provide new insights into eating behaviour, as was recently reported by Bouhlal et al. (Bouhlal, McBride, Trivedi, Agurs-Collins, & Persky, 2017). Bouhal's research group combined measures of *appetite for palatable foods*, *binge eating*, *disinhibition*, *food neophobia*, *pickiness* and *satiety responsiveness* in order to identify population segments based on eating behaviour tendency. They identified two multi-trait phenotypes showing associations with Body Mass Index (BMI) and self-efficacy, and concluded that such a holistic approach could assist in tailoring and improving interventions for weight management or other eating-related problems.

The Three-Factor Eating Questionnaire (TFEQ) (Stunkard & Messick, 1985) and a shortened version, the TFEQ-R18 (Karlsson, Persson, Sjöström, & Sullivan, 2000), are among the most frequently applied psychometric measurement tools for studying eating behaviour. The TFEQ-R18 captures tendencies for *cognitive restraint*, *uncontrolled eating* and *emotional eating*. Previous studies have mostly examined each of these tendencies independently and have often focused on specific population categories, such as obese

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people or women (Anglé et al., 2009; Elfhag & Linné, 2005; Jaakkola, Hakala, Isolauri, Poussa, & Laitinen, 2013; Jeanes et al., 2017; Järvelä-Reijonen et al., 2016; Nevanperä et al., 2012). We argue that going beyond the traditional approach, observing eating behaviour in a more holistic way and in the general population, would enable the development of more effective approaches (such as interventions and products) to overcome eating-related problems.

The current study aims to identify eating style-based population groups by analysing the interactive occurrence of *emotional eating, uncontrolled eating* and *cognitive restraint* in two general populations. We describe the identified segments on the basis of their well-being, coping strategies, food consumption and contentment with eating. We expect our results to provide new perspectives on eating behaviour research and building blocks to target interventions and products to the identified eating style-based segments.

The next section firstly reviews the literature on the concepts of *cognitive restraint*, *uncontrolled eating* and *emotional eating*. The subsequent paragraphs describe the variables applied for segment description and their relevance in the context of eating behaviour and the rationale for applying them in segment description. On this basis, expected relations of these variables with eating style segments are described.

2. Literature review

Emotional eating is a tendency to respond to negative emotions by eating (Karlsson et al., 2000). Positive correlations have been found between *emotional eating* and BMI (Elfhag & Linné, 2005). Furthermore, covariation has been identified between *emotional eating* and snack food intake (De Lauzon et al., 2004), consumption of sweet foods in adults (Konttinen, Männistö, Sarlio-Lähteenkorva, Silventoinen, & Haukkala, 2010) and larger meal portion sizes in general populations (Spence et al., 2016). In addition to these eating-related factors, other associations with *emotional eating* include psychological distress and depressive symptoms in adults (Järvelä-Reijonen et al., 2016; Konttinen et al., 2010; Pidgeon, Lacota, & Champion, 2013) and occupational burnout in women (Nevanperä et al., 2012).

Uncontrolled eating is loss of control over eating (Karlsson et al., 2000). *Uncontrolled eating* has been shown to correlate positively with BMI (Cornelis et al., 2014), consumption of energy dense foods in middle-aged adults (De Lauzon et al., 2004) and energy intake and central adiposity in mothers (Jaakkola et al., 2013). Larger meal portion sizes in general populations (Spence et al., 2016), binge eating behaviours in women with polycystic ovary syndrome (Jeanes et al., 2017), as well as occupational burnout in women (Nevanperä et al., 2012) and reduced cognitive functioning (Calvo, Galioto, Gunstad, & Spitznagel, 2014) have also been shown to correlate with *uncontrolled eating*.

The third eating behaviour tendency, *cognitive restraint*, reflects an inclination to regulate food intake through conscious restriction rather than using physiological cues (Karlsson et al., 2000). Unlike in the case of *emotional eating* and *uncontrolled eating*, the results regarding cognitive restraint are mixed. A positive correlation has been found between *cognitive restraint* and consumption of healthy foods, and a negative correlation with energy intake and meal portion size among adults (De Lauzon et al., 2004; Spence et al., 2016). Other studies have found correlations with unhealthy phenomena. For example, positive correlations have been identified between cognitive restraint and weight gain in adolescents (Elfhag & Linné, 2005), young women (Anglé et al., 2009) and in normal weight adolescents and adults (De Lauzon-Guillain et al., 2006). In short, *cognitive restraint* appears to be a contradictory concept in terms of its implications for health and well-being.

Taken together, these studies suggest that *uncontrolled eating* and *emotional eating* are associated with negative phenomena: 1) obesity or weight management problems, 2) poorer psychological well-being, and 3) a less healthy diet, whereas *cognitive restraint* may involve both positive and negative implications. On the basis of these results, we expected respondents with higher tendencies towards *uncontrolled* and *emotional eating* to use more unhealthy foods and to indicate poorer well-being, whereas *cognitive restraint* was expected to have less clear relationships with other variables.

As indicators of subjective well-being, the present study applies *subjective vitality* and perceived prevalence of positive and negative *emotions* in one's life (Diener, 2006; Macht, 2008). In addition to their reflection of well-being, *emotions* are also measured because of their various interconnections with eating behaviour as antecedents as well as consequences of eating (e.g. Macht, 2008), as the above results from TFEQ studies have also shown.

The concept of vitality originates from Self-Determination Theory (Deci & Ryan, 1980; Ryan & Deci, 2000; Ryan & Frederick, 1997), which postulates that self-determination is reflected as vitality in an individual (Nix, Ryan, Manly, & Deci, 1999; Ryan & Deci, 2008). Vitality has been associated with self-control, as well as multiple other positive outcomes related to well-being (Muraven, Gagné, & Rosman, 2008), happiness, and satisfaction with life (Uysal, Satici, Satici, & Akin, 2014). In general, a vital person possesses better life skills and well-being than his or her less vital counterparts (Fini, Kavousian, Beigy, & Emami, 2010; Uysal et al., 2014). Considering these results, population groups with less problematic eating styles should report more vitality than the groups with more adverse eating styles.

The concept of coping strategies refers to the various strategies that people use to cope with stress and negative emotions (Duhachek, 2005). In the context of eating behaviour, disordered eating has been seen as a maladaptive coping response to negative affect or stress (Heatherton & Baumeister, 1991). Coping studies state that strategies focusing on solving the problem actively and on framing it positively are more adaptive (i.e. related to positive well-being outcomes) than strategies focusing on denying the problem and on shifting attention away from it (Boals, Vandellen, & Banks, 2011; Penley, Tomaka, & Wiebe, 2002). The review study by Ball and Lee (2000) concluded that individuals with disordered eating apply coping strategies that focus on emotions and avoidance rather than on actions (Ball & Lee, 2000). In line with this, *emotional eating* interrelates with greater reliance on emotion-oriented coping and avoidance in women (Spoor, Bekker, Van Strien, & van Heck, 2007). Hence, we expected that the segments with non-problematic eating styles would tend to apply active coping strategies, whereas the groups with problematic eating styles probably rely more on emotion-oriented and avoidance strategies.

3. Material and methods

3.1. Participants and procedures

Data were collected from participants in Finland and Germany. As eating behaviour tendencies measured by the TFEQ-R18 have shown validity in several cultural and contextual settings (Cornelis et al., 2014; De Lauzon et al., 2004; Järvelä-Reijonen et al., 2016; Spence et al., 2016), similar results were expected from both countries. The data collection was conducted at the end of 2015 as an internet survey in Finland ($n = 1060$) and in Germany ($n = 1070$). Participants were recruited from an online panel of a market research company in both countries. The German panel consisted of 250 000 people and the Finnish panel included 78 000