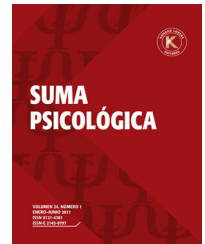




SUMA PSICOLÓGICA

www.elsevier.es/sumapsicol



Psychometric properties of the Multidimensional Students' Life Satisfaction Scale in a sample of Chilean university students

Berta Schnettler^{a,*}, Ligia Orellana^{b,c}, José Sepúlveda^{b,c}, Horacio Miranda^a, Klaus Grunert^d, Germán Lobos^e, Clementina Hueche^c

^a Departamento de Producción Agropecuaria, Facultad de Ciencias Agropecuarias y Forestales, Universidad de La Frontera, Temuco, Chile

^b Department of Psychology, University of Sheffield, Western Bank, Sheffield, South Yorkshire S10 2TN, United Kingdom

^c Centro de Excelencia de Psicología Económica y del Consumo, Universidad de La Frontera, Temuco, Chile

^d MAPP Centre, Aarhus University, Aarhus, Denmark

^e Escuela de Ingeniería Comercial, Facultad de Economía y Negocios, Universidad de Talca, Talca, Chile

ARTICLE INFO

Article history:

Received 14 March 2017

Accepted 5 June 2017

Available online 21 July 2017

Keywords:

Life satisfaction

Multidimensional life satisfaction

University students

Confirmatory factor analysis

ABSTRACT

The Multidimensional Students' Life Satisfaction Scale is an instrument to assess life satisfaction in children and adolescents in five life domains. However, research on multidimensional life satisfaction in older students, such as those attending university, is still scarce. This paper undertook to evaluate the psychometric properties of the Multidimensional Students' Life Satisfaction Scale in a sample of university students from five state universities in Chile. The Multidimensional Students' Life Satisfaction Scale and Satisfaction with Life Scale were applied to 369 participants. Confirmatory factor analysis was used to evaluate the expected correlated five-factor model of the long version (40 items) and the abbreviated version (30 items) of the Multidimensional Students' Life Satisfaction Scale. The goodness-of-fit values obtained from confirmatory factor analysis revealed that the data fit better to the 30-items and five-factor structure than to the 40-item structure. The convergent, concurrent and discriminant validity of the 30-item version was demonstrated. The 30-item version of the Multidimensional Students' Life Satisfaction Scale may be a promising alternative to measure satisfaction in different life domains in university students, and a valuable tool for differential assessments that guide research and intervention on this population.

© 2017 Fundación Universitaria Konrad Lorenz. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

* Corresponding author.

E-mail address: berta.schnettler@ufrontera.cl (B. Schnettler).

<http://dx.doi.org/10.1016/j.sumpsi.2017.06.001>

0121-4381/© 2017 Fundación Universitaria Konrad Lorenz. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Propiedades psicométricas de la Escala Multidimensional de Satisfacción con la Vida en Estudiantes en una muestra de estudiantes universitarios chilenos

R E S U M E N

Palabras clave:

Satisfacción con la vida
Satisfacción multidimensional
con la vida
Estudiantes universitarios
Análisis factorial confirmatorio

La Escala Multidimensional de Satisfacción con la Vida en Estudiantes mide la satisfacción con la vida en la niñez y adolescencia en cinco dominios de la vida. La investigación sobre satisfacción multidimensional con la vida es escasa en estudiantes de mayor edad, como aquellos que asisten a la Universidad. El objetivo de este estudio es evaluar las propiedades psicométricas de la Escala Multidimensional de Satisfacción con la Vida en Estudiantes en una muestra de estudiantes de cinco universidades estatales de Chile. La Escala Multidimensional de Satisfacción con la Vida en Estudiantes y la Escala de Satisfacción con la Vida fueron respondidas por 369 participantes. Se utilizó el análisis factorial confirmatorio para evaluar el modelo esperado de cinco factores de las versiones larga (40 ítems) y abreviada (30 ítems) de la Escala Multidimensional de Satisfacción con la Vida en Estudiantes. Los valores de bondad de ajuste obtenidos revelaron que los datos se ajustaron mejor a la escala de 30 ítems y a la estructura de cinco factores. La validez convergente, concurrente y discriminante de esta versión fue demostrada. La versión de 30 ítems de la Escala Multidimensional de Satisfacción con la Vida en Estudiantes puede constituir una alternativa prometedora para medir la satisfacción de estudiantes universitarios en distintos dominios de la vida, así como una herramienta valiosa para la evaluación diferencial que guíe la investigación e intervención en esta población.

© 2017 Fundación Universitaria Konrad Lorenz. Publicado por Elsevier España, S.L.U.

Este es un artículo Open Access bajo la licencia CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Satisfaction with life is defined as the overall assessment people make about their life and specific domains of it (Diener & Ryan, 2009; Diener, Suh, Lucas, & Smith, 1999). Much of its research has relied upon global measures, and while this one-dimensional perspective provides useful information, it may mask distinctions between life domains (Casas et al., 2014; Diener & Ryan, 2009; Rodríguez-Fernández, Ramos-Díaz, Ros, Fernández-Zabala, & Revuelta, 2016; Weber & Huebner, 2015). A multidimensional approach may provide richer, differentiated profiles (Brunner & Süß, 2005; Gilligan & Huebner, 2002; Tian, Zhang, & Huebner, 2015; Weber & Huebner, 2015; Yuen, 2013), indicating the relative importance of each domain for global satisfaction, and the correlates, predictors and outcomes of domain-specific satisfaction (González-Villalobos & Morrero, 2017; Jovanovic & Zuljevic, 2013).

The Multidimensional Students' Life Satisfaction Scale (MSLSS; Huebner, 1994) is a 40-item instrument for children and adolescents, aimed at measuring both overall life satisfaction and satisfaction across five domains: family, friends, school, living environment and self. The Family domain items refer to the respondents' satisfaction with their relationship with family members as well as the family members' relationships with each other. The School domain items look at the respondents' satisfaction with school life in terms of interest, learning, and educational activities. The Friends domain items aim to explore the adolescents' satisfaction with their peers. The self-domain entails the respondent's level of satisfaction with himself or herself and other people's opinion in that regard. Lastly, the Living environment domain items explore the satisfaction with the immediate community and people in the respondents' neighborhood (Galíndez & Casas,

2011). The MSLSS validation studies have been conducted in adolescent samples from the US and Canada (Bradley, Cunningham, & Gilman, 2014; Greenspoon & Saklofske, 1997, 1998; Weber & Huebner, 2015), Spain (Casas, Alsinet, Rosich, Huebner, & Laughlin, 2001; Galíndez & Casas, 2011), Korea (Park, Huebner, Laughlin, Valois, & Gilman, 2004), Ireland, China and South Korea (Gilman et al., 2008), Turkey (Irmak & Kuruüzüm, 2009), England (Sawatzky, Ratner, Johnson, Kopec, & Zumbo, 2009), Iran (Hatami, Motamed, & Ashrafzadeh, 2010), Serbia (Jovanovic & Zuljevic, 2013), Italy (Zappulla, Pace, Lo Cascio, Guzzo, & Huebner, 2014) and Hong-Kong (Yuen, 2013; Yuen, 2016; Yuen & Lee, 2016; Yuen, Lee, & Leung, 2016). Internal consistency for the total measure and for the domains has been tested in adolescents from Croatia (Huebner, Suldo, & Gilman, 2006), France (Fenouillet, Heutte, Martin-Krumm, & Boniwell, 2015), Brazil (Barros, Petribú, Sougey, & Huebner, 2014) and Chile (Chavarría & Barra, 2014).

However, the CFA model fit indices have been found to vary considerably across samples (Jovanovic & Zuljevic, 2013). Some studies provided good fit indices for the 40-item five-factor model (Gilman, Huebner, & Laughlin, 2000; Park et al., 2004), whereas others yielded fit indices that did not fall within the acceptable boundaries (Greenspoon & Saklofske, 1998; Hatami et al., 2010; Irmak & Kuruüzüm, 2009; Jovanovic & Zuljevic, 2013; Sawatzky et al., 2009). In light of interpretability problems regarding 10 negatively worded items, Huebner, Zullig, and Saha (2012) proposed an abbreviated 30-item version of the MSLSS that does not compromise the five-factor original structure (Huebner et al., 2012). The CFA conducted by Zappulla et al. (2014) provided support this abbreviated version.

Research on life satisfaction in students over 18 years old has been measured mostly as a one-dimensional construct (Cárdenas et al., 2012; Chico & Ferrando, 2008; Díaz & Sánchez-López, 2001; Diener, Emmons, Larsen, & Griffin, 1985; Matheny, Roque-Tovar, & Curette, 2008; Rodríguez-Fernández et al., 2016; Soares, Guisande, Diniz, & Almeida, 2006). Research on multidimensional life satisfaction in university students is scarce, and is based on the brief version of the MSLSS (Bueno, Wachholz, & Gonçalves, 2010; Inzunza et al., 2014; Seligson, Huebner, & Valois, 2003; Tian et al., 2015; Zullig, Huebner, Patton, & Murray, 2009). The MSLSS may be useful for differential assessments that guide research on and intervention with university students, since enrollment in college involves approaching new experiences and environments in different life domains (Schnettler et al., 2017; Tian et al., 2015). In parallel, according to Arnett (2000), undergraduate students are in the phase of their lifespan called emerging adulthood, which describes young adults who do not have children, do not live in their own home, or do not have sufficient income to become fully independent in their early to late 20s. This author suggests that emerging adulthood is the distinct period between 18 and 25 years of age where adolescents become more independent from their family and explore various life possibilities (Arnett, 2000). Therefore, the life domains included in the MSLSS are still important to the university student's life. The validation of this scale in this population may provide a deeper knowledge about the student's levels of satisfaction in these domains than the brief version of the MSLSS, and each domain's contribution to the students' overall life satisfaction.

Although the MSLSS has been validated in Spanish-speaking adolescent populations, to our knowledge, its psychometric properties have not been assessed with university students. Thus, the aim of this study was to test the factor structure of the MSLSS on a sample of Chilean university students, and evaluate its psychometric properties using confirmatory factor analysis (CFA), for the long version (Huebner, 1994) and the abbreviated one (Huebner et al., 2012). We expected to demonstrate that the abbreviated version of the scale (30 items) has more robust psychometric properties than the long version (40 items) does.

Method

Participants

Data were collected from five state universities in different geographical areas of Chile (Universidad de Tarapacá, Arica; Universidad de Chile, Santiago; Universidad de Talca; Universidad de La Frontera, Temuco; Universidad de Magallanes, Punta Arenas). A convenience sample of 369 students participated in the study, with a mean age of 20.9 years ($SD = 2.27$); 46.3% were men and 53.7% women; 95.4% resided in an urban area. Most of the sample was of Chilean origin (90.5%), and the rest were from indigenous origin (Mapuche and Aymara). According to the education level of the head of the household, 13.8% of the students belonged to families in which the head of the household has primary studies, 35.8% secondary studies, 43.1% tertiary education, and 7.3 postgraduate studies.

21.4% of the sample belonged to the high and upper-middle socioeconomic status (SES), 28.2% to the middle-middle SES, 24.1% to lower-middle, 20.1% to the low, and 6.2% to the very low SES. The sample comprised mainly students living with their parents all year (57.2%) or on weekends or for vacations (23.0%). 10.6% of respondents live with parents the entire year although they commute for the day to attend class. 9.2% of respondents moved out of their parents' house and live independently.

Instruments

Multidimensional Students' Life Satisfaction Scale (MSLSS)

This is a 40-item self-report scale designed for children aged 8 to 18. It measures the youths' life satisfaction in five life domains: family friends, school, self and living environment. It is a 6-point Likert-type response scale, ranging from *completely disagree* to *completely agree*. Studies of the MSLSS have consistently demonstrated acceptable psychometric properties, including stability coefficients, strong evidence of construct validity as indicated by both confirmatory and exploratory factor analyses, and strong evidence for convergent and discriminant validity (Huebner & Gilman, 2002). Despite there being Spanish-language versions of the MSLSS available (Chavarría & Barra, 2014; Galíndez & Casas, 2011), the choice was made to translate the 40-item version of the scale from the original English version to adapt it to Chilean culture. Therefore, two bilingual translators translated the 40 items from English to Spanish. Subsequently, a third bilingual translator back-translated the Spanish version of the scale into English. The differences found were resolved by discussion, with all the translators agreeing on the final versions of the scale. In addition, the items of the School domain were reworded exchanging "university" for school (Table 1). To assess the internal consistency of the 40-item and 30-item version of the MSLSS, Cronbach's α coefficients were computed for the five domain scores.

Satisfaction with Life Scale (SWLS)

It was developed by Diener et al. (1985). This scale consists of five items grouped into a single factor to evaluate overall cognitive judgments about a person's own life. The respondents must indicate their degree of agreement with each statement using a 6-point Likert scale (1: *disagree completely*, 6: *agree completely*). This study used the Spanish-language version of the SWLS which has shown good internal consistency in previous studies with university students in Chile (Schnettler et al., 2013, 2015). In the present study, the SWLS showed a good level of internal consistency (Cronbach's $\alpha = 0.88$).

Finally, the students were asked to indicate their age, gender, area of residence, ethnic origin, domicile during the semester, and the education level and occupation of the head of the household. The last two variables are used to determine the socioeconomic status (Adimark, 2004), categorized as high, upper middle, middle-middle, lower middle, low, and very low.

Procedure

The Ethics Committee of Universidad de La Frontera approved the research protocol. A pilot test of the questionnaire was

Table 1 – Spanish translation of the items and factors of the Multidimensional Students' Life Satisfaction Scale (40-item version) developed by Huebner (1994).

Factor	Item
Family – familia	Me gusta pasar tiempo con mis padres
	Mi familia es mejor que la mayoría
	Me gusta estar en casa con mi familia
	Los miembros de mi familia se llevan muy bien juntos
	Mis padres me tratan de manera justa
	Los miembros de mi familia hablan bien el uno al otro
	Mis padres y yo hacemos cosas divertidas juntos
Friends – amigos	Mis amigos son agradables
	Lo paso mal con mis amigos*
	Mis amigos son excelentes
	Mis amigos me ayudan si lo necesito
	Mis amigos me tratan bien
	Mis amigos son malos conmigo*
	Me gustaría tener amigos diferentes*
	Me divierto mucho con mis amigos
Living environment – entorno	Tengo suficientes amigos
	Hay muchas cosas entretenidas que hacer donde vivo
	Me gustaría vivir en una casa diferente*
	Me gusta mi barrio
	Me gustaría vivir en otro lugar*
	La ciudad donde vivo está llena de malas personas*
	Me gusta la casa de mi familia
	Me agradan mis vecinos
	Me gusta el lugar donde vivo
University – universidad	Me gustaría que en mi barrio vivieran otras personas*
	Me siento mal en la universidad*
	He aprendido mucho en la universidad
	Hay muchas cosas en la universidad que no me gustan*
	Me gustaría no tener que ir a la universidad*
	Espero con ansias ir a la universidad
	Me gusta estar en la universidad
Self – sí mismo	La universidad es interesante
	Me gustan las actividades universitarias
	Me divierte estar con otras personas
	Hay muchas cosas que hago bien
	Creo que tengo buen aspecto
	Me gusta como soy
	Le agrado a la mayoría de las personas
	Me considero una persona agradable
	Me gusta probar cosas nuevas

* Reversed scored items.

conducted with 30 students from Universidad de La Frontera with similar characteristics as the sample and no problems were detected. Program directors from the universities chosen were contacted and asked for permission to apply the instrument. The inclusion criterion for the present study was being a student enrolled in first year (started in 2013) or third year (started in 2011) at their respective universities. The students were invited to answer the survey online through a link sent to

their e-mails and distributed by the university online platform. The site displayed introduced to the description and aims of the study, and they were also provided with the informed consent (available for download) that contained the ethical guidelines of the study and the conditions of participation. After confirming their consent, they proceeded to answer the instrument. The survey was administered through Question-Pro Inc. between June and August 2013. The response rate was 39%.

Statistical analysis

Descriptive analyses were conducted using SPSS v.20. A CFA was used to evaluate the expected correlated five-factor model for the MSLSS, for both the 40-item model and the 30-item model. The CFA was carried out first with the complete scale and then with only the non-reversal items. Analyses were conducted using LISREL 8.8 (Scientific Software International, Inc. Chicago, 2007). The parameters were estimated by robust maximum likelihood. The goodness-of-fit of the models was assessed using the following indices: χ^2 statistic, the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the comparative fit index (CFI) and the root mean square error of approximation (RMSEA). These indices are regarded as indicative of a good fit when GFI is greater than 0.90, AGFI greater than 0.80, CFI greater than 0.95, and RMSEA value is about 0.06 or lower (Hu & Bentler, 1999). In addition, a good fitting model has a non-significant χ^2 . However, with a large sample as in the present study, χ^2 can be significant even if the model fits the data. Therefore, the χ^2 ratio is also usually interpreted above degrees of freedom, with values lower than 2 indicating a good fit (Tabachnick & Fidell, 2001).

Convergent validity and discriminant validity were evaluated by composite reliability and average variance extracted (AVE). The convergent validity of the research instrument was assessed by three measures: item reliability, composite reliability and AVE (Fornell & Larcker, 1981). Item reliability indicates the amount of variance in an item due to the underlying construct rather than to error. Item reliability of at least 0.50, a significant t value, or both, observed for each item, is considered evidence of convergent validity (Chau, 1997). The composite reliability was obtained by an adaptation of Fornell and Larcker's formula, which calculates the proportion between the sum of the standardized factor loadings of the items of a factor squared, and the same amount plus the error variances associated with the items. A value for acceptable composite reliability is 0.70 (Hair, Anderson, Tatham, & Black, 1999). The AVE measures the amount of variance captured by the construct in relation to the amount of variance due to measurement error. When the AVE is less than 0.50, the variance due to measurement error is greater than the variance due to the construct. In this study, discriminant validity was tested following Fornell and Larcker's (1981), who compared the squared correlations between two constructs with their respective AVE. Discriminant validity is demonstrated if the AVE of both constructs is greater than its squared correlation. Pearson correlations between the MSLSS and the SWLS were used to measure concurrent validity.

Table 2 – Fit statistics of LISREL models.

Model	χ^2	χ^2/df	CFI	GFI	AGFI	RMSEA
40-Item model	1489.77*	2.04	0.91	0.75	0.71	0.069
30-Item model	783.48*	1.98	0.93	0.81	0.77	0.067

χ^2 : χ^2 test.

χ^2/df : degrees of freedom for chi-squared test.

CFI: comparative fit index.

GFI: goodness-of-fit index.

AGFI: adjusted goodness-of-fit index.

RMSEA: root mean square error of approximations.

* $p < .01$.

Results

The results related to the model fit are summarized in Table 2. The CFA representing the 40-item five-factor model revealed minimally acceptable fit to the data. Only the RMSEA value is close to the recommended value (Hu & Bentler, 1999). In the 40-item version, the Cronbach α were 0.75 (Family), 0.82 (Friends), 0.80 (University), 0.80 (Living Environment), 0.72 (Self) and 0.88 (Global).

The CFA representing the 30-item five-factor model, which excludes the reverse-keyed items (Huebner et al., 2012), revealed a better fit to the data. However, even though CFI, AGFI and CFI remain under the values recommended by Hu and Bentler (1999), it is noteworthy that the χ^2/df ratio indicates a good fit (Tabachnick & Fidell, 2001). In the 30-item version, the Cronbach α were 0.75 (Family), 0.84 (Friends), 0.79 (University), 0.75 (Living Environment), 0.72 (Self) and 0.86 (Global). Following CFA studies that have obtained a good fit to the data with less than 30 items (Jovanovic & Zuljevic, 2013; Sawatzky et al., 2009), models were tested with fewer items (e.g., item “I like myself”), but all of them revealed a poor fit. For that reason, convergent, discriminant and concurrent validity were tested in the 30-item model. As seen in Fig. 1, all t-values of this model were significant and all item reliabilities were greater than 0.50, except for three items.

The composite reliability values for each subscale of the 30-item five-factor model MSLSS were calculated, and as seen in Table 3, all of them were over 0.70. In the case of AVE values, the convergent validity of the construct was questionable. AVE values were calculated for all five dimensions, but only the value for the subscale Friends was greater than 0.50 (Table 3). Inter-correlations between five dimensions of the MSLSS are shown in Table 3, most of which were significant at 0.01 level, except the association between Family and University ($p > .1$). The levels of relationships between the subscales were moderate, the highest correlation being between Family and Friends, and between Self and Friends. Calculated squared correlations are given in Table 3. According to the results, the AVE of each pair of constructs was greater than its squared correlation, therefore discriminant validities were demonstrated in all the subscales.

Finally, concurrent validity was tested calculating Pearson correlations between the five dimensions of the MSLSS and the one-dimensional SWLS score (Table 4). The MSLSS full-scale and all dimension scores related significantly with the SWLS, although the correlation values were moderate or low. The

greater associations between the levels of SWLS and dimensions corresponded to Friends and Self. There were lower levels of relationships between Family, Living Environment and the SWLS. The lowest association found was between University and the SWLS.

Discussion

The MSLSS was designed to provide a multidimensional profile of children's and adolescents' life satisfaction judgments to enable more focused diagnostic, prevention, and intervention efforts, i.e. students with relatively high levels of dissatisfaction with their family experiences require different intervention from students who report greater dissatisfaction with their school experiences (Huebner et al., 2012). Few studies have focused on multidimensional life satisfaction in late adolescents and young or emerging adults that maintain the student status. This is a group of interest given that, while the person remains in the student role, attending university is a turning point that often entails significant changes in most life domains: living conditions, self-image, relationships with others and the pace and demands of academic processes. Therefore, this study may help provide information to institutions of higher education to conduct specific strategies according to the domains where less satisfaction is reported, thus contributing to improve the general well-being of the students.

The minimally acceptable fit to the data obtained from the CFA conducted on university students representing the 40-item five-factor model of the MSLSS (Huebner, 1994) was close to Jovanovic and Zuljevic (2013) with a five-factor solution for the 40-item model (CFI=0.79, GFI=0.77, AGFI=0.74, RMSEA=0.072), and similar to Greenspoon and Saklofske (1998) and Sawatzky et al. (2009), with fit indices below the recommended levels. By contrast, Zappulla et al. (2014) concluded that this model adequately fit the data with the following fit indices: GFI=0.90; AGFI=0.85; CFI=0.90; RMSEA=0.07. Similar findings were reported by Irmak and Kuruüzüm (2009) with these fit indices: GFI=0.88; AGFI=0.87; CFI=0.93; RMSEA=0.05. However, in the last two studies the CFI values were lower than 0.95.

Conversely, the CFA conducted on the 30-item version indicated that this five-factor solution of the MSLSS (Huebner, 1994; Huebner et al., 2012) fits the data better than the 40-item version. Nonetheless, our fit index values are lower than in the study conducted by Zappulla et al. (2014) with the

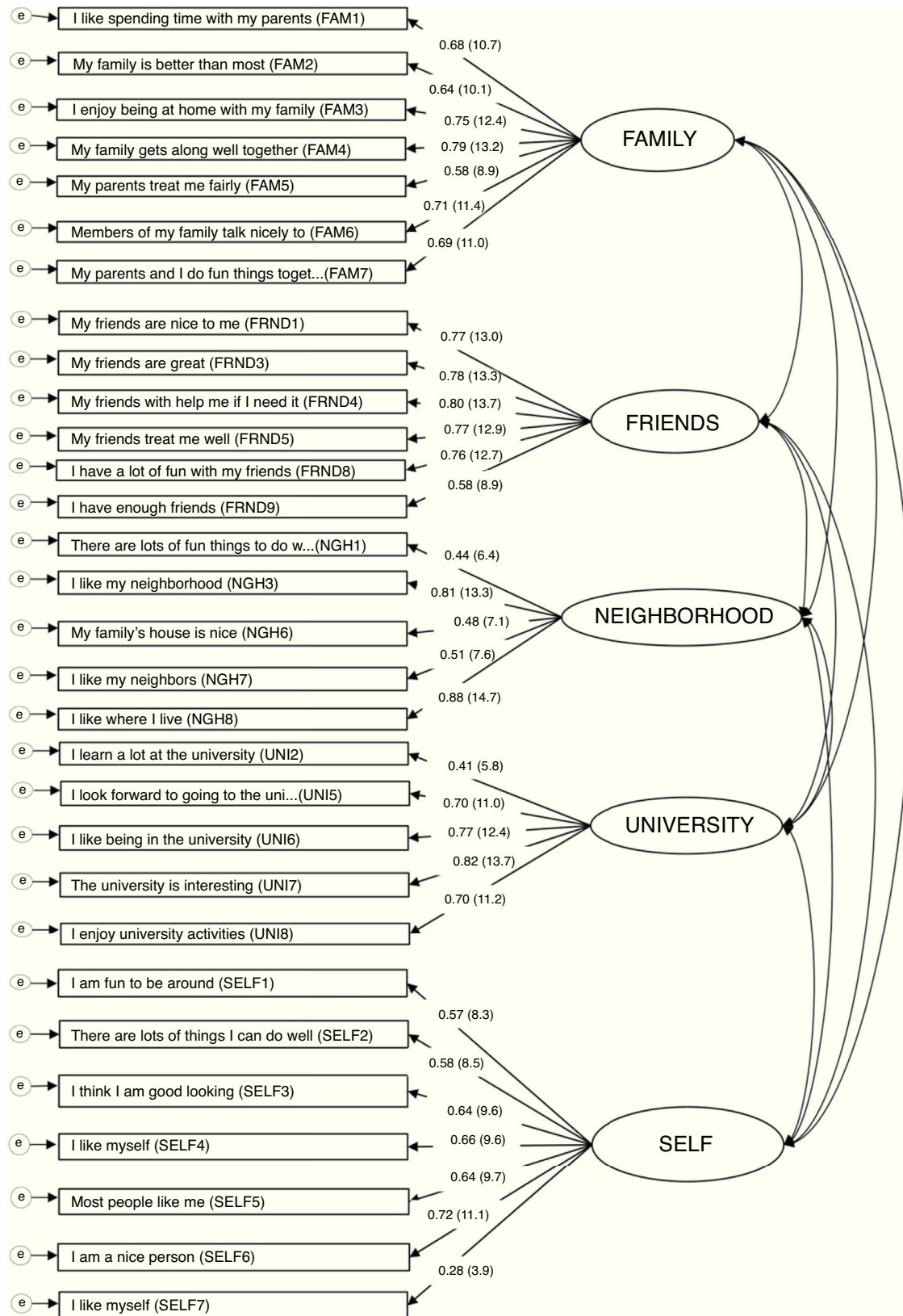


Fig. 1 – Best factor model of the Multidimensional Students' Life Satisfaction Scale (MSLSS, 30-item model) in a Chilean university student sample. Item reliability corresponds to the square of standardized weight. t values shown in ().

Table 3 – Composite reliabilities, average variance extracted (AVE), squared correlations between constructs and correlations between subscales, 30-item model.

Subscale	Composite reliability	AVE	Family	Friends	Living environment	University	Self
Family	0.87	0.48	–	0.20	0.09	0.02	0.12
Friends	0.88	0.56	0.45	–	0.06	0.08	0.19
Living environment	0.77	0.42	0.30	0.25	–	0.12	0.07
University	0.82	0.48	0.13	0.28	0.35	–	0.09
Self	0.79	0.36	0.35	0.44	0.27	0.23	–

Note. The values over diagonal indicate squared correlations between constructs.

The values under diagonal indicate Pearson correlation coefficients between subscales.

AVE: average variance extracted.

Table 4 – Relationships between the SWLS and the MSLSS, 30-Item Model.

		Family	Friends	Living environment	University	Self	MSLSS
SWLS	Pearson's r	0.286**	0.349**	0.281**	0.176*	0.380**	0.436**

SWLS: Satisfaction with Life Scale.

MSLSS: Multidimensional Students' Life Satisfaction Scale.

Pearson's r: Pearson correlation coefficient.

* $p < .05$.

** $p < .01$.

30-item model of the MSLSS (GFI=0.91; AGFI=0.88; CFI=0.95; RMSEA=0.05). They concluded that the model showed a good fit to the data. One difference between the study by Zappulla et al. (2014) and this research is that Zappulla used two distinct samples, one for the 40-item model and the other for the 30-item model, whereas we applied the complete MSLSS to the same sample. The CFA was carried out first with the complete scale and then with only the non-reversal items, which could have affected the results obtained in the 30-item model, and this is one of the main limitations of this study.

Internal consistency indices of the five domains of the abbreviated form were acceptable and similar to those reported in previous studies (Huebner et al., 2012; Tian et al., 2015; Weber & Huebner, 2015; Zappulla et al., 2014). Two of the three methods for measuring convergent validity showed better convergent validity, although researchers generally use only one of these methods (Irmak & Kuruüzüm, 2009). However, our findings are consistent with Irmak and Kuruüzüm (2009), in a Turkish adolescent sample (mean age=14.35, SD=1.50), who stated that the MSLSS has an adequate convergent validity. A discriminant validity analysis showed an adequate degree of divergence between the dimensions of the MSLSS, as found by Jovanovic and Zuljevic (2013). In this regard, Irmak and Kuruüzüm (2009) did not demonstrate discriminant validity between Family and Living Environment, because there is a strong relationship between these two dimensions in the collectivistic Turkish society, where their study was conducted. This is less feasible in the case of university students, who must in many cases leave home and family to attend university. Regardless, it can be inferred from these reports that the constructs that make up the MSLSS may be culture-specific and may be related to the participants' ages.

The correlation between the SWLS and the total score of the MSLSS proved the concurrent validity. It is possible to highlight several results even when correlations were moderate or

low between the SWLS and MSLSS domains. Unlike previously reported (Cárdenas et al., 2012; Irmak & Kuruüzüm, 2009), the relation between the SWLS and the Family domain was low. It has been found that university students who receive more social support from their family are more satisfied with their life (Brannan, Biswas-Diener, Mohr, Mortazavi, & Stein 2013; Schnettler et al., 2015). However, the items that make up this domain describe relationships among family members, and although a high proportion of students in the sample are living with their parents, it is likely that the demands of the university life decrease their interaction. The Self and Friends domains from the MSLSS presented the highest correlation to the SWLS (Tian et al., 2015). In university students, subjective well-being is linked to positive relations to people who are the closest (especially friends) and positive evaluations of oneself (Babinčak & Bacova, 2008; Tian et al., 2015), and there is evidence that social support from friends and peers has a major influence on life satisfaction, either positive or negative (Oberle et al., 2011; Tian et al., 2015). Regarding the domain Living environment, evidence indicates that the quality of the living environment affects the subjective well-being in adolescents (Jovanovic & Zuljevic, 2013). But due to the time students must spend in campus, it can be expected that living environment becomes less relevant than it is during adolescence. The low correlation between the domain University and the SWLS is noteworthy, since it has been reported that attending educational institutions may positively relate to well-being, self-esteem, and academic engagement, achievement and adjustment (Oberle et al., 2011). However, attending university entails high levels of demand, competition and expectations that increase stress – a relevant factor that may negatively impact the student's health (Antúnez & Vinet, 2013). Additionally, it is possible that switching the word “school” for “university” may not account for the variables related to university life that influence life satisfaction in students, which must be explored in future researches.

Therefore, the present investigation provides additional support for the abbreviated version of the MSLSS (Zappulla et al., 2014), but not only in adolescent samples. Our results indicate that the 30-item MSLSS may also be a useful instrument to measure life satisfaction in different life domains in university students. These results suggest that the combination of negatively and positively worded items, which can result in lower internal consistency (Barnette, 2000), not only affects adolescents' responses (Irmak & Kuruüzüm, 2009; Jovanovic & Zuljevic, 2013; Sawatzky et al., 2009), but also university students' responses.

One limitation of this study is that it was conducted in only one country; research with university students in other countries is required to confirm these results. Another limitation is the non-probabilistic nature of the sample and its relatively small size, which does not allow for generalization of the results. All data were self-reported; thus, responses may be affected by recall bias or social desirability, even though the participants were assured that the information was strictly confidential and that the survey was answered online. However, the main limitation of this study is the application of the complete scale to the sample, which could have affected negatively the fit indices from the 30-item model. In fact, it has been reported that the combination of negatively and positively worded items can reduce the reliability and validity of a scale, as this combination has been associated to respondent carelessness (Barnette, 2000; Woods, 2006). Woods (2006) suggested that a careless respondent may read a few items on a scale, infer what is being measured, and respond the same way to all items without noticing that some are worded in the opposite direction, therefore CFA results are likely to be detrimentally affected by negatively worded items. Further studies are required to validate this scale in a definite version for Chilean university students, using different samples to evaluate both versions of the scale or, based on our results, evaluate only the 30-item version model from the MSLSS, and that will establish comparison norms between groups (age, gender, socioeconomic status, etc.).

Nevertheless, our findings suggest that the 30-item version of the MSLSS may be a valid and reliable instrument to measure both the overall satisfaction with life and satisfaction in different domains in emerging adults as university students. Therefore, our findings can be considered as a starting point to study the relative importance of each domain included in the MSLSS for global satisfaction, and the correlates, predictors and outcomes of domain-specific satisfaction (González-Villalobos & Morrero, 2017; Jovanovic & Zuljevic, 2013) in emerging adults. In addition, future research should study the ways the MSLSS domains interact with one another, based on the "spillover" model, which states that satisfaction in different domains correlate positively, and the compensatory model, which establishes that the relationship between domains is negative (Wu, 2009). Future research should also distinguish profiles of university students based on the level of satisfaction in the domains included in the MSLSS, and propose differential interventions focused on improving the domains that university students report as the most important for them or those in which they are less satisfied.

Acknowledgement

This work was supported by Fondecyt project 1130165.

REFERENCES

- Adimark (Cartographer). (2004). (Socio-economic map) *Mapa Socioeconómico de Chile*. Retrieved from: <http://www.adimark.cl>
- Antúñez, Z., & Vinet, E. (2013). Mental health problems among students of a regional Chilean university. *Revista Médica de Chile*, 141, 209–216.
<http://dx.doi.org/10.4067/S0034-98872013000200010>
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55, 469–480.
<http://dx.doi.org/10.1037/0003-066X.55.5.469>
- Babinčak, P., & Bacova, V. (2008). Life satisfaction, beliefs and relations to oneself and others in university students. *Studia Psychologica*, 50, 79–94.
- Barnette, J. J. (2000). Effects of stem and Likert response option reversals on survey internal consistency: If you feel the need, there is a better alternative to using those negatively worded stems. *Educational and Psychological Measurement*, 60, 361–370.
<http://dx.doi.org/10.1177/00131640021970592>
- Barros, L., Petribú, K., Sougey, E., & Huebner, E. S. (2014). Multidimensional Students' Life Satisfaction Scale: Translation into Brazilian Portuguese and cross-cultural adaptation. *Revista Brasileira de Psiquiatria*, 36, 102–103.
<http://dx.doi.org/10.1590/1516-4446-2013-1146>
- Bradley, K., Cunningham, J., & Gilman, R. (2014). Measuring Adolescent Life Satisfaction: A psychometric investigation of the Multidimensional Students' Life Satisfaction Scale (MSLSS). *Journal of Happiness Studies*, 15, 1333–1345.
<http://dx.doi.org/10.1007/s10902-013-9478-z>
- Brannan, D., Biswas-Diener, R., Mohr, C., Mortazavi, S., & Stein, N. (2013). Friends and family: A cross-cultural investigation of social support and subjective well-being among college students. *Journal of Positive Psychology*, 8, 65–75.
<http://dx.doi.org/10.1080/17439760.2012.743573>
- Brunner, M., & Süß, H. (2005). Analyzing the reliability of multidimensional measures: An example from intelligence research. *Educational and Psychological Measurement*, 65, 227–240.
<http://dx.doi.org/10.1177/0013164404268669>
- Bueno, C., Wachholz, M., & Gonçalves, S. (2010). *Inserção em grupos formais e qualidade de vida entre adolescentes*. *Psico-USF*, 15, 311–320.
- Cárdenas, M., Barrientos, J., Bilbao, A., Páez, D., Gómez, F., & Asún, D. (2012). Estructura factorial de la Escala de Satisfacción con la Vida en una muestra de estudiantes universitarios chilenos. *Revista Mexicana de Psicología*, 29, 157–164.
- Casas, F., Alsinet, C., Rosich, M., Huebner, E. S., & Laughlin, J. E. (2001). Cross-cultural investigation of the multidimensional students' life satisfaction scale with Spanish adolescents. In F. Casas, & C. Saurina (Eds.), *Proceedings of the Third Conference of the International Society for Quality of Life Studies*.
- Casas, F., Sarribea, J., Alfaro, J., González, M., Figuer, C., Abs da Cruz, D., . . . , & Oyarzún, D. (2014). Satisfacción escolar y bienestar subjetivo en la adolescencia: poniendo a prueba indicadores para su medición comparativa en Brasil, Chile y España. *Suma Psicológica*, 21, 70–80.
[http://dx.doi.org/10.1016/S0121-4381\(14\)70009-8](http://dx.doi.org/10.1016/S0121-4381(14)70009-8)
- Chau, P. Y. K. (1997). Reexamining a model for evaluating information center success using a structural equation modeling approach. *Decision Sciences*, 28, 309–334.
<http://dx.doi.org/10.1111/j.1540-5915.1997.tb01313.x>

- Chavarría, M., & Barra, E. (2014). Satisfacción vital en adolescentes: Relación con la autoeficacia y el apoyo social percibido. *Terapia Psicológica*, 32, 41–46. <http://dx.doi.org/10.4067/S0718-48082014000100004>
- Chico, E., & Ferrando, P. (2008). Variables cognitivas y afectivas como predictoras de satisfacción en la vida. *Psicothema*, 20, 408–412.
- Díaz, F., & Sánchez-López, P. (2001). Relevancia de los estilos de personalidad y las metas personales en la predicción de la satisfacción vital. *Anales de Psicología*, 17, 151–158.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71–75. <http://dx.doi.org/10.1207/s15327752jpa4901.13>
- Diener, E., & Ryan, K. (2009). Subjective well-being: A general overview. *South African Journal of Psychology*, 39, 391–406. <http://dx.doi.org/10.1177/008124630903900402>
- Diener, E., Suh, E., Lucas, R., & Smith, H. (1999). Subjective well-being: three decades of progress. *Psychological Bulletin*, 125, 276–302. <http://dx.doi.org/10.1037/0033-2909.125.2.276>
- Fenouillet, F., Heutte, J., Martin-Krumm, C., & Boniwell, I. (2015). Validation française de l'échelle multidimensionnelle Satisfaction de vie chez l'élève [Multidimensional Students' Life Satisfaction Scale]. *Canadian Journal of Behavioural Science*, 47, 83–90. <http://dx.doi.org/10.1037/a0037624>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18, 39–50. <http://dx.doi.org/10.2307/3151312>
- Galíndez, E., & Casas, F. (2011). Adaptation and validation of the MSLSS of multidimensional life satisfaction with a sample of adolescents. *Revista de Psicología Social*, 26, 309–323. <http://dx.doi.org/10.1174/021347411797361284>
- Gilligan, T., & Huebner, E. S. (2002). Multidimensional life satisfaction reports of adolescents: A multitrait-multimethod study. *Personality and Individual Differences*, 32, 1149–1155. [http://dx.doi.org/10.1016/S0191-8869\(00\)00196-3](http://dx.doi.org/10.1016/S0191-8869(00)00196-3)
- Gilman, R., Huebner, E. S., & Laughlin, J. (2000). A first study of the multidimensional students' life satisfaction scale with adolescents. *Social Indicators Research*, 52, 135–160. <http://dx.doi.org/10.1023/A:1007059227507>
- Gilman, R., Huebner, E. S., Tian, L., Park, N., O'Byrne, J., Schiff, M., . . . , & Langknecht, H. (2008). Cross-national adolescent multidimensional life satisfaction reports: Analyses of mean scores and response style differences. *Journal of Youth and Adolescence*, 38, 142–154. <http://dx.doi.org/10.1007/s10964-007-9172-8>
- González-Villalobos, J. A., & Morrero, R. J. (2017). Determinantes sociodemográficos y personales del bienestar subjetivo y psicológico en población mexicana. *Suma Psicológica*, 24, 59–66. <http://dx.doi.org/10.1016/j.sumpsi.2017.01.002>
- Greenspoon, P., & Saklofske, D. (1997). Validity and reliability of the multidimensional students' life satisfaction scale with Canadian children. *Journal of Psychoeducation Assessment*, 15, 138–155. <http://dx.doi.org/10.1177/073428299701500204>
- Greenspoon, P., & Saklofske, D. (1998). Confirmatory factor analysis of the multidimensional Students' Life Satisfaction Scale. *Personality and Individual Differences*, 25, 965–971. [http://dx.doi.org/10.1016/S0191-8869\(98\)00115-9](http://dx.doi.org/10.1016/S0191-8869(98)00115-9)
- Hair, J., Anderson, R., Tatham, R., & Black, W. (1999). *(Multivariate data analysis) Análisis Multivariante*. Madrid, Spain: Prentice Hall.
- Hatami, G., Motamed, N., & Ashrafzadeh, M. (2010). Confirmatory factor analysis of Persian adaptation of Multidimensional Students' Life Satisfaction Scale (MSLSS). *Social Indicators Research*, 98, 265–271. <http://dx.doi.org/10.1007/s11205-009-9538-2>
- Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55. <http://dx.doi.org/10.1080/10705519909540118>
- Huebner, E. S. (1994). Preliminary development and validation of a multidimensional life satisfaction scale for children. *Psychological Assessment*, 6, 149–158. <http://dx.doi.org/10.1037/1040-3590.6.2.149>
- Huebner, E. S., & Gilman, R. (2002). An introduction to the Multidimensional Student's Life Satisfaction Scale. *Social Indicators Research*, 60, 115–122. <http://dx.doi.org/10.1023/A:1021252812882>
- Huebner, E. S., Suldo, M., & Gilman, R. (2006). Life satisfaction. In G. Bear, & K. Minke (Eds.), *Children's needs III*. Washington, DC: National Association of School Psychologists.
- Huebner, E. S., Zullig, J., & Saha, R. (2012). Factor structure and reliability of an abbreviated version of the Multidimensional Students' Life Satisfaction Scale. *Child Indicator Research*, 5, 561–657. <http://dx.doi.org/10.1007/s12187-012-9140-z>
- Inzunza, J. A., Piña, J. G., Gómez, C. G., Díaz, D. S., Sepúlveda, J. C. O., & Ruiz, L. G. (2014). Propiedades psicométricas de la Escala Breve Multidimensional de Satisfacción con la Vida para Estudiantes (BMSLSS) en población infantil chilena (10-12 años). *Universitas Psychologica*, 14, 29–41. <http://dx.doi.org/10.11144/Javeriana.upsy14-1.ppeb>
- Irmak, S., & Kuruüzüm, A. (2009). Turkish validity examination of the Multidimensional Students' Life Satisfaction Scale. *Social Indicators Research*, 92, 13–23. <http://dx.doi.org/10.1007/s11205-008-9284-x>
- Jovanovic, V., & Zuljevic, D. (2013). Psychometric evaluation of the Serbian version of the Multidimensional Student' Satisfaction Scale. *Social Indicators Research*, 110, 55–69. <http://dx.doi.org/10.1007/s11205-011-9916-4>
- Matheny, K., Roque-Tovar, B., & Curette, W. (2008). Perceived stress, coping resources, and life satisfaction among U.S. and Mexican college students: A cross-cultural study. *Anales de Psicología*, 24, 49–57.
- Oberle, E., Schonert-Reichl, K., & Zumbo, B. (2011). Life satisfaction in early adolescence: Personal, neighborhood, school, family, and peer influences. *Journal of Youth and Adolescence*, 40, 889–901. <http://dx.doi.org/10.1007/s10964-010-9599-1>
- Park, N., Huebner, E. S., Laughlin, E., Valois, F., & Gilman, R. (2004). A cross-cultural comparison of the dimensions of child and adolescent life satisfaction reports. *Social Indicators Research*, 66, 61–79. <http://dx.doi.org/10.1023/B:SOCI.0000007494.48207.dd>
- Rodríguez-Fernández, A., Ramos-Díaz, E., Ros, I., Fernández-Zabala, A., & Revuelta, L. (2016). Bienestar subjetivo en la adolescencia: el papel de la resiliencia, el autoconcepto y el apoyo social percibido. *Suma Psicológica*, 23, 60–69. <http://dx.doi.org/10.1016/j.sumpsi.2016.02.002>
- Sawatzky, R., Ratner, P., Johnson, J., Kopec, J., & Zumbo, B. (2009). Sample heterogeneity and the measurement structure of the Multidimensional Students' Life Satisfaction Scale. *Social Indicators Research*, 94, 273–296. <http://dx.doi.org/10.1007/s11205-008-9423-4>
- Schnettler, B., Denegri, M., Miranda, H., Sepúlveda, J., Orellana, L., Paiva, G., & Grunert, K. (2013). Eating habits and subjective well-being among university students in southern Chile. *Nutrición Hospitalaria*, 28, 2221–2228. <http://dx.doi.org/10.3305/nutr.hosp.v28in06.6751>
- Schnettler, B., Denegri, M., Miranda, H., Sepúlveda, J., Orellana, L., Paiva, G., & Grunert, K. (2015). Family support and subjective well-being: An exploratory study of university students in Southern Chile. *Social Indicators Research*, 122, 833–864. <http://dx.doi.org/10.1007/s11205-014-0718-3>
- Schnettler, B., Grunert, K. G., Orellana, L., Sepúlveda, J., Miranda, H., Lobos, G., . . . , & Etchebarne, S. (2017). Dietary restraint, life satisfaction and self-discrepancy by gender in university

- students. *Suma Psicológica*, 24(1), 25–33.
<http://dx.doi.org/10.1016/j.sumpsi.2016.12.001>
- Seligson, J., Huebner, E. S., & Valois, F. (2003). Preliminary validation of the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS). *Social Indicators Research*, 61, 121–145. <http://dx.doi.org/10.1023/A:1021326822957>
- Soares, A., Guisande, M., Diniz, A., & Almeida, L. (2006). Construction and validation of a multidimensional model of youth's adjustment to university context. *Psicothema*, 18, 249–255.
- Tabachnick, B., & Fidell, L. (2001). *Using multivariate statistics*. New York, NY: Harper & Row.
- Tian, L., Zhang, J., & Huebner, E. S. (2015). Preliminary validation of the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) among Chinese elementary school students. *Child Indicators Research*, 8, 907–923.
<http://dx.doi.org/10.1007/s12187-014-9295-x>
- Weber, M., & Huebner, E. S. (2015). Early adolescents' personality and life satisfaction: A closer look at global vs. domain-specific satisfaction. *Personality and Individual Differences*, 83, 31–36.
<http://dx.doi.org/10.1016/j.paid.2015.03.042>
- Woods, C. M. (2006). Careless responding to reverse-worded items: Implications for confirmatory factor analysis. *Journal of Psychopathology and Behavioral Assessment*, 28, 186.
<http://dx.doi.org/10.1007/s10862-005-9004-7>
- Wu, C. H. (2009). Enhancing quality of life by shifting importance perception among life domains. *Journal of Happiness Studies*, 10, 37–47. <http://dx.doi.org/10.1007/s10902-007-9060-7>
- Yuen, Y. M. C. (2013). Ethnicity, level of study, gender, religious affiliation and life satisfaction of adolescents from diverse cultures in Hong Kong. *Journal of Youth Studies*, 16, 776–791.
<http://dx.doi.org/10.1080/13676261.2012.756973>
- Yuen, Y. M. C. (2016). Linking life satisfaction with school engagement of secondary students from diverse cultural backgrounds in Hong Kong. *International Journal of Educational Research*, 77, 74–82. <http://dx.doi.org/10.1016/j.ijer.2016.03.003>
- Yuen, Y. M. C., & Lee, M. (2016). Mapping the life satisfaction of adolescents in Hong Kong secondary schools with high ethnic concentration. *Youth & Society*, 48, 539–556.
<http://dx.doi.org/10.1177/0044118X13502060>
- Yuen, Y. M., Lee, M., & Leung, C. (2016). Religious belief and its association with life satisfaction of adolescents in Hong Kong. *Journal of Beliefs & Values*, 37, 103–113.
<http://dx.doi.org/10.1080/13617672.2016.1141533>
- Zappulla, C., Pace, U., Lo Cascio, V., Guzzo, G., & Huebner, E. S. (2014). Factor structure and convergent validity of the long and abbreviated versions of the Multidimensional Students' Life Satisfaction Scale in an Italian Sample. *Social Indicators Research*, 118, 57–69.
<http://dx.doi.org/10.1007/s11205-013-0418-4>
- Zullig, K., Huebner, E. S., Patton, J., & Murray, K. (2009). The brief multidimensional students' life satisfaction scale-college version. *American Journal of Health Behavior*, 33, 483–493.
<http://dx.doi.org/10.5993/AJHB.33.5.1>