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A latent class analysis of family eating habits in families with adolescents

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ABSTRACT

The objectives of the present study were to identify adolescent classes based on perceptions of their family's eating habits and to determine whether these classes differ in terms of family meal frequency and source, parents and adolescent diet quality, nutritional status, satisfaction with life, family life and food-related life. Questionnaires were administered to a sample of 300 two-parent families with one child between 10 and 17 years in Chile. Questionnaires included the Satisfaction with Life Scale (SWLS), the Satisfaction with Food-related Life scale (SWFoL), the Satisfaction with Family Life scale (SWFaL) and the Adapted Healthy Eating Index (AHEI). Adolescents also answered the Family Eating Habits Questionnaire (FEHQ). Latent class (LC) analysis was used to estimate the number of classes associated with the adolescent's perceptions about their family's eating habits, based on the three factors detected in the FEHQ. The LC analysis yielded three classes: "medium cohesion around family meals/healthy food-related parenting practices" (Class 1, 50.4%), "high cohesion around family meals/healthy food-related parenting practices" (Class 2, 25.9%) and "high cohesion around family meals/unhealthy food-related parenting practices" (Class 3, 23.7%). Classes also differed in the adolescents AHEI score, frequency and source of family meals; body mass index, SWLS and SWFaL scores in mothers, fathers and adolescents, adolescent sex and household financial situation. These findings suggest that frequent and cohesive family meals improve the well-being in both parents and adolescents, but are not enough to achieve healthier diets and weight statuses in adolescents.

1. Introduction

Eating problems, such as such as overeating or binge eating, and obesity are frequent issues in adolescence (Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2014; Matton, Goossens, Braet, & Van Durme, 2013), often persisting into adulthood (Pearson et al., 2017). Eating problems and obesity may cause severe psychological and physical consequences that may interfere with the adolescent social, physical and psychological development, and also with the development of their eating behaviors and their future health (Matton et al., 2013). Increasing evidence indicates that a high frequency of family meals is associated with positive outcomes for adolescents (Haines et al., 2016; Hebestreit et al., 2017; Reicks et al., 2015; Watts, Loth, Berge, Larson, & Neumark-Sztainer, 2017). However, not all families sit down to regularly share family meals due to numerous factors including conflicting work and school schedules, stress, financial resources, adolescent increasing independence, etc. (Nepper & Chai, 2016; Pearson et al., 2017). Regardless, recent studies suggest that frequent family meals are not enough to improve diet quality (Loth, Horning, Friend, Neumark-Sztainer, & Fulkerson, 2017; Schnettler et al., 2017c), thus it is important to look beyond the frequency of family meals by focusing on the context and nature of the meal (Loth et al., 2017).

Parents use different food-related parenting practices to promote healthy eating habits in their adolescent children and to prevent overweight or obesity (Berge, Meyer, Loth, MacLehose, & Neumark-Sztainer, 2015). Nevertheless, there is evidence indicating that non-

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controlling practices (such as modeling healthy eating behaviors, having a healthy food environment at home, frequent family meals) are related to healthy eating behaviors (Haycraft, Karasouli, & Meyer, 2017; Palfreyman, Haycraft, & Meyer, 2015), whereas controlling food-related parenting practices (such as pressure to eat certain foods or to empty one's plate, restriction of certain foods) may result in the opposite outcome. Studies have shown that pressure to eat or to empty one's plate may lead to a deficit in children's self-regulation capacities, thus enhancing the risk of overeating and losing control over eating (Birch & Fisher, 2000; Loth et al., 2014), greater risk of child obesity and overweight (Pesch et al., 2016), as well as with eating disorders (Houldcroft, Farrow, & Haycraft, 2014; Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2013; Loth et al., 2014) and higher levels of anxiety and depression (Houldcroft et al., 2014). In addition, large food portions are a prime precursor for overeating (Fisher, Rolls, & Birch, 2003), which is indirectly linked to the development of overweight (Haycraft et al., 2017).

Most research on food-related parenting practices has been conducted with young children and without taking into account the context where eating occurs (Birch, Savage, & Fisher, 2015; Matton et al., 2013; Loth et al., 2013, 2014). Loth et al. (2013) reported that many parents exercise some level of control over adolescent eating habits, mainly related to adolescent weight status. The use of pressure to eat has been associated with normal weight adolescents (Kaur et al., 2006; Loth et al., 2013; Mulder, Kain, Uauy, & Seidell, 2009), non-overweight parents and adolescents (Berge et al., 2015) and with less adolescent weight loss (Sato et al., 2011), whereas food restriction has been related to adolescent higher body mass index (BMI) or obesity (Bailey-Davis et al., 2017; Kaur et al., 2006; Towner, Reiter-Purtill, Boles, & Zeller, 2015).

In parallel, the affective dimension of meals as a moment of family unity is an important component of the role of food within families (Melbye, Øgaard, Øverby, & Hansen, 2013; Ramalho, Lachal, Bucher-Maluschke, Moro, & Revah-Levy, 2016), promoting better family interaction, the strengthening of interpersonal relationships, the expression of affection (Salvy, Miles, Shih, Tucker, & D'Amico, 2017), and family cohesion (Klempel, Kim, Wilson, & Annunziato, 2013). These factors not only improve healthy eating behaviors (Klempel et al., 2013), but also increase well-being of adolescents (Utter, Denny, Lucassen, & Dyson, 2016; Utter et al., 2017) and youth (Schnettler et al., 2017a, 2016). Higher levels of subjective well-being have been positively associated with higher satisfaction with food-related life (Schnettler, Denegri et al., 2015a; Schnettler et al., 2016) and family life (Schnettler et al., 2017b), healthier eating habits (Peltzer & Pengpid, 2017; Schnettler, Denegri et al., 2015a; Schnettler, Miranda et al., 2015b), lower prevalence of being overweight or obese (Schnettler, Denegri et al., 2013, 2015a) in undergraduate students.

Nevertheless, studies in adolescents are still scarce and inconclusive. Lower levels of life satisfaction in adolescents has been associated with poorer diets (Valois, Zullig, Huebner, & Drane, 2003), obesity and eating disorders (Proctor, Linley, & Maltby, 2009). However, happiness has been associated with unhealthy food consumption (Chang & Nayga, 2010), as well as with healthy eating habits (Fararouei, Brown, Toori, Haghighi, & Jafari, 2013) in adolescents and children. In parallel, studies have reported that satisfaction with food in adolescents is associated with overall life satisfaction (Schnettler et al., 2017c; Vaqué, González, & Casas, 2012; Vaqué-Crusellas, González, & Casas, 2015). However, whereas Vaqué et al. (2012) reported that satisfaction in the food domain in adolescents is associated with eating away from home, Schnettler et al. (2017c) did not find an association between satisfaction with food-related life and eating habits in adolescents from families in which different non-controlling food-related parenting practices were detected.

In fact, the use of different food-related parenting practices is not homogeneous among families (Schnettler et al., 2017c). There is evidence regarding differences related to parent weight status (Berge et al., 2015; Haycraft et al., 2017; Schnettler et al., 2017c; Wardle, Sanderson, Guthrie, Rapoport, & Plomin, 2002), parent demographic characteristics (Loth et al., 2014, 2013; Towner et al., 2015), child weight status (Berge et al., 2015; Birch et al., 2015; Mulder et al., 2009; Towner et al., 2015), the child's characteristics (Birch et al., 2015; Mulder et al., 2009), household economic resources (Birch et al., 2015; Loth et al., 2014; Pesch et al., 2016; Schnettler et al., 2017c), parents' social or cultural traditions (Loth et al., 2013), parent diet quality and overall subjective well-being in the food and family domains (Schnettler et al., 2017c). However, a less studied aspect is whether different families' eating habits, food-related parenting practices and socio-demographic characteristics can be expressed in terms of adolescent profiles that may differ in their levels of subjective well-being, diet quality and nutritional status.

Therefore, the objectives of this study were a) to identify adolescent profiles based on the perception of their family's eating habits and b) to determine whether profiles differ in terms of family meal frequency and source, parent and adolescent diet quality, nutritional status, satisfaction with life, family life and food-related life, and sociodemographic characteristics.

2. Method

2.1. Sample and procedure

Non-probability sampling was used to recruit a sample of two-parent families with at least one adolescent child between 10 and 17 years of age in Temuco, Chile. In Temuco, the student population aged between 10 and 17 years old was 36,098 in 2016 (MINEDUC, 2017). A power analysis was carried out using the G*power 3.1 program. Then, a minimum sample size of 272 participants was set for this study (Cronbach's $\alpha = 0.05$, effect size $= 0.6$, power $(1-\beta) = 0.95$, allocation ratio $N2/N1 = 1.0$). Participants were recruited from seven schools that serve socioeconomically diverse populations. Directors from each school signed authorization letters to conduct the research with their students and provided a list containing 5145 students from fifth grade and up (corresponding to a minimum age of 10), with their parents' telephone numbers. From the list of 5145 parents, 654 were contacted by trained interviewers, who explained the study objectives and the strictly confidential treatment of the information obtained. Then, they provided detailed information about the questionnaires and asked if both parents and one of their children between 10 and 17 years wanted to participate in the study. A total of 300 parents agreed to participate in the study, resulting in a response rate of 45.9%. The main reason given by the parents who did not agree to participate in the study was lack of time. Although the minimum sample size required was 272, we collected data from 300 students and their parents based on the expectation of missing data or error responses. Post hoc analysis suggested that power $(1-\beta) = 0.95$ given Cronbach's α, sample size, and effect size.

Interviews were conducted in participants' homes or schools, according to their choice. After all parents signed written informed consent and the adolescents signed assent forms, the questionnaires were administered to both parents and one child over 10 years old by a trained interviewer. Each family member was interviewed individually without the presence of the rest of the family members. Respondent anonymity was ensured. The study was conducted between June and December 2016 and the study design was approved by the Universidad de La Frontera Ethics Committee. A pilot test of the questionnaires was conducted with 10 families following the same recruitment method. As the pilot test of the instrument was satisfactory, no changes were required in the questionnaires or the interview procedure.

2.2. Measures

The three family members answered the four following instruments: