



Original/Otros

Relationship between the domains of the Multidimensional Students' Life Satisfaction Scale, satisfaction with food-related life and happiness in university students

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Abstract

Aim: to characterize types of university students based on satisfaction with life domains that affect eating habits, satisfaction with food-related life and subjective happiness.

Materials and methods: a questionnaire was applied to a nonrandom sample of 305 students of both genders in five universities in Chile. The questionnaire included the abbreviated Multidimensional Student's Life Satisfaction Scale (MSLSS), Satisfaction with Food-related Life Scale (SWFL) and the Subjective Happiness Scale (SHS). Eating habits, frequency of food consumption in and outside the place of residence, approximate height and weight and sociodemographic variables were measured.

Results: using factor analysis, the five-domain structure of the MSLSS was confirmed with 26 of the 30 items of the abbreviated version: Family, Friends, Self, Environment and University. Using cluster analysis four types of students were distinguished that differ significantly in the MSLSS global and domain scores, SWFL and SHS scores, gender, ownership of a food allowance card funded by the Chilean government, importance attributed to food for well-being and socioeconomic status.

RELACIÓN ENTRE LOS DOMINIOS DE LA ESCALA MULTIDIMENSIONAL DE SATISFACCIÓN CON LA VIDA, SATISFACCIÓN CON LA ALIMENTACIÓN Y FELICIDAD EN ESTUDIANTES UNIVERSITARIOS

Abstract

Resumen

Objetivo: caracterizar tipologías de estudiantes universitarios según la satisfacción en dominios de la vida que afectan a los hábitos alimentarios, satisfacción con la alimentación y nivel de felicidad subjetiva.

Material y método: se aplicó un cuestionario a una muestra no probabilística de 305 estudiantes de ambos géneros de cinco universidades de Chile. El cuestionario incluyó: Escala Multidimensional de Satisfacción con la Vida para Estudiantes (MSLSS) abreviada, Satisfacción con la Alimentación (SWFL) y la Escala de Felicidad Subjetiva (SHS). Se consultaron hábitos de consumo de alimentos, frecuencia de comidas dentro y fuera del lugar de residencia, peso y estatura aproximada y variables sociodemográficas.

Resultados: mediante análisis factorial se confirmó la estructura de cinco dominios de la MSLSS, con 26 de los 30 ítems de la versión abreviada: Familia, Amigos, Sí mismo, Entorno de vida y Universidad. Mediante análisis clúster se distinguieron cuatro tipologías que difirieron significativamente en los puntajes de los dominios de la MSLSS y en su puntaje global, en los puntajes de la SWFL, SHS, género, contar con una tarjeta de alimentación financiada por el Estado chileno, importancia asignada a la alimentación para el bienestar personal y nivel socioeconómico.

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Conclusions: higher levels of life satisfaction and happiness are associated with greater satisfaction with food-related life. Other major life domains that affect students' subjective well-being are Family, Friends, University and Self. Greater satisfaction in some domains may counterbalance the lower satisfaction in others.

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Key words: *Life satisfaction. Satisfaction with food-related life. Happiness. Life domains. University students.*

Introduction

Subjective well-being (SWB) is an assessment people make of their own lives, including happiness, pleasurable emotions, life satisfaction, and the relative absence of unpleasant emotional states¹. Positive evaluations of life satisfaction are linked to happiness and the achievement of the 'good life'². Numerous studies have addressed overall satisfaction with life and in certain domains, including food. Recent studies with adult samples suggest that those who are satisfied with their food and eating habits are satisfied with their lives³⁻⁵. Others have concluded that healthful eating increases satisfaction with life⁶ and happiness⁷. However, the relation between these variables has not been analysed in younger populations, although recent studies show that eating is a domain that relates positively with life satisfaction⁸⁻¹⁰ and happiness in university students^{10,11}.

The study of food as a life domain in university students is relevant because the period of university studies is usually the first time youth take responsibility for their meals. Therefore, this critical stage in development of eating habits will affect their future health¹²⁻¹⁴. Satisfaction with food-related life is defined as a person's overall assessment regarding their food and eating habits³. Evidence from adult population indicates that satisfaction with food-related life not only positively affects life satisfaction, it also relates with other life domains, like family and health⁵. Likewise, eating habits of university students are influenced by family^{10,13,15-18}, living conditions^{13,14,16,19,20}, university^{11,13,16,17,19}, body image and self-concept^{9,13,17,20,21}, friends and classmates^{10,11,13,16,17,19}, among others. Therefore, if university students' eating habits are influenced by these variables and satisfaction with food-related life reflects the overall assessment regarding food and eating habits, it is expected that satisfaction with food-related life relates to students' satisfaction in these life domains.

Much of the research on life satisfaction has relied upon global measures. Although this unidimensional perspective provides useful information, it may mask distinctions between life domains. A multidimensional approach may provide richer, more differentiated profiles based on students' educational, emotional and interpersonal needs²². Therefore, in this research

Conclusiones: mayores niveles de satisfacción con la vida y de felicidad se asocian con una mayor satisfacción con la alimentación. Otros dominios importantes que afectan al bienestar subjetivo de los estudiantes corresponden a la familia, los amigos, la universidad y el sí mismo. La mayor satisfacción en unos dominios compensaría la menor satisfacción en otros.

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Palabras clave: *Satisfacción con la vida. Satisfacción con la alimentación. Felicidad. Dominios de la vida. Estudiantes universitarios.*

a typology of university students from various regions of Chile was developed based on satisfaction with life domains that affect students' eating habits. The types were characterized by their level of satisfaction with food-related life, happiness, eating habits in and out of the place of residence, health-related aspects and socio-demographic characteristics. The abbreviated 30-item version of the Multidimensional Students' Life Satisfaction Scale (MSLSS) proposed by Huebner et al.²³ was used. Commonly used to provide a multidimensional profile of children and youth, the MSLSS assesses both overall life satisfaction and satisfaction across five domains: family, friends, school, living environment and self²⁴.

Materials and method

Participants

The convenience sample comprised 305 students from five state universities in different geographical areas of Chile (Universidad de Tarapacá-Arica, Universidad de Chile-Santiago, Universidad de Talca-Talca, Universidad de La Frontera-Temuco, Universidad de Magallanes-Punta Arenas). All participants were volunteers, with a mean age of 21.5 (SD=2.76); 39.8% were male and 60.2% female; 91.1% resided in an urban area.

Instrument

The questionnaire included the following scales:

- *Multidimensional Students' Life Satisfaction Scale (MSLSS)*: a 40-item self-report scale designed for children of ages 8-18. It uses a 6-point Likert-type response scale, ranging from completely disagree to completely agree²³. Domain and global scores are computed by summing the values of the items and then dividing them by the total number of items comprising each domain or by the total number of items of the scale, respectively. Negatively worded items are reversed-keyed

so that a higher mean score is indicative of higher levels of satisfaction with a particular domain. In this study, the abbreviated 30-item version of the MSLSS²³ was used, which excludes the reverse-keyed items. The internal consistency scores for the domain scores ranged from 0.71 to 0.91²³. Although there is a Spanish-language version of the MSLSS available²⁵, the scale was translated from the original English version to adapt the language to Chilean culture. Two bilingual translators translated the MSLSS from English to Spanish, and a third translator back-translated the Spanish version into English. The differences were resolved by discussion, and all translators agreed on the final version. In addition, the items of the School domain were reworded using “university” instead of school.

- *Satisfaction with Food-related Life Scale (SWFL)*: proposed and tested by Grunert et al.³, it consists of five items grouped into a single dimension (“Food and meals are positive elements”; “I am generally pleased with my food”; “My life in relation to food and meals is close to ideal”; “With regard to food, the conditions of my life are excellent”; “Food and meals give me satisfaction in daily life”). Respondents must indicate their degree of agreement with the statements using a 6-point Likert scale (1: disagree completely, 6: agree completely). This study used the Spanish versions of the SWFL, which has shown good levels of internal consistency in previous studies with Chilean university student samples⁸⁻¹⁰. In this study, the SWFL scale presented adequate levels of internal consistency (Cronbach’s $\alpha=0.836$). The average score of the SWFL was 19.18 (SD=4.92) out of a theoretical maximum of 30.
- *Subjective Happiness Scale (SHS)*: Developed by Lyubomirsky and Lepper²⁶, this instrument consists of four items on a 7-point Likert scale. The first item “is generally considered” goes from 1: a not very happy person, up to 7: a very happy person. The second item “compared with the majority of their peers, is considered” goes from 1: less happy up to 7: happiest. Items 3 “Some people are very happy. They enjoy life despite what happens, taking benefits from almost everything. To what extent does this characterization describe you?” and 4 “Some people are not very happy. Although they are not depressed, they never seem as happy as they could be. To what extent does this characterization describe you?” go from 1: Not at all up to 7: totally. This study used the Spanish version of the SHS, which has previously shown good levels of internal consistency in a study with Chilean university students¹⁰. In this study, the SHS presented good internal consistency (Cronbach’s $\alpha=0.875$). The average score of the SHS in the sample was 5.23 (SD=1.06) out of a theoretical maximum of 7.

Students were asked about the frequency of consumption of nine food groups categorized by the National Statistics Institute in the Surveys of Family Budgets²⁷. They were asked where they lived during the semester and the frequency of meals at their place of residence. Those who ate daily at their place of residence were asked with whom they shared their meals. In case of eating outside the residence, they were asked where they usually had their meals. It was enquired whether they had a food allowance card provided by the Chilean government. They were also asked about the perceived importance of food for their well-being using a 6-point Likert scale (1: not important at all, 6: totally and completely important). The students were asked to indicate the education level and occupation of the head of the household to determine the socioeconomic status (SES) according to Adimark²⁸. The combination of these two variables in a matrix made it possible to determine the SES of the household, corresponding to high and upper middle (ABC1), middle-middle (C2), lower middle (C3), low (D) and very low (E). Finally, their estimated weight and height were assessed in order to calculate their body mass index (BMI) (kg/m²).

Procedure

The execution of the study was approved by the Ethics Committee of the Universidad de La Frontera. Prior to the survey, the questionnaire was pretested with 30 students from said university with similar characteristics. As no problems were detected in the pretest, no changes were required in the questionnaire. The survey was administered through the online survey program QuestionPro, during March and May 2014. QuestionPro is an online service for conducting online research. It allows the creation and administration of survey and polls with different types of questions and formats and the distribution may be private (through email or direct links) or public distribution through social networks or embedded links²⁹. The participants signed informed consent statements before responding.

The MSLSS scale factors were extracted using principal component analysis, considering *eigenvalues* greater than 1 and a varimax factor rotation³⁰. To determine the adequacy of the factor analysis, the Kaiser-Meyer-Olkin (KMO) test and Bartlett’s test of sphericity were used. A cluster analysis (hierarchical conglomerates) was used to determine student types based on the MSLSS factors, with linkage by Ward’s method and the squared Euclidian distance as the measure of similarity between objects³⁰. This analysis was applied to the Z-scores resulting from the MSLSS factor analysis. The number of groups was determined based on the percentage change of the recomposed conglomeration coefficients. To describe the segments, Pearson’s Chi² test was applied to the discrete variables, and analyses of variance to the Z-scores re-

sulting from the factor analysis of the benefits. Because the Levene's statistic indicated non-homogeneous variances in all the continuous variables analysed, the variables for which the analysis of variance resulted in significant differences ($P < 0.001$) were subjected to Dunnett's T3 multiple comparisons test. The programme used was SPSS v. 16.0 (SPSS, 2007) for Windows.

Results

Most students in the sample live with their parents year-round (46.6%) and belong to the SES C2 (25.9%) and C3 (31.1%). 36.7% of the sample asserts that food issues are important for their well-being, while 38.7% considered them to be "very important". 49.5% of the sample has a food allowance card provided by the government (Table I).

The average diet of most participants consists of bread (68.2%), soft drinks (46.6%), sugar, coffee and tea (68.9%), milk and dairy products (42.0%) and vegetables (47.2%) on a daily basis; fruits are reported to be consumed daily or two to three times per week (40.7% and 25.9%, respectively). Also two to three times per week, students consume cereals and pasta (56.4%) and meat (51.8%). Fish and seafood (50.5%) are consumed occasionally (Table II). Regarding the frequency of meals at the residence, the largest proportion of students eat breakfast and lunch there daily (45.9 y 36.4%, respectively) or two to three times per week (23.6 y 34.8%, respectively). Most participants skip dinner (42.0%). Considering students that eat breakfast daily at where they live, 70.0% eat alone due to the incompatibility of schedules with other mem-

bers of their residence. Among those who have lunch daily at where they live, 44.5% have lunch with their family and 31.8% do it alone due to incompatibility of schedules. Among students who have dinner on a daily basis where they live, 55.6% do so in the company of their family (Table III). Among those who eat breakfast daily outside of their residence, 26.5% have breakfast in a university cafeteria and 32.9% skip this meal. Out of students who do not eat lunch daily at their place of residence, 52.3% have lunch at the university main cafeteria, 14.0% bring lunch from home and 10.9% eat at smaller cafeterias in campus. Among those who do not eat dinner daily in their place of residence, 75.0% skip this meal (Table IV).

The average BMI of the sample was 23.98 kg/m² (SD=3.64). The nutritional status of the participants, according to the norms of the World Health Organization, were 1.3% low weight, 70.2% in the normal range, 22.3% with overweight (BMI \geq 25) and 6.2% with obesity (BMI \geq 30).

Using factor analysis, the MSLSS five-factor structure was confirmed and grouped 26 of the 30 original items, with an explained variance of 64.5% (Table V). The item "I like my family's house" from the Living environment domain was eliminated because it did not load on a single factor. Likewise, items "University is interesting", from the University domain and "I have fun being around other people" from the Self domain were deleted. The item "I have learned a lot in the university" from the University domain was eliminated because it presented communality values below 0.4. Hence, the MSLSS with the remaining 26 items presented adequate levels of internal consistency, in general (Cronbach's $\alpha=0.91$) and in each of its

Table I
Socio-demographic characteristics, importance of eating habits for well-being and posesión de una food allowance card (%) of university students sample from Chile, May 2014

| | | |
|--|--|------|
| Place of residence during study period | With parents the entire year | 46.6 |
| | With parents the entire year although he/she travels for the day to attend class | 10.2 |
| | With their parents only on weekends or for holidays | 30.2 |
| | Independent of parents | 13.1 |
| Socio-economic status | ABC1 (high and upper middle) | 14.8 |
| | C2 (middle-middle) | 25.9 |
| | C3 (lower middle) | 31.1 |
| | D (low) | 20.2 |
| | E (very low) | 7.9 |
| Importance of eating habits for well-being | Not important at all | 1.0 |
| | Very little important | 1.3 |
| | Slightly important | 8.2 |
| | Important | 36.7 |
| | Very important | 38.7 |
| | Totally and completely important | 14.1 |
| Has a food allowance card provided by the Chilean government | Yes | 49.5 |
| | No | 50.5 |

Table II
Eating habits (%) of university students sample from Chile, May 2014

| | | |
|---|------------------|------|
| Frequency of consumption of bread | Daily | 68.2 |
| | 2-3 times a week | 20.3 |
| | Once a week | 3.6 |
| | Occasionally | 4.9 |
| | Does not consume | 3.0 |
| Frequency of consumption of cereals and pasta | Daily | 22.0 |
| | 2-3 times a week | 56.4 |
| | Once a week | 16.7 |
| | Occasionally | 3.6 |
| | Does not consume | 1.3 |
| Frequency of consumption of meat | Daily | 23.3 |
| | 2-3 times a week | 52.8 |
| | Once a week | 11.1 |
| | Occasionally | 8.2 |
| | Does not consume | 5.6 |
| Frequency of consumption of fish and seafood | Daily | 0.7 |
| | 2-3 times a week | 11.1 |
| | Once a week | 25.9 |
| | Occasionally | 50.5 |
| | Does not consume | 11.8 |
| Frequency of consumption of milk and dairy products | Daily | 35.1 |
| | 2-3 times a week | 42.0 |
| | Once a week | 13.1 |
| | Occasionally | 7.9 |
| | Does not consume | 2.0 |
| Frequency of consumption of fruits | Daily | 25.9 |
| | 2-3 times a week | 40.7 |
| | Once a week | 15.4 |
| | Occasionally | 15.7 |
| | Does not consume | 2.3 |
| Frequency of consumption of vegetables | Daily | 47.5 |
| | 2-3 times a week | 36.7 |
| | Once a week | 8.9 |
| | Occasionally | 5.6 |
| | Does not consume | 1.3 |
| Frequency of consumption of soft drinks | Daily | 46.6 |
| | 2-3 times a week | 26.6 |
| | Once a week | 10.2 |
| | Occasionally | 12.5 |
| | Does not consume | 4.3 |
| Frequency of consumption of sugar, coffee and tea | Daily | 68.9 |
| | 2-3 times a week | 15.4 |
| | Once a week | 4.9 |
| | Occasionally | 5.9 |
| | Does not consume | 4.9 |

domains. The value of the KMO sample adequacy test is considered excellent, and Bartlett's test of sphericity was significant ($p \leq 0.001$)³⁰. This finding is consistent with that obtained by Jovanovic and Zuljevic²⁴ in Serbia, who found a better fit with a 25-item model, excluding all negatively worded and some positively

worded items. The average score the MSLSS was 4.45 (SD=0.59) out of a theoretical maximum of 6. The Pearson correlation between MSLSS and SWFL was 0.389 ($p < 0.01$).

Using a cluster analysis, four student types were detected with significant differences in the Z-scores

Table III

Frequency of meals at the residence and companions with whom the students eat daily at the place of residence (%) of university students sample from Chile, May 2014

| | | |
|--|--------------------------------------|------|
| Frequency of breakfast at the residence | Daily | 45.9 |
| | Two or three times a week | 23.6 |
| | Only on weekends | 4.6 |
| | Occasionally | 17.4 |
| | Never | 5.2 |
| | Does not have breakfast | 3.3 |
| Frequency of lunch at the residence | Daily | 36.4 |
| | Two or three times a week | 34.8 |
| | Only on weekends | 13.4 |
| | Occasionally | 11.1 |
| | Never | 3.6 |
| | Does not have lunch | 0.7 |
| Frequency of diner at the residence | Daily | 26.9 |
| | Two or three times a week | 9.2 |
| | Only on weekends | 1.3 |
| | Occasionally | 10.8 |
| | Never | 9.8 |
| | Does not have diner | 42.0 |
| Companions for breakfast at the place of residence (daily) | With their family | 19.3 |
| | With roommates | 3.6 |
| | Alone, due to incompatible schedules | 70.0 |
| | Alone, because they live alone | 7.1 |
| Companions for lunch at the place of residence (daily) | With their family | 44.5 |
| | With roommates | 17.3 |
| | Alone, due to incompatible schedules | 31.8 |
| | Alone, because they live alone | 6.4 |
| Companions for dinner at the place of residence (daily) | With their family | 55.6 |
| | With roommates | 17.2 |
| | Alone, due to incompatible schedules | 22.2 |
| | Alone, because they live alone | 4.9 |

Table IV

Place where the student eats in case he/she doesn't eat at the place of residence (%) of university students sample from Chile, May 2014

| | | |
|---|--|------|
| Place where the student eats breakfast, in case it is not at the place of residence | University main cafeteria | 17.4 |
| | Smaller cafeteria in campus | 26.5 |
| | Food stand in campus or nearby | 7.1 |
| | Buys snacks in a store near campus | 4.5 |
| | Brings food from home and eats it anywhere | 11.6 |
| | Skips breakfast | 32.9 |
| Place where the student eats lunch, in case it is not at the place of residence | University main cafeteria | 52.3 |
| | Smaller cafeteria in campus | 10.9 |
| | Food stand in campus or nearby | 3.1 |
| | Fast food restaurant near campus | 9.3 |
| | Buys snacks in a store near campus | 4.6 |
| | Brings food from home and eats it anywhere | 14.0 |
| Place where the student eats dinner, in case it is not at the place of residence | University main cafeteria | 3.1 |
| | Smaller cafeteria in campus | 5.2 |
| | Food stand in campus or nearby | 5.1 |
| | Fast food restaurant near campus | 6.2 |
| | Brings food from home and eats it anywhere | 5.3 |
| | Skips dinner | 75.0 |

Table V
Results of factor analysis of principal components for the MSLSS in university students from various regions of Chile, May 2014.

| | <i>Components</i> | | | | |
|--|-------------------|----------------|-------------|---------------------------|-------------------|
| | <i>Family</i> | <i>Friends</i> | <i>Self</i> | <i>Living environment</i> | <i>University</i> |
| My family gets along well | 0.814 | -0.014 | 0.065 | 0.149 | 0.081 |
| I like being at home with my family | 0.797 | 0.114 | 0.119 | 0.109 | 0.007 |
| My family is better than most | 0.794 | 0.103 | 0.129 | 0.152 | -0.061 |
| The members of my family speak well... | 0.774 | 0.094 | 0.073 | 0.128 | 0.057 |
| My parents and I do fun things together | 0.746 | 0.142 | 0.142 | 0.139 | 0.060 |
| My parents treat me fairly | 0.739 | 0.185 | 0.087 | 0.000 | 0.024 |
| I like spending time with my parents | 0.731 | 0.170 | 0.128 | 0.048 | 0.083 |
| My friends are excellent | 0.172 | 0.857 | 0.099 | 0.073 | 0.128 |
| My friends help me if I need it | 0.089 | 0.824 | 0.125 | 0.125 | 0.127 |
| I have a lot of fun with my friends | 0.140 | 0.754 | 0.056 | 0.112 | 0.030 |
| My friends treat me well | 0.095 | 0.750 | 0.272 | 0.046 | 0.067 |
| My friends are nice | 0.217 | 0.694 | 0.234 | 0.019 | -0.027 |
| I have enough friends | 0.062 | 0.664 | 0.160 | 0.153 | 0.112 |
| Most people like me | 0.059 | 0.084 | 0.813 | 0.087 | 0.097 |
| I think I'm good looking | 0.112 | 0.174 | 0.811 | 0.116 | 0.042 |
| I consider myself a nice person | 0.165 | 0.103 | 0.763 | 0.075 | 0.078 |
| I like how I am | 0.223 | 0.236 | 0.756 | 0.169 | 0.031 |
| There are many things I do well | 0.028 | 0.258 | 0.691 | 0.086 | 0.202 |
| I like to try new things | 0.109 | 0.084 | 0.554 | -0.021 | 0.089 |
| I like where I live | 0.186 | 0.093 | 0.064 | 0.871 | -0.059 |
| I like my neighborhood | 0.102 | 0.159 | 0.076 | 0.859 | -0.047 |
| I like my neighbors | 0.214 | 0.083 | 0.032 | 0.676 | 0.211 |
| There are many fun things to do where I live | 0.090 | 0.114 | 0.219 | 0.655 | 0.116 |
| I like being in the university | 0.052 | 0.151 | 0.153 | 0.041 | 0.828 |
| I look forward to going to the university | 0.081 | 0.039 | 0.034 | 0.129 | 0.814 |
| I like university activities | 0.028 | 0.142 | 0.264 | -0.002 | 0.743 |
| Variance explained by component (%) | 29.65 | 11.98 | 8.43 | 7.72 | 6.64 |
| Cumulative variance (%) | 29.65 | 41.64 | 50.08 | 57.80 | 64.45 |
| Cronbach's α per component | 0.90 | 0.86 | 0.86 | 0.85 | 0.79 |

Extraction method: principal components analysis. Rotation method: Varimax with Kaiser Normalization. Rotation converged in five iterations. Measure of sampling adequacy: Keiser-Meyer-Olkin (KMO) = 0.868. Bartlett's Test of Sphericity, approximate Chi-square = 4297.013; $gl = 325$; $p = 0.000$. Note: the remaining item should qualified the following standards: the eigenvalues of each extracted factor should be more than 1.000; the factor loadings of each reserved item should be more than 0.40; each item should be only loaded on a single factor; each factor should include at least 3 items.

(Table VI) of the five components obtained from the MSLSS ($p \leq 0.001$). The types differed significantly in the scores of the SWFL, MSLSS and SHS ($p \leq 0.001$) (Table VII). They also differed in owning a food allowance card, gender, importance of food for the well-being and SES ($p \leq 0.05$) (Table VIII).

Group 1, Satisfied with their food-related life, with their self and university (33.4%): This group scored significantly higher than the other groups on the Self and University domains. Participants in this group had a low score on Friends (Table VI). These students scored significantly higher on SWLF and SHS scales

than Groups 3 and 4. The MSLSS total score was significantly lower than Group 2 (Table VII). Group 1 had a higher proportion of students with a food allowance card (58.8%) and that belonged to the SES C3 (39.2%) (Table VIII).

Group 2, Satisfied with their food-related life, with their family, friends and living environment (20.7%): This group scored significantly higher than the rest of groups on Family, Friends and Living environment domains (Table VI). This group had the highest scores on the SWFL and SHS scales, although there were no statistical differences with Group 1 (Table VII). Group 2 had the highest score on the MSLSS, significantly higher than the rest of the groups. Group 2 had more students who considered that food is “totally and completely important” for their well-being (26.4%) and that belonged to the SES E (15.1%) (Table VIII).

Group 3, Moderately satisfied with their food-related life, dissatisfied with their family and self (21.3%): This group scored the lowest on Family and Self, although the latter did not differ statistically from Group 4 (Table VI). Group 3 scored significantly lower than Groups 1 and 2 on SWFL, MSLSS and SHS scales (Table VII). Group 3 consisted of a higher proportion of students that belonged to the SES C2 (45.5%).

Group 4, Moderately satisfied with their food-related life, dissatisfied with their friends and university (24.6%): This group scored significantly lower

than the rest of the groups on Friends and University. It also had a low score on Self, although it did not differ significantly from Groups 2 and 3 (Table VI). Students in this group had significantly lower scores on the SWFL, MSLSS and SHS scales than Groups 1 and 2. Group 4 consisted of a higher proportion of students who did not own a food allowance card (62.1%), male (57.6%), and who considered that food is not at all important for their well-being (4.5%) (Table VIII).

Discussion

The results confirm a five-factor structure for the MSLSS in a sample of university students from different regions of Chile, showing adequate global and domain internal consistency, with 26 out of the 30 original items of the abbreviated version²³. Therefore, the MSLSS may be useful to measure domain-specific life satisfaction in university students.

From the Z-scores of the Family, Friends, Self, Living environment and University domains, four student types were distinguished, which differed in MSLSS domain and global scores, SWFL and SHS scores. They also differed in ownership of a food allowance card, gender, assigned importance to food for well-being and SES. The types did not differ in the frequency of consumption of food groups, place of residence during the semester, frequency of meals in and out of the place of residence, nor BMI. These results contradict

Table VI
Z-score averages of groups obtained from cluster analysis, students of state universities in Chile, May 2014

| Component | Group 1 (n = 102) | Group 2 (n = 63) | Group 3 (n = 65) | Group 4 (n = 75) | F | P-value |
|--------------------|----------------------|---------------------|---------------------|---------------------|--------|---------|
| Family | 0.194 b | 0.698 a | -1.391 c | 0.302 b | 65.978 | 0.000 * |
| Friends | -0.162 c | 0.829 a | 0.310 b | -0.855 d | 35.500 | 0.000 * |
| Self | 0.493 a | -0.114 bc | -0.537 c | -0.405 c | 17.369 | 0.000 * |
| Living environment | 0.143 b | 0.712 a | 0.248 b | -0.051 b | 92.050 | 0.000 * |
| University | 0.600 a | -0.181 b | -0.193 b | -0.753 c | 27.044 | 0.000 * |

*Significant at 1%. Letters in horizontal orientation indicate statically significant differences according to Dunnett's T3 Comparison test (p≤0.001) for non-homogeneous variables.

Table VII
Average scores for the SWFL, 26-item version MSLSS and SHS scales in groups obtained by cluster analysis in university students from various regions in Chile. May 2014

| | Group 1 (n = 102) | Group 2 (n = 63) | Group 3 (n = 65) | Group 4 (n = 75) | F | P-value |
|-------|----------------------|---------------------|---------------------|---------------------|--------|---------|
| SWFL | 20.19 a | 20.67 a | 17.85 b | 17.33 b | 6.046 | 0.000 |
| MSLSS | 4.73 b | 5.04 a | 3.95 c | 4.17 c | 69.285 | 0.000 |
| SHS | 5.50 a | 5.53 a | 4.75 b | 4.97 b | 7.056 | 0.000 |

*Significant at 1%. Letters in horizontal orientation indicate statically significant differences according to Dunnett's T3 Comparison test (p≤0.001) for non-homogeneous variables.

Table VIII
Characteristics (%) with statistically significant differences in groups of university students from various regions of Chile obtained by cluster analysis. May 2014

| | Group 1 (n = 102) | Group 2 (n = 63) | Group 3 (n = 65) | Group 4 (n = 75) |
|--------------------------------------|----------------------|---------------------|---------------------|---------------------|
| Food allowance card | | | | |
| | | | | |
| Yes | 58.8 | 49.1 | 40.0 | 37.9 |
| No | 41.2 | 50.9 | 60.0 | 62.1 |
| Gender | | | | |
| | | | | |
| Male | 38.2 | 30.8 | 30.9 | 57.6 |
| Female | 61.8 | 69.2 | 69.1 | 42.4 |
| Importance food on well-being | | | | |
| | | | | |
| Not at all important | 0.0 | 0.0 | 0.0 | 4.5 |
| Very little important | 2.0 | 1.9 | 0.0 | 1.5 |
| A little important | 5.9 | 5.7 | 12.7 | 12.1 |
| Important | 44.1 | 41.5 | 38.2 | 28.8 |
| Very important | 44.1 | 41.5 | 38.2 | 28.8 |
| Totally and completely important | 14.7 | 26.4 | 7.3 | 6.1 |
| Socio-economic status | | | | |
| | | | | |
| ABC1 (high and upper middle) | 14.7 | 22.6 | 9.1 | 16.7 |
| C2 (middle-middle) | 17.6 | 18.9 | 45.5 | 31.8 |
| C3 (lower middle) | 39.2 | 24.5 | 25.5 | 31.8 |
| D (low) | 23.5 | 18.9 | 14.5 | 13.6 |
| E (very low) | 4.9 | 15.1 | 5.5 | 6.1 |

reports indicating that university students living with their family have more healthful eating habits^{8,10,13,15-18}, which relate to higher satisfaction with their life and food related-life^{8,10} and lower overweight and obesity prevalence^{8,10,18}. Some studies also assert that living with friends and classmates during the semester may negatively influence students' eating habits^{8,10,19}. This in turn is linked to living conditions^{13,14,16,18-20}, by associating the type of nutrition (healthful or unhealthful) to whether they are living with their family, peers or in dormitories during the semester. Evidence indicates that the quality of the living environment affects the SWB in adolescents^{2,24}. According to Oberle et al.³¹, supportive and positive relationships with peers and non-related adults in the community are significantly and positively related to life satisfaction. This may help explain higher scores in Group 2 for the Living environment domain, as well as for the SWFL, SHS and MSLSS.

Inconsistencies between the literature cited and the results of this study on the Family and Friends domains may relate to the MSLSS items that make up these domains, which mainly focus on the social interaction of students with their families and friends. The pleasure of eating is associated with social interaction, es-

pecially in university students¹³. In this respect, it has been reported that students who receive more social support from their family are more satisfied with their life^{10,31-33}, with their food-related life¹⁰ and experience more happiness^{10,33}. This is consistent with the highest scores in Group 2, and the lowest scores in Group 3 in SWFL, MSLSS and SHS and the Family domain, respectively. However, the characteristics of Group 4, statistically similar to Group 3 on SWFL, MSLSS, SHS scores and an intermediate score on Family, suggest that satisfaction with family alone is not enough.

Peers, particularly roommates and partners, seem to have the largest influence on students, positively and negatively, by acting as role models and providing both social support¹⁶ and social pressure^{16,17}. In a qualitative study with UK university students, Brown et al.¹¹ concluded that eating involved socialising and building relationships, and that being in company with friends enhanced the experience of eating, which in turn made them experience more happiness. The opposite can become a strong source of social pressure and it may be associated with feelings of loneliness and even stigmatization¹¹. Also, there is evidence that social support from friends and peers has a major influence on life satisfaction^{24,31}. This is consistent with

the higher scores for Group 2 and lower scores for Group 4 on the SWFL, MSLSS, SHS and the Friends domain. However, the characteristics of Group 3, with statistically similar scores to Group 4 in SWFL, MSLSS, SHS, and an intermediate score on Friends, allows suggesting that satisfaction with friends alone is not enough either. This may be associated with low scores on Self by groups 3 and 4, which had the lowest scores on the SWFL, MSLSS and SHS. Goodwin and Hernández³² found that perceived support from friends was significantly correlated with self-esteem. In university students, SWB is linked to positive relations to people who are the closest (especially friends) and positive evaluations of oneself³⁴. In this regard, students in Groups 3 and 4 scored particularly low on the Self items “Most people like me”, “I like how I am” and “I think I’m good looking”, which would partly explain the lower scores on the SHS, representing the affective component of SWB.

Similarly, although no significant differences in BMI were obtained among the student groups, these results may be linked to low satisfaction with food-related life. There is evidence that people unsatisfied with their body image turn to eating as an immediate distraction to avoid and forget negative feelings on their corporeality, thus reducing anxiety and threats to the self²¹, which may affect negatively their satisfaction with food-related life. Students with important weight fluctuations are reportedly less satisfied with their food-related life than those who maintain their weight⁹ and thus may be more satisfied with their body image. This aspect is a highly relevant variable for university students, who generally aspire to be attractive to others¹⁷ and adjust to the sociocultural Thin Ideal image¹³. Additionally, students who reported greater body dissatisfaction had poorer social and academic adjustment²⁰. This is in line with the low scores for Group 4 on Friends, Self and University. Therefore, it is reasonable to expect that adjustment problems may contribute to a declining SWB²⁰, while the opposite happens in Group 1, with high scores on Self and University. Educational institutions may operate as a protective force for young individuals, and it is positively related to well-being, self-esteem, and academic engagement, achievement and adjustment³¹. This is noteworthy and must be considered by university authorities, given that more positive perceptions of the university environment tend to be associated with greater student engagement in educational experiences and in the learning process and, in turn, academic success³⁵.

Differences in the SES composition between Groups 1, 2 and 3 confirm that this variable is related to students’ life satisfaction^{2,10}, satisfaction with food-related life and happiness¹⁰. The budgetary restrictions that affect university students negatively impacts their SWB^{10,36}, the quality of their eating habits^{11,14-16} and their food-related life¹⁰. However, contrary to the findings of these studies, the present research reports that

the lowest scores for SWFL, MSLSS and SHS belonged to Group 3, with a higher proportion of students from the SES C2. On the other hand, Group 2 had the highest scores in these scales and had a higher proportion of students from families of the SES E. In this regard, Lyubomirsky et al.³⁷ have asserted that family social support satisfies fundamental needs for acceptance, belonging and love, which cannot be satisfied by economic security alone, as occurs in Group 2 (the highest score in the Family domain) and Group 3 (the lowest score). Regarding Group 1, with high scores on the SWFL and SHS scales, intermediate scores on the MSLSS and the Family domain, and higher presence of students from the SES C3, it can be suggested that budgetary constraints that may affect their SWB are counterbalanced by greater satisfaction in other domains such as Self and University.

In the case of the food domain, the highest level of satisfaction with food-related life may be linked to ownership of a food allowance card provided by the Chilean government. This may allow students to meet their food needs and experience positive levels of satisfaction with food-related life and in the University domain. This is in line with the findings of Gaines et al.¹⁵ in a sample of university students in the USA, in which they found that food assistance improves students’ nutrition. Also, this result is in contrast to studies indicating easy access to unhealthful food in campus which affects students negatively^{13,17,19}. On the contrary, holders of the food allowance card provided by the Chilean government have access to healthful food.

Finally, Group 2 had the highest proportion of students who believe that food is “totally and completely important” to their well-being, and the higher presence of students from Group 4 who believe that food is “not at all important” to their well-being. In part, these differences may be due to a higher presence of men in Group 4, because women tend to be more concerned with food and eating behaviour than men¹⁹. Additionally, this confirms that students’ assigned importance to food for their well-being relates to satisfaction with life and with food-related life^{8,9}. Therefore, there is a need to foster educational campaigns about the importance of food for a higher well-being, physical but also psychological.

Thus, it is possible to indicate that life satisfaction, measured through the MSLSS, relates to satisfaction with food-related life and subjective happiness in university students. These components of SWB are related to satisfaction in other domains, such as family, friends, self, and university. However, the results obtained indicate that similar levels of satisfaction with life, with food-related life and happiness may be associated with satisfaction in different life domains, i.e. higher levels of SWB may be associated with greater satisfaction with the Self and University, but these levels can also be achieved through greater satisfaction with family and friends. This suggests that satisfaction

in some domains counterbalance the lower satisfaction in others.

Limitations of this study include the non-probabilistic nature of the sample and its relatively small size, which does not allow generalization of the results. Also, all data were self-reported, thus responses may be affected by social desirability and recall or response bias. Another limitation of the study lies in asking only the frequency of food consumption and not the amount ingested; therefore, it is not possible to analyse the real nutritional contribution of their intake. These aspects must be dealt with in future studies.

Based on the results obtained, the following can be concluded:

- Four types of university students were distinguished that differ significantly in the MSLSS global and domain scores, SWFL and SHS scores, gender, ownership of a food allowance card funded by the Chilean government, importance attributed to food for well-being and socioeconomic status.
- Higher levels of life satisfaction and happiness are associated with greater satisfaction with food-related life. Other major life domains that affect students' subjective well-being are Family, Friends, University and Self.
- Greater satisfaction in some domains may counterbalance the lower satisfaction in others. However, students reporting satisfaction in more domains of the MSLSS tend to have higher levels of life satisfaction, satisfaction with food-related life and happiness.
- Higher levels of satisfaction with food-life are related to the importance of food assigned by the students to their well-being.

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