



# Family and food variables that influence life satisfaction of mother-father-adolescent triads in a South American country

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## Abstract

This study explored the influence of each family member's life satisfaction on the other family members' life satisfaction in mother-father-adolescent triads. We also explored the influence of each family member's satisfaction with food-related life and family life on their own life satisfaction (LS) as well as on the other family members' LS in mother-father-adolescent triads. The influence of family eating habits, food-related parenting practices used by each parent and sociodemographic characteristics on each family member's LS were also explored. A survey was applied to a sample of 300 two-parent families with one child between 10 and 17 years of age in Temuco, Chile. The questionnaire included the Satisfaction with Life Scale, Satisfaction with Food-related Life scale, Satisfaction with Family Life scale, Adapted Healthy Eating Index, Family Food Behavior Survey and Family Eating Habits Questionnaire. Frequency and sources of family meals as well as sociodemographic characteristics were also consulted. Three multivariate ordinal logit models were proposed, with the dependent variable LS in the three subsamples: mothers, fathers and adolescents. The three logit models were significant, but differed in the explanatory variables. Mothers' LS was influenced by their children's LS and vice versa. Mothers' LS was positively influenced by both their own satisfaction with family life and the fathers' satisfaction with family life and vice versa. Children's LS was also positively influenced by their own satisfaction with food-related and family life. Both parents' LS was influenced by eating habits, food-related parenting practices and sociodemographic characteristics, but in different ways. Therefore, different interventions should be implemented to improve each family member's life satisfaction.

**Keywords** Subjective well-being · Family · Food-related parenting practices · Family meals

## Introduction

Satisfaction with life - the cognitive component of subjective well-being (SWB) - includes assessing what individuals make of their life as a whole and of different life domains (Diener 2012; Diener et al. 1985). Studies related to this issue seek to promote well-being and life satisfaction by identifying the variables related to them in different populations (Tian et al. 2015). In this regard, the level of life satisfaction of each family member seems to play a key role, given that some studies suggest that life satisfaction is correlated among individuals who belong to one family (e.g.: Headey et al. 2014). Among life domains, the evidence shows that satisfaction with family life and food-related life are important for parents and their children's life satisfaction (e.g.: Schnettler et al. 2017b, 2019). However, less is known about how the satisfaction in these domains of one family member is related to the life satisfaction of the other members of the family. This is important given that improving the satisfaction with family life and

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food-related life of one family member may not only enhance their own life satisfaction but also that of the other family members (Bakker and Demerouti 2013). In addition, some studies suggest that eating behaviors and some food-related parenting practices are also related to the mothers' and their children's subjective well-being (e.g.: Schnettler et al. 2019), but less is known about how these behaviors and practices influence the fathers' life satisfaction. This is important, given that female participation in the labor market is growing worldwide and the fathers' involvement in their children's eating habits is growing in some countries (e.g.: Sharif et al. 2017). However, the available evidence on most of these issues is still scarce in South American countries, a geographical area marked by a traditional family structure (Hueche et al. 2018). Therefore, the main focus of the present study is to explore the influence of different family and food variables on life satisfaction of the members within a family, adopting a triadic focus with a sample of mother-father-adolescent triads from a South American country like Chile.

The paper is organized in six main sections. The first reviews the most relevant literature about previous studies and findings on satisfaction with life among family members, satisfaction with family life and food-related life in different stages of life, eating habits and food-related parenting practices. In the second section, the study objectives and a theoretical framework are stated. In the third section data collection, sampling and statistical analyses are described in detail. In the fourth section the main findings of this study are shown, while in the fifth section these findings are discussed in relation to the aims of this work. Lastly, conclusions and the study limitations as well as proposals for future research are considered.

## Literature Review

SWB assesses psychosocial aspects of quality of life, namely positive and negative affect as well as the cognitive aspect of satisfaction with life (Diener 2012). Life satisfaction (LS) examines how individuals rate their life as a whole (Diener et al. 1985). Some studies provide evidence of the intergenerational transmission of LS, i.e., LS of individuals within the same family is correlated (Carlsson et al. 2014; Casas et al. 2008, 2011; Dobewall et al. 2018; Headey et al. 2014; Ma 2016; Schnitzlein and Wunder 2016). This is in line with the family systems theory (Kerr and Bowen 1988), which addresses the interdependence between individuals and how individuals involved in reciprocal family relationships influence each other's thoughts and emotions (Bakker and Demerouti 2013; Kenny et al. 2006; Katapodi et al. 2018). Different authors also provide evidence that explain in part the intergenerational transmission of LS. These links are due partly to genetic personality traits (Carlsson et al. 2014; Dobewall et al. 2018;

Headey et al. 2014; Thege et al. 2017), parent modeling of values and behavioral choices such as work-life balance, life events and shared experiences, parents' support (Headey et al. 2014; Thege et al. 2017) and family wealth (Ma 2016). Yet not only is children's LS influenced by their parents' LS, it has been stressed that parents' LS is also influenced by their children's (Carlsson et al. 2014; Headey et al. 2014). At the same time, some studies have highlighted that mothers had greater influence than fathers on their children's LS (Dobewall et al. 2018; Headey et al. 2014; Richter et al. 2018; Schnitzlein and Wunder 2016), which may be due to mothers still being primarily responsible for child-rearing (Dobewall et al. 2018).

LS not only examines how individuals rate their life as a whole, but also in different life domains (Diener et al. 1985). According to the "bottom-up" theoretical approach to SWB and LS (Pavot and Diener 2008), satisfaction with food-related life and satisfaction with family life are positively associated with LS (Diener 2012). Regarding the family domain, positive family relationships and higher satisfaction with family life have been associated with higher levels of LS in adolescents (Castellá et al. 2018; Lawler et al. 2017; Schnettler et al. 2018a, b, c), youth (Schnettler et al. 2015c, 2016) and adults (Loewe et al. 2014; Schnettler et al. 2017a, 2018c). In parallel, studies involving adolescents (Schnettler et al. 2018a, b, c; Vaqué et al. 2012; Vaqué-Crusellas et al. 2015), young adults (Schnettler et al. 2015a, 2017a) and adults (Schnettler et al. 2013a, 2015b, 2018c; Seo et al. 2013) provide evidence supporting the relationship between satisfaction with food-related life and LS. However, although it has been well established that a person's satisfaction with food-related life and satisfaction with family life positively influence their own LS, it has been pointed out that an individual's experiences in one life domain not only influence their own well-being, but also those closest to them, such as the partner and children (Bakker and Demerouti 2013). In this regard, some recent studies suggest that both parents' work satisfaction (Dobewall et al. 2018; Mauno et al. 2018) and satisfaction in the family and food domains are also related to their children's LS (Schnettler et al. 2017b, 2018a). Nevertheless, studies focused on the influence of one family member's satisfaction in these life domains on the other family members' LS are still lacking.

Regarding the food domain as a source of SWB and LS (Grunert et al. 2007), there is growing evidence that healthful eating habits are related to higher levels of LS in adolescents (Hong and Peltzer 2017; Kelishadi et al. 2018; Schnettler et al. 2019), youth (Peltzer and Pengpid 2017; White et al. 2013) and adults (Blanchflower et al. 2013; Schnettler et al. 2013a, 2019). Higher levels of LS and SWB have also been associated with more frequent family meals and higher cohesion of family around eating in adolescents, youth and adults (Neumark-Sztainer et al. 2010; Oriol et al. 2017; Schnettler et al. 2015a, b, c, 2016, 2017a, 2018a, d, e; Utter et al. 2013,

2016, 2017). Satisfaction with food-related life in a family context may also be related to the parenting practices used to promote healthy eating habits in children and to prevent overweight or obesity (Berge et al. 2013). This includes controlling (e.g., pressure to eat, restriction of certain foods, using food as a reward, food portion sizes, emptying the plate) (Kiefner-Burmeister et al. 2016) and non-controlling food-related parenting practices (e.g., modeling healthy eating behaviors, encouraging healthy eating behaviors, having a healthy food environment at home, involving children in food planning and preparation, frequent family meals and family meal-time environment) (Loth et al. 2016; Nepper and Chai 2016). While non-controlling practices have been mainly related to healthful eating behaviors and nutritional status in adolescents (Haycraft et al. 2017), controlling food-related parenting practices may result in both positive and negative eating behavior and nutritional status outcomes (Pesch et al. 2016; Towner et al. 2015). While some recent studies show that mothers' eating habits, food-related parenting practices and sociodemographic characteristics influence their own SWB – in general and in the food and family domains – as well as their adolescent children's SWB (Schnettler et al. 2018c, d, e), studies focused on the fathers' influence are still lacking. This is relevant, given that some studies stress differences in the use of food-related parenting practices between mothers and fathers (Jansen et al. 2018; Pulley et al. 2014). In addition, although the engagement level of fathers in child-rearing and feeding has increased in recent years (Sharif et al. 2017; Vaughn et al. 2017), existing research on diet quality with samples of mother-father-children triads is still scarce (Schnettler et al. 2017b; Sharif et al. 2017; Vaughn et al. 2017). In addition, differences in food-related parenting practices have been related to differences in parents' and children's weight status (Haycraft et al. 2017; Towner et al. 2015), parents' and children's demographic characteristics (Loth et al. 2013; Pulley et al. 2014; Schnettler et al. 2018d; Towner et al. 2015), household economic resources (Pesch et al. 2016; Schnettler et al. 2017b) and parents' social or cultural traditions (Loth et al. 2013).

In this regard, studies focused on the correlation of LS between family members have been developed mainly in Europe and Asia. Therefore, research is needed in other regions and cultures, such as in Latin American countries. Indeed, the study of the correlation of LS and SWB between the family members is particularly relevant in South American countries, given that in Latin American culture the family is central for the individual, more than for groups in some other cultural contexts (Negy and Snyder 2006). In addition, there is evidence showing differences in the variables that influence SWB (Davis et al. 2018; Telef and Furlong 2017), child-rearing styles and parent-children interaction (Buist et al. 2017; Davis et al. 2018; Dinisman et al. 2017) and family eating habits (Schnettler et al. 2019; Tiwari et al. 2017)

between countries and cultures. Another particular issue of Latin American culture is related to the traditional family structure and the role that parents have in household tasks, in which mothers are still the main person responsible for feeding the family and the children (Loth et al. 2013; Hueche et al. 2018; Matias et al. 2017). However, a recent qualitative study in South America reported that there are different types of fathers regarding their responsibility in feeding children and food-related parenting practices. Whereas there are fathers who only assume the traditional role of provider of economic resources to finance the food for the family, other fathers try to be a model for their children in eating habits, while yet another group of fathers supports the mother in the tasks of feeding the children (Hueche et al. 2018). Therefore, the present study also sought to determine the food-related parenting practices that fathers use with their adolescents children and how these practices and their families' eating habits influence their own and their children's LS in the South American cultural context.

## Study Objectives and Theoretical Framework

The aims of the present study were: a) to explore the influence of each family member's life satisfaction on the other family members' life satisfaction in mother-father-adolescent triads, b) to explore the influence of each family member's satisfaction with food-related life and satisfaction with family life on their own life satisfaction as well as on the other family members' life satisfaction and c) to explore the influence of family eating habits, diet quality, food-related parenting practices used by each parent and sociodemographic characteristics on each family member's life satisfaction. The paper goes beyond existing research by analyzing complete triads of mother, father and child in a South American country, and by taking a systematic look at how each family member's life satisfaction is affected by the domain-specific life satisfaction of all other family members, and by domain-related family practices. In this study, Chile was used as case study among South American countries.

Therefore, in order to identify variables that influence the LS of mothers, fathers and adolescents, three independent multivariate ordinal logistic regression models were performed. In these three models, the level of LS of each family member was the dependent variable. Based on the studies that show LS of individuals within the same family is correlated (Carlsson et al. 2014; Casas et al. 2008, 2011; Dobewall et al. 2018; Headey et al. 2014; Ma 2016; Schnitzlein and Wunder 2016), the influence of each family member's LS on the others family member's LS was tested. Based on the “bottom-up” theoretical approach to LS (Pavot and Diener 2008), each family member's satisfaction with food-related life was tested as an explanatory variable of the same family member's LS.

Taking into account studies indicating that an individual's experiences in one domain influence their family members' well-being (Bakker and Demerouti 2013), the influence of each family member's satisfaction with food-related life on the other family member's LS was assessed. The same procedures were used with each family member's satisfaction with family life. On the basis of the evidence that healthful eating habits are related to higher levels of LS (Blanchflower et al. 2013; Hong and Peltzer 2017; Kelishadi et al. 2018; Peltzer and Pengpid 2017; Schnettler et al. 2013a, 2019; White et al. 2013), each family member's diet quality was tested as an explanatory variable of each family member's LS. The same procedure was used with each family member's perception of food-related parenting practices (Schnettler et al. 2018c, d, e), the frequency of family meals (Neumark-Sztainer et al. 2010; Oriol et al. 2017; Schnettler et al. 2015a, b, c, 2016, 2017a, 2018a, d, e; Utter et al. 2013, 2016, 2017) and sociodemographic characteristics of each family member.

## Method

### Sample and Procedure

Non-probability sampling was used to recruit a sample of 300 two-parent families with at least one adolescent child in Temuco, Chile. The World Health Organization's defines adolescence as the period that spans 10 to 19 years of age (WHO 2014). However, in this study only children aged between 10 and 17 years were included, as it is common in Chile for adolescents aged 17 years to be in their last year of secondary school. Therefore, they are still highly influenced by their family's eating habits. Married and unmarried cohabiting couples were included as a growing preference for cohabitation in lieu of legal marriage has recently been observed in Chile (Calvo et al. 2011). Participants were recruited from seven schools that serve socioeconomically diverse populations. Directors in each school signed authorization letters to conduct the research with their students and provided a list of students from fifth grade upwards (corresponding to a minimum age of 10 years), with their parents' telephone numbers.

Parents were contacted by trained interviewers who explained the objectives of the study and the strictly confidential treatment of the information obtained. Then, the interviewers provided detailed information about the questionnaires and asked if both parents and one of their children between 10 and 17 years of age wanted to participate in the study. Interviews were conducted in participants' homes. After all parents signed written informed consent and the adolescents signed assent forms, the questionnaires were administered by a trained interviewer to both parents and one child over 10 years old. Each family member was interviewed individually without the presence of the rest of the family members.

The anonymity of the respondents was assured. The study was conducted between June and December 2016. The design of this study was approved by the Ethics Committee of the Universidad de La Frontera.

### Measurements

The questionnaire included the following instruments, which were answered by the mothers, fathers and children:

- Satisfaction with Life Scale (SWLS; Diener et al. 1985): This scale is composed of five items grouped into a single dimension to evaluate overall cognitive judgments about a person's own life (e.g. *"In most ways my life is close to my ideal"*). Respondents were asked to indicate their degree of agreement with the five statements using a 6-point Likert scale (1: completely disagree; 6: completely agree). This study used the Spanish-language version of the SWLS (Schnettler et al. 2011), which has shown good internal consistency in previous studies with adolescents (Cronbach  $\alpha = 0.90$ – $0.91$ ) and adults (Cronbach  $\alpha = 0.89$ – $0.90$ ) in Chile (Schnettler et al. 2017b, 2018a, c, d, e). In the present study, the SWLS showed good levels of internal consistency (ordinal  $\alpha$  mothers =  $0.91$ , fathers =  $0.90$ , adolescents =  $0.92$ ). The SWLS score is the sum of the 5 items on the scale.
- Satisfaction with Food-related Life (SWFoL): This scale was developed by Grunert et al. (2007) and is composed of five items grouped in a single dimension to evaluate a person's overall assessment regarding their food and eating habits (e.g. *"Food and meals are positive elements"*). Respondents were asked to indicate their degree of agreement with the five statements using a 6-point Likert scale (1: completely disagree; 6: completely agree). This study used the Spanish-language version of the SWFoL (Schnettler et al. 2011), which has shown good internal consistency in studies with adolescents (Cronbach  $\alpha = 0.89$ – $0.91$ ) and adults (Cronbach  $\alpha = 0.76$ – $0.86$ ) in Chile (Schnettler et al. 2013b, 2017b, 2018a, c, d, e). In this study the SWFoL showed a good level of internal consistency (ordinal  $\alpha$  mothers =  $0.87$ , fathers =  $0.80$ , adolescents =  $0.91$ ). The SWFoL score is the sum of the 5 items on the scale.
- Satisfaction with Family Life (SWFaL): This scale was proposed by Zabriskie and McCormick (2003) and corresponds to a modified version of the SWLS (Diener et al. 1985) in which the words "family life" replaced the word "life" in each of the five original items of the SWLS. This study used the Spanish-language version of the SWFaL (Schnettler et al. 2017a), which has shown good internal consistency in studies with adolescents (Cronbach  $\alpha = 0.90$ – $0.92$ ) and adults (Cronbach  $\alpha = 0.91$ – $0.92$ ) in Chile (Schnettler et al. 2017b, 2018a, c, d, e).

Respondents were asked to indicate their degree of agreement with the five statements using a 6-point Likert scale (1: completely disagree; 6: completely agree). In this study the SWFaL showed good levels of internal consistency (ordinal  $\alpha$  mothers = 0.92, fathers = 0.91, adolescents = 0.93). The SWFaL score is the sum of the 5 items on the scale.

The discriminant validity of the SWLS, SWFoL and SWFaL was previously demonstrated in samples of undergraduate students, adolescents and adults in Chile using a confirmatory factor analysis (Schnettler et al. 2017a, b, 2018c).

- The Adapted Healthy Eating Index (AHEI), is an adaptation of the US-HEI (Kennedy et al. 1995) developed by Norte and Ortiz (2011) for Spanish-speaking populations. Respondents were asked to provide information on their frequency of consumption for nine food groups. Each group received a score ranging from 0 to 10 according to the degree of compliance with food recommendations (see the food groups and score criteria in Norte and Ortiz 2011). In addition there is a variable that refers to diet variety, for which 2 points are added if the person complies with each of the daily recommendations and 1 point if they comply with each of the weekly recommendations. AHEI score was calculated by adding the score obtained in each of the variables with a maximum of 100 points. Scores above 80 are indicative of a “healthy” diet; scores between 51 and 80 correspond to a diet that “requires changes”; scores below 50 correspond to “unhealthy” diets (Kennedy et al. 1995).
- Family Food Behavior Survey (FFBS; McCurdy and Gorman 2010) is a scale that assess family mealtime practices using a 5-point Likert scale (0: never true; 4: always true). This study used the Spanish-language version for adults and adolescents (Schnettler et al. 2018c, d), which when applied to samples of mothers and adolescents in previous studies in Chile resulted in three dimensions: “maternal control of child eating behavior”, “maternal presence during child eating” and “child involvement in food consumption”. In order to make sure that dimension structure is the same for mothers, fathers and adolescents, an exploratory factor analysis (EFA) was conducted in parallel for the three subsamples using FACTOR 10.4. The sample adequacy of the data was assessed using the KMO index, Bartlett’s statistic and the determinant of the polychoric correlations matrix. The extraction was performed by unweighted least squares with Promin rotation. The number of factors was determined by Horn’s parallel analysis. The items with factor loadings lower than 0.4 were eliminated. The internal consistency of the factors extracted was assessed through the ordinal  $\alpha$  coefficient, which was obtained using the R software 3.5.0. The results of the EFA indicated an acceptable or reasonable fit to the data in terms of sample adequacy for mothers, fathers and adolescents (KMO  $\geq$  0.63, Bartlett’s statistic with  $p < 0.001$  and determinant of the matrix  $< 0.4$  in the three subsamples). In all subsamples the same items were eliminated because they presented factor loadings below 0.4. The remaining items of the FFBS were grouped in two factors with the same structure in each subsample, which explained 71.6% of the variance in mothers, 56.5% in fathers and 70.7% in adolescents. The first factor, labeled “parental presence during child eating”, was composed of the items 10 (“*I eat dinner with my child*”), 15 (“*I sit down with child when s/he eats*”) and 20 (“*My child and I sit and eat together*”) in the three subsamples. The second factor, labeled “parental control of child eating behavior”, was composed of the items 1 (“*I decide how many snacks my child eats*”), 8 (“*I decide my child’s snack time*”), 11 (“*I decide what my child eats between meals*”) and 17 (“*I decide the time when child eats meals*”) in the three subsamples. The first factor of the FFBS obtained ordinal coefficient  $\alpha$  over 0.7 (mothers = 0.84, fathers = 0.72, adolescents = 0.84) while the second factor obtained ordinal  $\alpha$  coefficients over 0.60 (mothers = 0.84, fathers = 0.65, adolescents = 0.85), so they presented acceptable or reasonable levels of internal consistency.
- Family Eating Habits Questionnaire (FEHQ; Klempel et al. 2013) is a scale to assess how individuals perceive their family’s eating habits using 5-point Likert scale with the options of “Never”, “Occasionally”, “Sometimes”, “Much of the Time” and “Always”. This study used the Spanish-language version of the FEHQ (Schnettler et al. 2016), which when was applied to a sample of adolescents in a previous study in Chile resulted in three dimensions: “food portions”, “cohesiveness of family eating” and “pressure to eat” (Schnettler et al. 2018e). In order to make sure that dimension structure is the same for mothers, fathers and adolescents, an EFA was conducted in parallel for the three subsamples. Following the same procedure described for the FFBS, the results of the EFA conducted on the FEHQ indicated an acceptable or reasonable fit to the data in terms of sample adequacy for mothers, fathers and adolescents (KMO  $\geq$  0.68, Bartlett’s statistic with  $p < 0.001$  and determinant of the matrix  $< 0.04$  in the three subsamples). In all subsamples the same items were eliminated because they presented factor loadings below 0.4. The remaining items of the FEHQ were grouped in two factors with the same structure in each subsample, which explained 51.7% of the variance in mothers, 53.6% in fathers and 50.1% in adolescents. The first factor labeled as “cohesiveness of family eating and healthy eating” was composed of the items 2 (“*Meals*

are an important part of my family life”), 4 (“Healthy meals are prepared in my family”), 5 (“Eating together is the most important part of our parties and celebrations”), 7 (“Eating is an important part of my family life”), 12 (“All of my family members eat together regularly”), 13 (“Healthy eating is encouraged in my family”) and 14 (“My family members try to eat together whenever possible”) in the three subsamples. The second factor labeled as “food portions and pressure to eat”, was composed of the items 1 (“My family eats large meals”), 3 (“In my family, members are encouraged to have second helpings at meals”), 8 (“In my family, large portions of foods are served”), 9 (“Family members pressure me to eat even if I am not hungry”) and 11 (“My family members suggest eating when I seem stressed out or upset”). The first factor of the FEHQ obtained ordinal  $\alpha$  coefficients over 0.7 (mothers = 0.81, fathers = 0.83, adolescents = 0.79) as well as the second factor (mothers = 0.79, fathers = 0.81, adolescents = 0.77), so they presented acceptable levels of internal consistency.

Finally, each family member was asked about their age and approximate weight and height to determine their respective body mass indexes (BMI, kg/m<sup>2</sup>). Mothers and fathers were asked about their marital status, ethnic origin and their perception of the current financial situation of their households. Mothers were asked about the number of family members, number of children, the gender of the main breadwinner and the monthly food expenditure. They were also asked about the number of days that all the family members had breakfast, lunch and dinner together during the week and the number of days that they eat home-made food, buy ready-to-eat food, order food at home, eat at restaurants and eat at fast-food outlets. Education level and occupation of the head of the household were used to determine socioeconomic status (SES) (Adimark 2004).

## Data Analysis

Descriptive statistics were used for each of the variables. Frequency distributions were obtained, and the mean and standard deviation were calculated for continuous variables.

In order to contrast and identify the predictive variables of the life satisfaction of mothers, fathers and adolescents, three multivariate ordinal logistic regression models were conducted using the SPSS 23.0 software for Windows in Spanish. In each of these models, the level of life satisfaction of the respective subsample (mothers, fathers or adolescents) was introduced as a dependent variable. Previously, the SWFoL, SWFaL and SWLS scores of mothers, fathers and adolescents were categorized, leaving three response categories (1: extremely unsatisfied or unsatisfied; 2: moderately satisfied; 3: extremely satisfied or satisfied). Moreover, a series of

bivariate analyses were carried out with different tests as appropriate (Pearson’s chi-squared, Kruskal-Wallis H or ANOVA), keeping the categorized SWLS of mothers, fathers and adolescents as dependent variables to determine which of the predictor variables should be included in the multivariate logit models. A bivariate significance less than or equal to 0.25 was considered as an inclusion criterion given that some predictor variables with weak bivariate association could become an important variable in conjunction with other predictor variables. Additional variables were eliminated in the models to achieve a good fit of the data. The  $-2$  log of likelihood, Pearson and Deviance chi-squared, pseudo R squared (Cox and Snell, Nagelkerke and McFadden) and the test of parallel lines were used to assess the goodness of fit of the multivariate logit models. The dependent variables and the predictor variables that were significant in each model are specified in Tables 2.

## Results

### Sample Description

Table 1 shows the demographic characteristics of the sample, as well as their weight status following the criteria of the World Health Organization (WHO 2004) for mothers and fathers and the criteria of the World Health Organization (WHO 2007) and the Technical Norm of Nutritional Evaluation of children from 5 to 19 years old from the Chilean Ministry of Health (MINSAL 2016). Table 1 also includes the three family members’ AHEI average scores, the family’s eating habits, the monthly food expenditure, the three family members’ average scores on the components on the FFBS and FEHB and the three family members’ distribution according to their scores on the SWLS, SWFoL and SWFaL.

### Multivariate Ordinal Logit Regression Models

The results of the three optimal multivariate ordinal logit models obtained for mothers, fathers and adolescents are shown in Table 3. In all these models, the  $-2$  log likelihood and the Pearson and Deviance chi squared indicated a good fit to the data, the pseudo R squared was greater than 0.3 and the test of parallel lines indicated that the proportional odds assumption was met for the data (Table 4).

In the subsample of mothers, it was shown that the younger mothers ( $\beta = -0.089$ ) and those who exert greater parental control over child eating behavior ( $\beta = 0.563$ ) were more likely to be satisfied or extremely satisfied with their life. Also, the likelihood that mothers are satisfied or extremely satisfied with their life decreases if they are unsatisfied or extremely unsatisfied ( $\beta = -4.296$ ) and also if they are moderately satisfied with their family life ( $\beta = -4.750$ ) compared to mothers

**Table 1** Sample characteristics

Variables	Total sample ( <i>n</i> = 300)		
Marital status (%)			
Married	75.0		
Unmarried cohabiting	25.0		
Number of family members [Mean (SD)]	4.35 (1.01)		
Number of children [Mean (SD)]	2.4 (1.0)		
Age [Mean (SD)]			
Mothers	41.57 (6.84)		
Fathers	44.13 (7.23)		
Adolescents	13.19 (2.28)		
Gender of the interviewed adolescent (%)			
Female	48.7		
Male	51.3		
Socioeconomic status (%)			
High and upper-middle	17.0		
Middle-Middle	18.7		
Lower-Middle	35.0		
Low	24.0		
Very low	5.3		
Gender of the main breadwinner (%)			
Female	20		
Male	80		
Average monthly food expenditure (USD)	274.07		
AHEI [Mean (SD)]			
Mothers	64.52 (14.30)		
Fathers	58.85 (14.57)		
Adolescents	61.97 (14.98)		
Number of days a week families eat together [Mean (SD)]			
Breakfast	4.16 (2.84)		
Lunch	4.42 (2.56)		
Dinner	3.89 (3.22)		
Number of days families eat different types of foods [Mean (SD)]			
Home-made food	6.41 (1.43)		
Ready-to eat food	0.49 (1.00)		
Food ordered at home	0.32 (0.65)		
Food in restaurants	0.37 (0.67)		
Fast-food outlets	0.28 (0.60)		
Perceived financial situation of the household (%)	Mothers	Fathers	
Very difficult	7.0	7.0	
Regular	28.3	29.7	
Stable	43.3	40.7	
Good	18.7	18.3	
Very good	2.7	4.3	
Ethnic origin (%)	Mothers	Fathers	
Mapuche	19.4	14.9	
Non-Mapuche	80.6	85.1	
BMI (%)	Mothers	Fathers	Adolescents
Undernourished	0	0	6.3
Underweight	0.3	0	13.7
Normal range	23.7	17.7	53.7

**Table 1** (continued)

Variables	Total sample ( <i>n</i> = 300)		
Overweight	42.7	55.7	19.7
Obesity	33.3	26.7	6.7
FFBS [Mean (SD)]	Mothers	Fathers	Adolescents
Parental presence during child eating	3.39 (0.70)	3.17 (0.73)	3.42 (0.65)
Parental control of child eating behavior	2.39 (1.05)	1.98 (0.95)	2.11 (1.17)
FEHQ [Mean (SD)]	Mothers	Fathers	Adolescents
Cohesiveness of family meals and healthy eating	4.15 (0.61)	4.13 (0.61)	4.02 (0.62)
Food portions and pressure to eat	2.28 (0.89)	2.35 (0.89)	2.42 (0.86)
SWFoL (%)	Mothers	Fathers	Adolescents
Extremely unsatisfied or unsatisfied	9.7	6.7	12.3
Moderately satisfied	14.3	14.3	13.7
Extremely satisfied or satisfied	76.0	79.0	74.0
SWFaL (%)	Mothers	Fathers	Adolescents
Extremely unsatisfied or unsatisfied	6.0	5.7	8.3
Moderately satisfied	8.3	5.7	7.3
Extremely satisfied or satisfied	85.7	88.7	84.3
SWLS (%)	Mothers	Fathers	Adolescents
Extremely unsatisfied or unsatisfied	7.3	5.7	6.7
Moderately satisfied	12.7	8.3	9.3
Extremely satisfied or satisfied	80.0	86.0	84.0

that are satisfied or extremely satisfied with their family life. The same effect was obtained if fathers are moderately satisfied with their family life ( $\beta = -2.004$ ) compared to fathers that are satisfied or extremely satisfied with their family life and if adolescents are moderately satisfied with their life ( $\beta = -2.485$ ) compared to adolescents that are satisfied or extremely satisfied with their life. The likelihood that mothers are satisfied or extremely satisfied with their life also decreases if their families share breakfast as a family five days per week ( $\beta = -4.697$ ) compared to mothers whose families have breakfast as a family seven days per week. The same effect was obtained if their families do not have family lunches ( $\beta = -2.958$ ) compared to mothers whose families have lunch as a family seven days per week, and if their families have family dinner only one day per week ( $\beta = -3.700$ ) compared to mothers whose families have family dinners seven days per week.

In the subsample of fathers it was shown that fathers with greater AHEI scores ( $\beta = 0.112$ ) who scored lower in “parental presence during child eating” ( $\beta = -2.210$ ) and in “cohesiveness of family eating and healthy eating” ( $\beta = -1.924$ ) were more likely to be satisfied or extremely satisfied with their life. It was also found that the likelihood that fathers are satisfied or extremely satisfied with their life decreases if they are unsatisfied or extremely unsatisfied ( $\beta = -9.858$ ) and also if they are moderately satisfied with their family life ( $\beta =$

$-8.808$ ) compared to fathers that are satisfied or extremely satisfied with their family life. The same effect was obtained if mothers are unsatisfied or extremely unsatisfied ( $\beta = -11.743$ ), and also if they are moderately satisfied ( $\beta = -3.630$ ) with their family life compared to mothers that are satisfied or extremely satisfied with their family life. The likelihood that fathers are satisfied or extremely satisfied with their life also decreases if they are of Mapuche ethnic origin ( $\beta = -4.002$ ) compared to fathers who are not. Inversely, the likelihood that fathers are satisfied or extremely satisfied with their life increases if their families have lunch together two days per week ( $\beta = 3.495$ ) compared to fathers whose families have family lunches seven days per week.

In the subsample of adolescents, it was found that the likelihood that adolescents are satisfied or extremely satisfied with their life decreases if they are female ( $\beta = -0.946$ ). The same effect was obtained if their mothers are unsatisfied or extremely unsatisfied ( $\beta = -2.672$ ) and also if they are moderately satisfied ( $\beta = -1.478$ ) with their life compared to mothers who are satisfied or extremely satisfied with their life. The likelihood that adolescents are satisfied or extremely satisfied with their life also decreases if they are unsatisfied or extremely unsatisfied ( $\beta = -2.290$ ) and also if they are moderately satisfied ( $\beta = -1.749$ ) with their food-related life compared to adolescents who are satisfied or extremely satisfied with their food-related life. The same effect was obtained if



**Table 2** Definition of variables for the multivariate ordinal logistic regression models generated to measure the life satisfaction of mothers, fathers and adolescents

Variables	Description
AGE_Mo	Mothers' age (continuous)
FAC2_FFBS_Mo	Parental control of child eating behavior of mothers (continuous)
HEI_Fa	Adapted Healthy Eating Index (AHEI) scores of the fathers (continuous)
FAC1_FFBS_Fa	Parental presence during child eating of fathers (continuous)
FAC1_FEHQ_Fa	Cohesiveness of family eating and healthy eating of fathers (continuous)
SWFoL_Mo	Satisfaction with food-related life of mothers (ordinal): 1 = extremely unsatisfied or unsatisfied, 2 = moderately satisfied, 3 = satisfied or extremely satisfied
SWFaL_Mo	Satisfaction with family life of mothers (ordinal): 1 = extremely unsatisfied or unsatisfied, 2 = moderately satisfied, 3 = satisfied or extremely satisfied
SWLS_Mo	Satisfaction with life of mothers (ordinal): 1 = extremely unsatisfied or unsatisfied, 2 = moderately satisfied, 3 = satisfied or extremely satisfied
SWFoL_Fa	Satisfaction with food-related life of fathers (ordinal): 1 = extremely unsatisfied or unsatisfied, 2 = moderately satisfied, 3 = satisfied or extremely satisfied
SWFaL_Fa	Satisfaction with family life of fathers (ordinal): 1 = extremely unsatisfied or unsatisfied, 2 = moderately satisfied, 3 = satisfied or extremely satisfied
SWLS_Fa	Satisfaction with life of fathers (ordinal): 1 = extremely unsatisfied or unsatisfied, 2 = moderately satisfied, 3 = satisfied or extremely satisfied
SWFoL_CH	Satisfaction with food-related life of adolescents (ordinal): 1 = extremely unsatisfied or unsatisfied, 2 = moderately satisfied, 3 = satisfied or extremely satisfied
SWFaL_CH	Satisfaction with family life of adolescents (ordinal): 1 = extremely unsatisfied or unsatisfied, 2 = moderately satisfied, 3 = satisfied or extremely satisfied
SWLS_CH	Satisfaction with life of adolescents (ordinal): 1 = extremely unsatisfied or unsatisfied, 2 = moderately satisfied, 3 = satisfied or extremely satisfied
GENDER_CH	Gender of adolescents (binary): 1 = female, 2 = male
FREQ_BF	Frequency of days per week that families meet for breakfast in last seven days (ordinal): 0 = 0 days, 1 = 1 day, 2 = 2 days, 3 = 3 days, 4 = 4 days, 5 = 5 days, 6 = 6 days, 7 = 7 days
FREQ_LUNCH	Frequency of days per week that families meet for lunch in last seven days (ordinal): 0 = 0 days, 1 = 1 day, 2 = 2 days, 3 = 3 days, 4 = 4 days, 5 = 5 days, 6 = 6 days, 7 = 7 days
FREQ_DINNER	Frequency of days per week that families meet for dinner in last seven days (ordinal): 0 = 0 days, 1 = 1 day, 2 = 2 days, 3 = 3 days, 4 = 4 days, 5 = 5 days, 6 = 6 days, 7 = 7 days
ETHNIC_Fa	Ethnic origin of fathers (binary): 1 = Mapuche, 2 = non-Mapuche

adolescents are unsatisfied or extremely unsatisfied ( $\beta = -3.813$ ) and also if they are moderately satisfied ( $\beta = -1.995$ ) with their family life compared to adolescents who are satisfied or extremely satisfied with their family life.

## Discussion

The first focus of the present study was to explore the influence of each family member's life satisfaction on the other family members' life satisfaction in mother-father-adolescent triads. In this regard, our results are in line with those studies reporting that mothers had greater influence than fathers on their children's LS (Dobewall et al. 2018; Headey et al. 2014; Richter et al. 2018; Schnitzlein and Wunder 2016). However, one significant result is related to the lack of an association between the father's and their children's LS. This contradicts

the aforementioned studies and also those studies reporting a correlation between the LS of all family members in different countries (Carlsson et al. 2014; Casas et al. 2008, 2011; Dobewall et al. 2018; Headey et al. 2014; Ma 2016; Schnitzlein and Wunder 2016). This unexpected result may be associated with the traditional family structure in Latin American countries as well as with the specific roles that parents have in household tasks (Loth et al. 2013; Hueche et al. 2018; Matias et al. 2017). However, at the same time, this result is of concern given that it seems to indicate that fathers are not very involved with their children during adolescence. Therefore, further research is needed to corroborate the lack of association between fathers and their children LS in other Latin American countries and to determine the underlying causes. In parallel, our results partially agree with investigations that reported that parents' LS is also influenced by their children's LS (Carlsson et al. 2014; Headey et al. 2014),

**Table 3** Results of the multivariate ordinal logistic regression models generated to measure the life satisfaction of mothers, fathers and adolescents

	Mothers model		Fathers model		Children model
SWLS_Mo = 1	-6.949* (6.343)	SWLS_Fa = 1	-6.948 (.822)	SWLS_CH = 1	-5.552** (21.661)
SWLS_Mo = 2	-4.683 (3.014)	SWLS_Fa = 2	-3.038 (.160)	SWLS_CH = 2	-3.711** (10.668)
Significant continuous explanatory variables					
AGE_Mo	-0.089* (6.692)				
		HEI_Fa	0.112* (5.142)		
		FAC1_FFBS_Fa	-2.210* (6.009)		
FAC2_FFBS_Mo	0.563* (4.394)				
		FAC1_FEHQ_Fa	-1.924* (3.982)		
Significant categorical explanatory variables					
SWFaL_Mo = 1	-4.296** (12.678)	SWFaL_Mo = 1	-11.743** (6.982)		
SWFaL_Mo = 2	-4.750** (34.171)	SWFaL_Mo = 2	-3.630* (5.622)		
SWFaL_Mo = 3	0 <sup>a</sup>	SWFaL_Mo = 3	0 <sup>a</sup>		
SWLS_Mo = 1	b			SWLS_Mo = 1	-2.672** (10.517)
SWLS_Mo = 2	b			SWLS_Mo = 2	-1.478* (5.098)
SWLS_Mo = 3	b			SWLS_Mo = 3	0 <sup>a</sup>
SWFaL_Fa = 1	0.519 (0.106)	SWFaL_Mo = 1	-9.858** (15.660)		
SWFaL_Fa = 2	-2.004* (6.027)	SWFaL_Mo = 2	-8.808** (16.045)		
SWFaL_Fa = 3	0 <sup>a</sup>	SWFaL_Mo = 3	0 <sup>a</sup>		
SWLS_Fa = 1			b		
SWLS_Fa = 2			b		
SWLS_Fa = 3			b		
				SWFoL_CH = 1	-2.290** (12.147)
				SWFoL_CH = 2	-1.749** (10.149)
				SWFoL_CH = 3	0 <sup>a</sup>
				SWFaL_CH = 1	-3.813** (27.544)
				SWFaL_CH = 2	-1.995** (8.102)
				SWFaL_CH = 3	0 <sup>a</sup>
SWLS_CH = 1	0.344 (0.069)				b
SWLS_CH = 2	-2.485** (12.621)				b
SWLS_CH = 3	0 <sup>a</sup>				b
				GENDER_CH = 1	-0.946* (4.073)
				GENDER_CH = 2	0 <sup>a</sup>
FREQ_BF = 0	0.676 (0.431)				
FREQ_BF = 1	-0.644 (0.318)				
FREQ_BF = 2	-1.375 (3.219)				
FREQ_BF = 3	-0.381 (0.053)				
FREQ_BF = 4	13.713 (0.000)				
FREQ_BF = 5	-4.697** (9.388)				
FREQ_BF = 6	-0.907 (0.126)				
FREQ_BF = 7	0 <sup>a</sup>				
FREQ_LUNCH = 0	-2.958* (5.615)	FREQ_LUNCH = 0	16.125 (0.000)		
FREQ_LUNCH = 1	-0.430 (0.132)	FREQ_LUNCH = 1	-2.838 (2.680)		
FREQ_LUNCH = 2	1.025 (2.377)	FREQ_LUNCH = 2	3.495* (3.979)		
FREQ_LUNCH = 3	1.665 (1.122)	FREQ_LUNCH = 3	0.164 (0.003)		
FREQ_LUNCH = 4	1.626 (1.029)	FREQ_LUNCH = 4	-1.561 (0.661)		
FREQ_LUNCH = 5	16.770 (0.000)	FREQ_LUNCH = 5	-3.056 (0.000)		
FREQ_LUNCH = 6	-3.101 (1.850)	FREQ_LUNCH = 6	-5.576 (3.166)		
FREQ_LUNCH = 7	0 <sup>a</sup>	FREQ_LUNCH = 7	0 <sup>a</sup>		
FREQ_DINNER = 0	-0.631 (1.367)				

**Table 3** (continued)

	Mothers model	Fathers model	Children model
FREQ_DINNER = 1	−3.700* (5.530)		
FREQ_DINNER = 2	−0.921 (0.669)		
FREQ_DINNER = 3	−0.591 (0.177)		
FREQ_DINNER = 4	1.130 (0.497)		
FREQ_DINNER = 5	0.252 (0.018)		
FREQ_DINNER = 6	−2.096 (2.085)		
FREQ_DINNER = 7	0 <sup>a</sup>		
	ETHNIC_Fa = 1	−4.002* (5.323)	
	ETHNIC_Fa = 2	0 <sup>a</sup>	

\*Significant variables at  $p < 0.05$  based on the Wald statistics (in parentheses)

\*\*Significant variables at  $p < 0.01$  based on the Wald statistics (in parentheses)

<sup>a</sup> This parameter is at zero because it is redundant. This is a comparison category for each categorical explanatory variable in the model

<sup>b</sup> These categories correspond to the dependent variable of the model

because only the mother's LS was positively influenced by their children's LS and vice versa. This is important because it has been suggested that mother-child relationships are fundamental to well-being in young children (Richter et al. 2018), but our findings suggest that this relationship is still relevant during adolescence. However, this finding also suggests a poor father-child relationship during the adolescence.

The second focus of the present study was to explore the influence of each family member's satisfaction with food-related life and with family life on their own life satisfaction as well as on the other family members' life satisfaction in mother-father-adolescent triads. The findings obtained regarding the positive influence of satisfaction with family life on the three family members' life satisfaction are consistent with the "bottom-up" theoretical approach of SWB and LS (Pavot and Diener 2008). These results are also consistent with previous studies reporting that positive family relationships and higher satisfaction with family life have been associated with higher levels of LS in adolescents and adults in different countries (Castellá et al. 2018; Lawler et al. 2017; Loewe et al. 2014; Schnettler et al. 2017a, 2018a, b, c). This is of particular importance in the case of adolescents, who are in a phase in which important changes occur in many different areas - physical, psychological and emotional, so their well-being may be easily affected by their life circumstances (Kapıkıran 2013), and family relationships are one of the strongest predictors of adolescent SWB (Lawler et al. 2017). Likewise, consistent with the "bottom-up" theoretical approach (Pavot and Diener 2008), adolescents' LS was positively influenced by their own satisfaction with food-related life, confirming the results of previous studies (Schnettler et al. 2018a, b, c; Vaqué et al. 2012; Vaqué-Crusellas et al. 2015). However, contrary to what was expected (Schnettler et al. 2013a, 2015b, 2018c; Seo et al. 2013), neither parent's LS was

influenced by their satisfaction with food-related life. In this regard, it should be noted that previous studies which evaluated the relationship between satisfaction with food-related life and LS and between satisfaction with family life and LS reported a stronger relationship between satisfaction with family life and LS than between satisfaction with food-related life and LS (Schnettler et al. 2018a, b, c).

Contrary to what was expected (Dobewall et al. 2018; Mauno et al. 2018; Schnettler et al. 2017b, 2018a), our results show that parents' satisfaction in the food and family domains did not influence their children's LS. One possible explanation may be related to the increasing autonomy from family experiences during adolescence (Pearson et al. 2017). Therefore, it is possible to expect that the domains which are important for their own life, such as family or food according our results, may have higher influence on their LS, rather than their parents' satisfaction in specific domains. In fact, there is evidence that some extra-family factors such as school and friends also have an important influence on adolescents' LS (Uyan-Semerci et al. 2017). However, each parent's LS was positively influenced by the other member of the couple's satisfaction with family life. This finding can be explained considering that a couple's lives are particularly interrelated as they share many significant experiences and responsibilities (Lu et al. 2016; Matias et al. 2017), which is consistent with the family systems theory (Kerr and Bowen 1988). However, it is also feasible for positive experiences in the family domain of one member of the couple to be transmitted to the other partner according to the crossover effect (Bakker and Demerouti 2013; Matias et al. 2017). In this regard, crossover involves the transmission of strains or positive experiences from one domain to another, but the strains or positive experiences cross over between people closely sharing the same environment (Bakker and Demerouti 2013), like the couples in this study.

**Table 4** Goodness-of-fit statistics of the multivariate ordinal logistic regression models generated to measure the life satisfaction of mothers, fathers and adolescents

	Mothers model	Fathers model	Children model
Likelihood Ratio Chi Squared Test <sup>a</sup>			
–2 log likelihood (Intercept only model)	330.832	234.316	329.004
–2 log likelihood (Final model)	182.080	71.904	198.662
Chi squared value (df)	148.753 (46)	162.412 (58)	130.342 (33)
Chi Squared tests <sup>b</sup>			
Pearson chi squared (df)	525.453 (478)	197.107 (434)	572.619 (565)
Deviance chi squared (df)	182.080 (478)	71.904 (434)	198.662 (565)
Pseudo R Squared coefficients <sup>c</sup>			
Cox and Snell	0.432	0.482	0.352
Nagelkerke	0.604	0.786	0.529
McFadden	0.450	0.693	0.396
Test of Parallel Lines <sup>d</sup>			
–2 log likelihood (Null hypothesis model)	182.080	71.904	198.662
–2 log likelihood (General model)	135.092	0.000	172.049
Chi squared value (df)	46.988 (46)	71.904 (58)	26.613 (33)

<sup>a</sup> All significant models at  $p < 0.001$  for the likelihood ratio chi squared test

<sup>b</sup> All models at  $p > 0.05$  for Pearson and Deviance chi squared

<sup>c</sup> All pseudo R squared coefficients greater than 0.3

<sup>d</sup> All models at  $p > 0.05$  for the test of parallel lines

However, our results are novel and remarkable given that studies regarding the crossover of positive experiences among couples are still limited (Steiner and Krings 2016), and given that there are no available studies on South American countries.

Regarding our third objective, although neither parent's LS was influenced by their food-related life satisfaction, their LS was influenced by variables associated with the satisfaction with food-related life, although in different ways. This is an interesting and novel finding that suggests that food-related variables that influence LS are gender-specific; thus, future studies should consider gender as a possible moderating variable in these relationships. Considering that the food-related variables that influence LS detected in the present study are also determinants of satisfaction with food-related life, it is likely that having them in the same model may lead to some variables being significant and others not, such as satisfaction with food-related life in this study. Only the fathers' LS was positively influenced by a high diet quality, measured using the AHEI, which is consistent with studies reporting that healthful eating habits are related to higher levels of LS in adult samples (Blanchflower et al. 2013; Schnettler et al. 2013a, 2019). This finding and the lack of influence of the diet quality on the mothers' LS may reflect that there is more room for improvement in the fathers' eating habits and that is shown in their LS. Therefore, interventions to enhance fathers' LS in particular should consider the improvement of their diet quality. In parallel, while the mothers' LS was positively associated with more frequent family meals (breakfast,

lunch and dinner), fathers' LS was negatively influenced by frequent shared lunches with their families. The findings in the mother subsample are consistent with authors reporting positive relations between maternal LS and the frequency of shared everyday activities and experiences with their children (Richter et al. 2018). At the same time, this finding confirms that more frequent family meals are associated with higher levels of LS in adults (Oriol et al. 2017; Schnettler et al. 2015a, b, c, 2016, 2017a; Schnettler et al. 2018d, e). In addition, it also confirms that maternal presence when adolescents eat is associated with higher levels of LS in mothers (Schnettler et al. 2018c, d). This may be associated with the affective dimension of meals as a moment of family unity (Ramalho et al. 2016; Speirs et al. 2016), in which family members interact, preserve relationship closeness, resolve conflicts, express love and provide emotional support (Ramalho et al. 2016; Speirs et al. 2016). By contrast, the results in the father subsample are unexpected and noteworthy, given that it would partially contradict the relative higher importance of family in Latin American culture (Negy and Snyder 2006). At the same time, although previous studies reported an increase in the participation of fathers in child feeding (Sharif et al. 2017; Vaughn et al. 2017), our results underscore that this kind of father-child interaction does not necessarily increase the fathers' LS, at least with adolescent children and in the South American context. However, family meals might also be a source of tension, given that meal time can be used to exert control or reinforce the authority of some family members over others, which results in avoidance or

shortening of some family meals (Jarosz 2017). This may partially explain why fathers' LS was negatively influenced by more frequent family lunches. However, considering that in 80% of the families surveyed the father is the main breadwinner, it is possible to hypothesize that they may be experiencing work-family conflict. In this regard, it has been reported that parents who experience this type of inter-role conflict have less frequent family meals (Nepper and Chai 2016; Pearson et al. 2017). However, both source of conflicts (stressful family meals and fathers' work-family conflict) may be interrelated, as it has been reported that the parents' workload is associated with conflict with their children, and work stress has a negative effect on the quality of family interactions (Kinkead et al. 2017). Nevertheless, further research is needed to corroborate these relationships in other South American countries and also in countries with a different culture.

Regarding the food-related parenting practices included in this study, the positive influence of the "parental control of child eating behavior" (the second component on the FFBS) on the mother's LS is consistent with a previous study (Schnettler et al. 2018d). One possible explanation may be related to mothers feeling satisfaction controlling their adolescent children's eating habits to protect them from becoming overweight or obese (Chong et al. 2017; Schnettler et al. 2018d). This finding may be associated with the positive influence of more frequent family meals on the mother's LS, because a higher frequency of family meals not only allows mothers to take advantage of the affective dimension of meals (Ramalho et al. 2016; Speirs et al. 2016), but also allows them to control their children's eating habits during and between meals (snacking). By contrast, fathers' LS was positively influenced by a lower "parental presence during child eating" (the first component on the FFBS) and a lower engagement in "cohesiveness of family meals and healthy eating" (the first component on the FEHQ). These results are also unexpected and noteworthy, given that they suggest that fathers do not value sharing meals with their children and have a low concern of their children's eating habits. Yet it is again possible suggest that this kind of father-child interactions do not necessarily increase the fathers' LS, because they may feel that such family activities are a mother's duty (Loth et al. 2013; Hueche et al. 2018; Matias et al. 2017), while it is also possible that fathers do not realize that family meals are an important way to share with their adolescent children. However, taking the results obtained in the mother and father subsamples jointly, our findings are in line with studies reporting that mothers spend more time and do different activities with children than fathers (Meier et al. 2018; Musick et al. 2016). These authors found that mothers spend more time on child-care management and cooking, whereas fathers spend more time on activities high in enjoyment and low in stress, like leisure. Therefore, it is not surprising that fathers may be more satisfied with their life if they can avoid family meals and the

food-related parenting practices that should be taken during meals, such as modeling healthy food behaviors or controlling their children eating habits, which may result in higher stress and not in enjoyment. In this regard, although studies conducted in the US indicate that the level of fathers' engagement in child-rearing tasks has increased (Sharif et al. 2017; Vaughn et al. 2017), our results show that it is not true in South American countries like Chile, where it seems that mothers are the only ones responsible for family meals (Pulley et al. 2014). In this regard, the evidence in other countries indicates that levels of paternal responsibility and involvement with children feeding have not fulfilled mother's expectations and continue to follow traditional gender roles (Pulley et al. 2014). However, these results may be exacerbated due to the cultural context of the present study. A traditional family structure still prevails in Latin America, where men are the main breadwinners and women are still the main ones responsible for the household and family tasks, including feeding the children (Loth et al. 2013; Hueche et al. 2018; Matias et al. 2017). These results are of concern, considering that inconsistency between the food-related parenting practices used by mothers and fathers may result in negative outcomes for their children (Pulley et al. 2014). Regardless, these findings confirm previous studies in different countries that stressed mothers use more control or monitoring food-related parenting practices than fathers (Jansen et al. 2018; Pulley et al. 2014).

Regarding sociodemographic characteristics, an unexpected and noteworthy result was the negative influence of age only on the mother's LS. In this regard, some studies suggest that LS decreases with age (Hansen and Slagsvold 2012), while other authors note that the relationship between LS and age is U-shaped, i.e., young people and older people have the highest levels of life satisfaction (Blanchflower and Oswald 2008). Although our findings are in line with the aforementioned studies in general, this is the first study that reported gender differences among parents. Furthermore, other studies indicate a positive relationship between LS and age (Agrawal et al. 2018) or stability in LS across the lifespan (Arnett 2018), irrespective of gender. Although further research is required to better understand and corroborate this association, one possible explanation may be related to the closeness to menopause in older mothers included in the sample studied, as it has been reported that this stage of life impacts negatively on women's LS (Kishida and Elavsky 2017). Another unexpected and remarkable result was that the likelihood that adolescents are satisfied or extremely satisfied with their life decreases if they are girls. In fact, different authors have reported that the relationship between demographic variables, such as gender, and overall LS are weak or not significant in adolescents (González-Carrasco et al. 2017), while other have reported that gender differences during the adolescence are mainly related to satisfaction in specific life domains (González-Carrasco et al. 2017). Therefore, further research is

needed to identify variables which may explain the lower probability of achieving higher levels of LS in female adolescents, which may be also associated with Latin American culture. Regarding the fathers' ethnic origin, we found that the likelihood that fathers are satisfied or extremely satisfied with their life decreases if they are of Mapuche ethnic origin. The Mapuche people are the largest aboriginal group in Chile and one of the largest in Latin America (MIDESO 2018). Considering that LS has been associated with income (Carlsson et al. 2014; Kelishadi et al. 2018; Ma 2016), this finding may be explained by the lower levels of income and the higher rate of poverty among the Mapuche compared to Chileans not belonging to this aboriginal group (MIDESO 2018; Schnettler et al. 2012). Nevertheless, our results are in line with previous studies with samples of undergraduate students in Chile, which reported that Mapuche students scored lower than non-Mapuche students on the SWLS (Schnettler et al. 2011, 2017c).

## Limitations and Conclusions

The limitations of this study include its cross-sectional design, meaning causality cannot be determined. New research is required to test causality and thus must also consider longitudinal, experimental or quasi-experimental designs. Another limitation is related to the non-probabilistic nature of the sample and its relatively small size, as well as the fact that it examined only families with adolescent children, which limits our results from being extrapolated to families at other stages of the life cycle. All data were self-reported; therefore, responses may have been affected by social desirability. In this regard and taking into account that the interviews were conducted in participants' homes, another limitation was that BMI calculations were based on self-reported data from the participants. Evidence, however, does support the high correlation between self-reported and measured BMI (Himes et al. 2005). Notwithstanding, misclassification of some overweight and obese cases was likely (Elgar et al. 2005). Therefore, future studies should obtain the measured height and weight in a subsample of participants in order to assess the correlation between self-reported and measured BMI giving a margin of error between the two calculations. In addition, we did not ask about the main breadwinner's type of employment, the number of working hours and did not assess their level of work-family conflict. Also, we did not ask the other parent's occupation (mainly women in our sample); therefore, it is not possible to associate the mothers' food-related parenting practices to their participation in the labor force or not. In addition, we did not assess the atmosphere of family meals. These variables should be taken into account in future studies given that they

may influence the frequency of family meals and the food-related parenting practices in working parents (Nepper and Chai 2016; Pearson et al. 2017).

Despite these limitations, this study used self-reported measures of well-being that were answered by the adolescent children and by their parents, given the differences between child and adult perceptions of child well-being (Kinkead et al. 2017). This field of research is important given that the study of SWB has been greatly developed in adult populations, but not as much in adolescents (Oriol et al. 2017). In addition, this is the first study to assess the correlation between family members' LS in a South American country and explore the cross-over influence of the satisfaction in two life domains of one family member on the other family members' LS. In this regard, our results provide new evidence regarding the positive reciprocal influence of mothers' and children's life satisfaction, as well as the reciprocal positive influence of satisfaction with family life between both parents. At the same time, our results show that fathers' and their adolescent children's LS are not associated, contrary to the findings reported in previous studies conducted in Europe and Asia. Therefore, it is possible to hypothesize that culture may affect the intergenerational transmission of LS between fathers and their children. In addition, this study contributes to knowledge of the relationship between parenting practices and parents' SWB, providing new insights regarding the relationship between mothers' LS and food-related parenting practices and the first evidence of the relationship between fathers' LS and food-related parenting practices.

The findings from this study suggest that different interventions should be implemented in order to improve each family member's life satisfaction. However, special emphasis should be placed on changing fathers' awareness, involvement and enjoyment regarding family meals and their adolescent children's eating habits. This may not only improve the fathers' LS, but also their partners' and children's LS. In fact, it is possible to expect that greater involvement on the part of fathers with their adolescent children around family meals would improve the father-child relationship, positively affecting the adolescent's LS and their satisfaction with family life and food-related life. In parallel, it is also possible to expect that greater involvement by fathers in family meals and food-related parenting practices may decrease the mothers' workload in this regard, and in turn also improve the mothers' LS and satisfaction with family life.

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## Compliance with Ethical Standards

**Conflict of Interest** None.

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