

The moderating role of age and gender differences in the relation between subjective well-being, psychopathology and substance use in Uruguayan adolescents*¹

O papel moderador das diferenças de idade e gênero na relação entre bem-estar subjetivo, psicopatologia e uso de substâncias em adolescentes uruguaios

Maria Eugenia Fernandez*², Lore Van Damme*³, Sarah De Pauw*⁴, Daniel Costa-Ball*⁵, Lilian Daset*⁶, Wouter Vanderplasschen*⁷

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The aim of this study is to explore the Subjective well-being (SWB) of school-going adolescents in Uruguay (N= 325; Mage= 14.67; SD= 1.62). We investigate age- and gender-specific relationships between psychopathology and substance use on the one hand, and subjective well-being on the other hand.

Multivariate linear regression analyses, indicated five significant predictors of SWB: three psychopathology factors (depression-anxiety, social anxiety and dissocial behaviour), and age displayed a negative association, while one psychopathology factor (resilience) showed a positive association. When extending the multivariate linear regression analysis with interaction effects, significant interactions appeared regarding gender and resilience and age and substance use.

Our study focuses on the necessity to have evidence-based results in order to plan appropriate preventive interventions with adolescents.

Key words: Subjective well-being, psychopathology, adolescence, substance use

*¹ This article is included as one chapter of the Doctoral Thesis “Enhancing quality of life and mental health in substance using adolescents”. Maria Eugenia Fernandez. Defended the 8th December 2017 at the Universidad Catolica del Uruguay.

*^{2, 5, 6} Universidad Católica del Uruguay (Montevideo, Uruguai).

*^{2, 3, 4, 7} Ghent University (Gent, Bélgica).

Introduction

Adolescent development

Adolescence is a key period in human development, characterized by various transitions and changes. Biological changes during this period of transition impact adolescents' social, sexual, and emotional development (Costello, Copeland & Angold, 2011). This period is often referred to as a period of storm and stress (Steinberg, 2001), with both mental health problems and experimenting behaviour being relatively normal phenomena.

Often, the onset of mental health problems occurs in early adolescence. Moreover, incidence of psychopathology increases substantially during this period. Also, the timing of puberty has been considered a risk factor for the development of mental health problems (especially depression and behavioural problems) (Costello, 2016). The study by Costello, Copeland and Angold (2011) claims that one in five adolescents has some kind of psychiatric problems. The most prevalent mental health problems among youth are: depression, panic disorder, agoraphobia and substance use. Increased rates of antisocial behaviour have been observed in adolescence (Belloch & Alvarez, 2002). Mental health problems are likely to impact the subjective well-being of adolescents (Huebner et al., 2004).

Due to the fact that experimenting behaviour is common among adolescents, they are at the peak developmental period for substance use (JND, 2014). In Uruguay, among students between 13 to 17 years old, the prevalence of last year use of alcohol is 60% and marijuana 17% (JND, 2014). Previous studies have highlighted the impact of substance misuse in adolescence, leading to problems in mental health, academic performance and social relations in later life (Fergusson, Boden & Horwood, 2013; Hemphill et al., 2014; Liang & Chikritzhs, 2015). The longitudinal study by Bogart and colleagues (2007) demonstrated that the use of alcohol and marijuana had a lasting effect on the decrease in subjective well-being.

Relevance of studying subjective well-being

Clearly, the above mentioned changes and challenges in adolescence are likely to influence adolescents' Subjective Well-Being (SWB), a

concept which is of high relevance in this particular developmental period (Casas, 2011; Montserrat et al., 2015; Brann et al., 2017). Two contrasting constructs of well-being should be distinguished: the hedonic perspective, which emphasizes satisfaction in relation to happiness and pleasure, and the eudemonic perspective, which stresses the importance of the development of persons' potential and achieving a meaningful life (Broekaert et al., 2017). Diener et al. (2006) defines subjective well-being as a general evaluation by the person of his/her life. This construct implies three domains: positive affect (e.g. enthusiasm, joy, excitement, curiosity), negative affect (e.g. anger, distress, sadness, lethargy) that should be reduced in order to have a high level of SWB, and lastly a global positive judgment of one's life. Life satisfaction is part of this third domain, the global self-judgment, and refers to the cognitive aspect of SWB (Park, 2004).

The 'homeostasis theory' of SWB states that there is a neurological inherit tendency in each person that maintains the level of SWB around set points (Cummins, 2010). These set points range between 70 and 90, reflecting the adequate range of SWB (Tomyn, Weinberg & Cummins, 2015). This theory of SWB states that under unchanging life circumstances, the person's sense of global well-being is maintained by this homeostatic system. However, the system could collapse under life challenges (Tomyn, Weinberg & Cummins, 2015). Cummins' homeostatic theory implies that SWB is sensitive to modifications. The SWB homeostatic system may vary through life disturbances or regulatory adjustment processes, which may be particularly prevalent during the turbulent developmental phase of adolescence (Cummins, et al., 2014).

Positive development in adolescence has been shown to be related to high levels of SWB in teenagers. Park (2004) considers SWB as a key factor in the healthy development of adolescents. For example, the social support adolescents have (from family, friends, and school) and core affects they experience (e.g. feeling happy) are positively associated with SWB (Gonzalez-Carrasco et al., 2017). Also, prosocial factors, personality factors, high self-perception of control, high self-esteem, and optimism were identified as positive correlates of SWB (Cummins, 2010). Finally, good physical and mental health, positive interpersonal relationships, and high academic performance are related to high levels of SWB (Park, 2004).

Negative adolescent development, on the other hand, has been associated with low levels of SWB in teenagers. Lower levels of SWB among youth have been associated with different social and psychological

problems, such as depressive symptoms, dissocial behaviour, suicidal intent and suicidal ideation, low self-esteem, and family and peer relationship problems (Alfaro et al., 2016; Suldo & Huebner 2004; Zullig et al., 2001). In addition, low levels of SWB in adolescents have been found to be related to risky behaviour such as drug or alcohol abuse and antisocial behaviour like aggression to others and sexual harassment (Proctor et al., 2009).

Age, gender and subjective well-being

Earlier studies have reported age and gender differences in SWB among adolescents (Gonzalez et al., 2017; Casas et al., 2007). Previous studies reported a progressive decline in the levels of SWB during adolescence (Gonzalez et al., 2017; Castella-Sarriera et al., 2012; Tomy & Cummins, 2011; Casas et al., 2007). A possible explanation given by these authors is that older adolescents might be challenged by developmental factors which result in a decrease in SWB. However, the majority of these studies are cross-sectional, which hampers a sound evaluation of causal and developmental effects.

Noteworthy, the above-mentioned age differences regarding SWB seemingly differ according to gender. The most pronounced decline in SWB levels during adolescence was reported among girls (Brann et al., 2017). The study by Brann and colleagues (2017) compared two birth cohorts in Sweden (n=4362 and n=5151) and found significant differences in the levels of SWB per gender. At the age of 18 years, girls reported much lower levels of well-being for all SWB dimensions. This study could not make firm conclusions on the cause of these gender differences, although it offered some plausible explanations. Girls' SWB levels could be affected by more social pressure, socialization aspects, gender identity and stereotypes, and hormonal changes (Brann et al., 2017).

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Studies on adolescents' subjective well-being from Latin America

Research on adolescents' Subjective well-being (SWB) in Latin America is limited (Alfaro et al., 2016; Castella et al., 2012), especially in relation to substance use and psychopathology. The limited Latin-American research on this topic suggests the relevance of studying SWB in relation to adolescents' development. One Colombian study focused on the general well-being of adolescents and its main predictors, such as high self-esteem, religiosity and a healthy family background (Gomez & Cogollo, 2010). Another study from Mexico suggested SWB as a protective factor for the use of alcohol and

tobacco, but not for other substances (Palacios & Cañas, 2010). The study of Contini and colleagues (2003) in Argentina showed that positive coping strategies (e.g. looking for social support, focus on positive aspects) in adolescents are associated with high levels of SWB. To the best of our knowledge, SWB has not being studied previously in Uruguay in adolescents in relation to psychopathology and substance use.

The study by Noble and McGrath (2014) claims that in order to provide solid educational interventions; governments should base their programmes on evidence-based definitions of the construct of well-being in students. Casas (2011) claimed that research and systematic data-collection about subjective social indicators of child and adolescent well-being worldwide, is still very scarce, and that policy makers should consider these in order to make decisions and evaluate social interventions. Therefore, further studies on SWB in adolescents are important, in particular in the context of Latin-American countries like Uruguay. Prior research showed that depending on the culture, there are different constructs of what well-being implies (Garcia et al., 2017), which goes hand in hand with the dissimilar emphasis given to interventions to promote it (Ryff, et al. 2014).

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This study

Based on the evidence from the research exposed above, SWB has been shown to be a key factor for healthy and positive development among adolescents. Studies in Latin America about SWB in adolescents are still in an early stage. Especially in Uruguay, there are no previous studies that assessed the SWB of adolescents in relation to psychopathology and substance use. This study was designed to fill this gap by studying SWB in school-going adolescents in Montevideo. More specifically, we investigate age- and gender-specific relationships between psychopathology and substance use on the one hand, and subjective well-being on the other hand. We expect that high levels of psychopathology and substance use will be related to low levels of SWB (Huebner et al., 2004). In addition, we expect to find age and gender differences regarding SWB and its relationship with the other concepts of interest (Brann et al., 2017; Gonzalez-Carrasco et al., 2017). Our hypothesis, based on the available literature, is that the girls in our sample will present lower level of SWB in comparison with boys. Our second hypothesis in relation to age in SWB is that the levels of SWB will be lower in older students. This goes in line with previous cited literature which states that there are declines in the levels of SWB in relation to age.

Methods

Sample

A non-probabilistic sample was recruited between May and June 2016 in a school located in the metropolitan area of Montevideo, the capital city of Uruguay. The school is a private and traditional catholic school. We choose this school as it has a good gender and age balance. Many private schools have few pupils over 15 years old. In Uruguay since 2008, secondary school is compulsory until the age of 18 years, before this date, school was compulsory until 15 years old. The total sample consisted of 390 students. Since some students (n=65) and/or their parents did not approve to participate or were not at school at the moment of data collection, this resulted in a final sample of 325 adolescents. The sample consisted of 172 girls (53.2%) and 153 boys (46.8%) from 12 to 18 years old ($M_{age} = 14.67$; $SD=1.62$). The socioeconomic status of 8 (3%) adolescents' families was low, medium for 156 students (48%) and high for 49% (n=159) of the sample.

Procedure

Before starting data collection, a verbal explanation was given to students about the content of the study and ethical issues regarding their participation. Active informed consent was signed by the head of the institution, parents or guardian, and the students. The self-report scales (all in electronic version) were administered in Spanish in the school computer labs during the class period. On average, the administration of the questionnaires took around one hour to complete. An IT teacher was present during the administration for assistance on any problems with the computers or software used. Moreover, the first author as well as a research assistant were present during administration, in case students had any further questions. The current study was approved by the Ethical committee of the Uruguayan Catholic University.

Instruments

Socio-demographic characteristics. A socio-demographic survey was used, consisting of 41 items regarding individual, family, and school characteristics. This survey is part of the Adolescent self-report scale ("Autoinforme de Adolescentes"; ADA). In the current study, we used the variable

‘socio-economic status’ (SES), subdivided into low, medium and high. SES is calculated by classifying households according to their consumption or expenditure capacity and consisted of questions regarding individual, family, school and environment characteristics. We also included gender and age, with the latter being dichotomised into younger (12-14 years) and older (15-18 years) adolescents.

Psychopathology. The Adolescent Self-report (ADA) (Daset et al., 2015) was used to assess psychopathology. This instrument consists of 82 items and is scored using a 5-point Likert scale (0-4). Psychopathological symptoms refer to emotional, behavioural and thought related problems (e.g. “I feel sad and fed-up most of the time”). The instrument also includes some items referring to positive development, including strengths, life planning, coping skills, and social desirability (e.g. “I have self-confidence”). Cronbach’s alpha’s for the ADA domains range from .70 to .90 (Daset, et. al. 2015). The ADA screening is based on the empirical taxonomies and studies of Achenbach and Edelbrock (1978), Lemos and colleagues (1992) and López-Soler and contributors (1998). The ADA consists of 6 cluster dimensions: Factor 1 ‘Depression-anxiety’, Factor 2 ‘Dissocial behaviour, substance use and negative emotionality’, Factor 3 ‘Disrupted and dysregulated behaviour’, Factor 4 ‘Social anxiety’, Factor 5 ‘Resilience and pro-sociality’ and Factor 6 ‘Obsessive- compulsive symptoms’. In the current study, Cronbach’s alpha was .94 for F1, .84 for F2, .94 for F3, .92 for F4, .93 for F5, and .87 for F6.

Alcohol use. To assess adolescents’ alcohol use, an existing questionnaire (JND, 2011) was used. The questionnaire assessed (i) the lifetime prevalence of alcohol use (yes/no), (ii) the prevalence of alcohol use during the last 12 months (yes/no); (iii) the prevalence of alcohol use during the last 30 days (yes/no); and (iv) the age of first alcohol use in school-going adolescents from 12 to 18 years old.

Marihuana use. We used the Spanish version of the Cannabis Abuse Screening Test (Cast) (Legleye et al., 2003), which was validated by the “Junta Nacional de Drogas, Uruguay” (2003), to measure marihuana use and associated problems. This scale considers possible problems in relation to the consumption of marihuana in the last 12 months and is based on the criteria for substance abuse of the DSM-IV. It consists of 6 items and employs a 4-point (1-5) Likert scale, with higher scores indicating more severe marihuana use. The Cronbach’s alpha of the instrument in the current sample was .73. We dichotomized the variables alcohol and marihuana use into ever/never use (including once in lifetime, last year, and last month use), in order

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to have more cases that were ever exposed and to be able to include these variables in the model.

Subjective Well-being. Cummins and Lau (2003) developed the Personal Well-being Index (PWI) to measure subjective well-being across 50 countries and different age groups (12 to 65 years old) and cultures. The instrument showed good psychometric properties and cultural stability (The International Well-Being Group, 2013). We used the Personal Well-Being index (PWI) (Cummins et al., 2003) in its Spanish version, validated for Chile (Alfaro et al., 2016). The scale is unidimensional and consists of 7 items that evaluate following domains: 'standard of living', 'health', 'achievements', 'relationships with others' (peers and family), 'safety', 'community-connectedness', and 'future security'. The items assess the perceived satisfaction with these life domains. It is measured using a Likert scale ranging from 0 (completely dissatisfied) to 10 (completely satisfied). The index is calculated by summing up all the items and transforming the scores into a 0-100 scale. Cronbach's alpha of the original instrument in international studies vary between .70 and .85. The version we used had an internal reliability of .77 and was validated for teenagers (Cummins et al., 2003). In the current study, the Cronbach's alpha of the PWI was .87.

Statistical analyses

First, descriptive statistics were calculated regarding psychopathology, substance use and SWB for gender, age and SES groups. Second, gender, age and SES differences regarding psychopathology, substance use and SWB were examined using (a) independent t-tests and ANOVAs for continuous variables and (b) chi-square tests for categorical variables. Third, a multivariate linear regression analysis was performed to examine the relationship between psychopathology and substance use on the one hand (i.e., the independent variables), and SWB on the other hand (i.e., the dependent variable). To maximize the statistical power, we decided to only include those sociodemographic variables that were significantly (p-value 0.05) related with psychopathology, substance use and/or SWB (i.e., gender and age, and SES).

We performed a correlation analysis and found that F2 and F4 are highly correlated (0.9). Given this fact, as they appear in the estimations (first performed linear regression model with all variables) with almost the same coefficient but of opposite sign, probably indicating that in fact they are not significant if included alone because they are canceling each other

out (same coefficient of opposite sign); we decided to perform separate linear regression analysis including each variable (disocial behaviour and social anxiety) separate. In the annexes of this article we included the table of the correlation analysis between all variables. The variance inflation factor (VIF) indicates whether a predictor has a strong linear relationship with the other predictor (s). Although there are no hard and fast rules about what value of the VIF should cause concern, Myers (1990) (in Field, 2009), suggests that a value below 10 is adequate. What's more, if the average VIF is greater than 1, then multicollinearity may be biasing the regression model (Bowerman & O'Connell, 1990, in Field, 2009). Related to the VIF is the tolerance statistic, which is its reciprocal (1/VIF). As such, values below 0.1 indicate serious problems although Menard (1995) (in Field, 2009), suggests that values below 0.2 are worthy of concern. Table 3 (a & b) presents both linear regression models including the VIF and tolerance statistic. In our model VIF is below 5 and the tolerance above 0.2, therefore showing that no collinearity problems are found in both regressions.

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Fourth, the multivariate linear regression analysis was extended with the interaction effects between psychopathology and substance use on the one hand, and gender and age on the other hand. Before creating the interaction variables, all continuous variables were standardized. Subsequently, the interaction variables were constructed by multiplying psychopathology and substance use variables with age and gender. The R and R² are stated for each model. A p-value of 0.05 was used in all analyses as the standard for statistical significance.

Results

The mean score of global SWB of the total sample was 84.00 (SD 4.16). In table 1, we describe the distribution of SWB, psychopathology and substance use for boys versus girls. Compared to girls, boys had significantly higher levels of SWB and significantly lower scores for Factor 1 'Depression anxiety', Factor 2 'Dissocial behaviour' and Factor 4 'Social anxiety'. Regarding marijuana use, no significant gender differences could be revealed.

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Pearson Correlation ADA Factors

	Depression anxiety	Dissocial behaviour	Disrupted disregulated	Social anxiety	Resilience	OCD
Depression-anxiety	1	0.721	0.081	0.754	-0.26	0.377
Dissocial behaviour		1	0.162	0.904	-0.122	0.744
Disrupted disregulated			1	0.033	0.772	0.345
Social anxiety				1	-0.234	0.413
Resilience					1	0.175
OCD						1

Table 1. Subjective well-being, psychopathology and substance use: distribution and gender differences

Variables		Boys		Girls		Boys vs girls	
		N= 152		N= 173			
M	SD	M	SD	t (df)			
SWB		59.67	7.80	57.22	10.15	-2.456 (317)•	
Depression-anxiety		11.17	9.54	17.73	14.22	4.934 (302)*	
Dissocial behaviour		15.74	8.39	18.69	9.94	2.899 (320)*	
Disrupted disregulated		46.23	9.95	46.03	9.36	-189(323)	
Social anxiety		7.75	6.25	10.63	7.58	3.756 (321)*	
Resilience		40.63	7.80	41.23	7.77	.685 (323)	
OCD		11.50	4.45	11.89	4.82	.754 (323)	
		N	(%)	N	(%)	x ² (df)	
Alcohol use		105	(60,7)	91	(59.9)	.023 (1)*	
Marihuana use		22	(12.7)	21	(13.9)	.099 (1)	

*p<0.05

In table 2, we describe the distribution of SWB, psychopathology and substance use for younger versus older adolescents. Compared to younger students (12 to 14), older students (15 to 18) had significantly lower levels of SWB, significantly higher scores for Factor 3 ‘Disrupted dysregulated behaviour’, and significantly higher prevalence rates for lifetime alcohol and marihuana use.

Table 2. Subjective well-being, psychopathology and substance use: distribution and age differences

Variables	Younger (12-14)		Older (15-18)		Younger vs Older	
	N= 155		N= 169			
	M	SD	M	SD	t (df)	
SWB	60.50	9.14	56.45	8.85	4.040 (317)•	
Depression-anxiety	13.61	12.17	15.60	13.11	-1.412 (322)	
Dissocial behaviour	16.52	9.75	17.97	8.94	-1.388 (322)	
Disrupted dysregulated	44.27	9.51	47.88	9.44	-3.424 (319)*	
Social anxiety	8.80	7.44	9.69	6.83	-1.125 (322)	
Resilience	40.58	8.77	41.31	6.76	-845 (322)	
OCD	11.29	4.75	12.05	4.53	-1.489 (322)	
	N	(%)	N	(%)	x ² (df)	
Alcohol use	53	(34.2)	143	(84.6)	86.007 (1)*	
Marihuana use	6	(3.9)	36	(22)	23.020 (1)*	

*p<0.05

In table 3a, we present the multivariate regression model predicting the global score of SWB, including psychopathology, substance use and the selected socio-demographic variables, excluding social anxiety. This model identified four significant predictors of SWB. The predictors in this model explained 58.2% of the variance in the dependent variable (SWB). Regarding psychopathology, two ADA Psychopathology factors were identified with a negative association: Factor 1 ‘Depression-anxiety’ (p= .000) and Dissocial behaviour (p= .038). One ADA factor had a positive association with SWB:

Factor 5 ‘Resilience and pro-sociality’ ($p=.000$). Also, age had a significant negative association with SWB ($p=.002$).

Table 3a. Multivariate linear regression analysis predicting SWB (excluding Social anxiety)

Variables	B	SE	Beta	t	p	Tolerance	VIF
Depression-anxiety	-.321	.045	-.442	-7.111	.000	.348	2.870
Dissocial behaviour	-.168	.080	-.170	-2.085	.038	.202	4.958
Disrupted disregulated	.020	.069	.020	.285	.776	.261	3.835
Resilience	.366	.086	.310	4.230	.000	.252	3.972
OCD	.111	.125	.056	.894	.372	.339	2.949
Marihuana use	-1.529	1.099	-.056	-1.391	.165	.820	1.219
Alcohol use	-.910	.836	-.048	-1.089	.277	.681	1.469
Age	-1.007	.250	-.177	-4.037	.000	.698	1.432
Gender	-.151	.730	-.008	-.207	.836	.860	1.163

N=325, $R^2= 0.582$.

In table 3b. we present the multivariate regression model predicting the global score of SWB, including psychopathology, substance use and the selected socio-demographic variables, excluding the variable dissocial behavior. We identified depression-anxiety ($p= .000$), social anxiety ($p=.004$), and age negatively related to SWB and resilience with a positive association ($p= .000$).

When extending the multivariate linear regression analysis with interaction effects between psychopathology and substance use on the one hand, and age and gender on the other hand, only the interaction effects of gender*Factor 5 ‘Resilience and pro-sociality’ for our model without the factor of dissocial behavior ($t(df) = 3.232(24)$; $p=.001$), age*alcohol use ($t(df) = 2.171(24)$; $p = .031$), age*marihuana use use ($t(df) = 2.052(24)$; $p = .041$) This model explained 62.8% of the variance. The multivariate linear regression analysis with interaction effects between psychopathology and substance use, and age and gender, only the interaction effects of gender*Factor 5 ‘Resilience and pro-sociality’ for our model without the factor of social anxiety was positively related to SWB in girls, ($t(df) = 3.223(24)$; $p=.001$).

Regarding the interactions with substance use, age*alcohol use ($t(df) = 2.064$ (24); $p = .040$), age*marihuana use ($t(df) = 1.927$ (24); $p = .055$) appeared as significant. This model explained 62.2% of the variance.

Table 3b. Multivariate linear regression analysis predicting SWB (excluding Dissocial behavior)

Variables	B	SE	Beta	t	p	Tolerance	VIF
Depression-anxiety	-.297	.045	-.409	-6.555	.000	.342	2.924
Disrupted disregulated	.018	.068	.019	.265	.791	.261	3.826
Social anxiety	-.221	.076	-.171	-2.899	.004	.382	2.618
Resilience	.369	.085	.312	4.324	.000	.256	3.910
OCD	-.025	.086	-.013	-.290	.772	.703	1.423
Marihuana use	-1.687	1.095	-.062	-1.541	.124	.817	1.225
Alcohol use	-1.033	.831	-.055	-1.243	.215	.680	1.471
Age	-.966	.249	-.170	-3.884	.000	.694	1.442
Gender	-.171	.725	-.009	-.235	.814	.860	1.163

N=325, $R^2 = 0.582$.

Discussion

In this study, we aimed to assess the global level of subjective well-being of a sample of school-going adolescents from Uruguay, exploring the moderating role of age and gender in the relation between psychopathology and substance use on the one hand, and subjective well-being on the other hand. The Well-being International Group (2013) suggests a normative range between a minimum of 73.8 and a maximum of 90.4 (Well-being International Group, 2013). The total score of SWB in our sample (i.e. $M=84.00$, $SD=4.16$) falls within this stipulated normative range which illustrates that overall, school-going adolescents from this specific sample are relatively satisfied with their life.

Regarding psychopathology, the multivariate regression model indicated a significant association between four ADA psychopathology factors and SWB. Three factors (i.e., depression-anxiety, social anxiety and dissocial behaviour)

had a negative association with SWB. In line with prior studies (Huebner et al., 2004; Park, 2004), these results suggest that negative development (e.g. psychological problems) is associated with lower levels of SWB in teenagers. It is likely that adolescents who display high levels of dissocial behaviour lack empathy to others and lack insight about their own behaviour and its consequences (Aalsma, Lapsley, & Flannery, 2006; Berk, 2006; Seagrave & Grisso, 2002). More research is needed to gain more insight regarding the construct of this particular ADA factor, as well as regarding plausible variables that could mediate the association between SWB and dissocial behaviour, such as peer relationships, bonds with the family, and patterns of problems behaviour since childhood (Costello, 2016; Keyes, 2006).

Also in line with prior studies (Casas et al., 2012), the factor resilience showed a positive association, providing support for the idea that positive development is associated with higher levels of SWB during the developmental period of adolescence. Resilience is defined as healthy development in the face of adversity, and refers to contextual challenges.

Regarding age, both the bivariate analysis indicated that, compared to older adolescents, younger adolescents reported higher levels of SWB. This is in line with previous studies (Brann et al., 2017), showing a negative association between age and global level of SWB. This also accords with prior work in other Latin-American countries. For example, the study of Castella and colleagues (2012) compared the SWB of 12 to 16 year old adolescents from Brazil and Argentina. In both countries, the level of SWB decreased with age. In addition, our study results revealed some interesting interaction effects; alcohol and marijuana use displayed a significant interaction effect with age. The positive coefficient of the interaction between age and substance use (alcohol and marijuana), implies that as the individuals grow up the negative impact of the use of these substances over the global SWB is reduced. Similarly, the study by Van Ouytsel and colleagues (2017) found that Belgian adolescents that use alcohol and marijuana at a young age are more vulnerable or prone to engage in risk behavior such as dating violence, and more vulnerability to have depression and low self-esteem.

Significant gender differences were observed regarding the global level of SWB and the ADA factors 'depression-anxiety', 'dissocial behaviour' and 'social anxiety'. Bivariate analyses showed that — compared to girls — boys had significantly higher levels of SWB. This is in line with prior work (Gonzalez-Carrasco et al., 2017; Garcia, et al., 2017; Brann et al., 2017), including the Latin-American study by Castella and colleagues (2012) that indicated higher levels of SWB among boys than among girls in both Brazil

and Argentina. A possible explanation for this finding is the strong existing connection between SWB and psychopathology, where there is a higher prevalence of Psychopathology in female adolescents (Costelo, 2016; Lopez-Soler et al., 1998; Belloch & Alvarez, 2002). Noteworthy, these gender differences did not appear in our multivariate regression model. However, a significant gender interaction effect was found: gender and resilience had a significant positive interaction effect for girls only.

Our study has several contributions. In the first place, this is the first study in Uruguay that relates SWB in adolescents to psychopathology and substance use, thereby contributing to the scant research on the topic in Latin America (Castella-Sarriera et al., 2012). Our study focuses on the necessity to have evidence-based results in order to plan appropriate preventive interventions with adolescents to avoid negative development and promote positive development (Montserrat et al., 2015). In relation to age and gender, our results suggest that when planning interventions aimed at increasing the level of SWB in adolescents, educators, teachers, psychologists and youth workers should consider gender and age differences. Additionally, interventions aimed at stimulating the level of SWB should be specific, based on the main significant factors that are related to SWB in teenagers (Casas et al., 2015). Our results also suggest that it is important to invest efforts in detecting and preventing depression-anxiety, social anxiety and dissocial behaviour in school settings.

Based on the current study, it is therefore suggested to not only adopt a problem-oriented approach (i.e., striving to reduce depressive, anxious and compulsive symptoms), but to also apply strength-based principles (i.e., striving to enhance resilience), in particular among girls given the interaction effect.

Research limitations and recommendations

The study findings, however, need to be considered in the light of some limitations. First, the cross-sectional nature of the study does not allow any causal conclusions. Of note, while we considered the effects of psychopathology and substance use on SWB, other studies suggested an inverse impact (Alfaro et al., 2016; Huebner et al., 2004). Longitudinal studies are needed to reveal more insight in the bi-directionality of this relationship, which is clearly needed in future research on this topic in Uruguay and Latin-America.

Second, the results can only be considered for this particular sample, as we only collected data from one school that displayed some specific

characteristics (i.e. a catholic school, located in the city centre of a small city near the capital). For future research, it is recommended to collect data at national level and to design the study including a probabilistic sample.

Third, it is advisable to assess SWB on various groups of adolescents, including clinical samples, to assess whether the current age- and gender-specific relationships can also be revealed in at risk adolescents or adolescents with pre-existing health and/or mental health problems. Also, pre-adolescents, from 10 years old, should be included in future longitudinal studies in order to observe whether any pattern of change in SWB can be observed in the transition from primary school to high school (Gonzalez-Carrasco et al., 2017).

Finally, we suggest further research to add a qualitative assessment of SWB, in order to gain a deeper understanding of individuals' interpretation of different dimensions of SWB, as well as about the importance they attach to it (Casas, 2011).

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Resumos

(O papel moderador das diferenças de idade e gênero na relação entre bem-estar subjetivo, psicopatologia e uso de substâncias em adolescentes uruguaios)

O objetivo deste estudo é explorar o bem-estar subjetivo (BES) de adolescentes que frequentam o ensino médio no Uruguai (N = 325; M idade = 14,67; DP = 1,62). Pesquisamos as relações específicas de idade e sexo entre psicopatologia e uso de substâncias, por um lado, e bem-estar subjetivo, por outro.

Análises de regressão linear multivariada indicaram cinco preditores significativos de BES: três fatores psicopatológicos (depressão-ansiedade, ansiedade social e comportamento dissocial) e idade apresentaram associação negativa, ao passo que um fator psicopatológico (resiliência) apresentou associação positiva. Ao estender a análise de regressão linear multivariada com efeitos de interação, surgiram interações significativas em relação a gênero e resiliência e idade e uso de substâncias.

Este estudo está centrado da necessidade de obter resultados baseados em evidências para planejar intervenções preventivas adequadas com adolescentes.

Palavras-chave: Bem-estar psicológico subjetivo, psicopatologia, adolescência, uso de substâncias

(Le rôle modérateur des différences d'âge et de sexe dans le rapport entre le bien-être subjectif, la psychopathologie et la consommation de substances chez les adolescents Uruguayens)

Le but de cette recherche est d'explorer le bien-être subjectif (BES) des adolescents étudiants du secondaire en Uruguay (N = 325, M être = 14,67, SD = 1,62). Nous étudions les rapports spécifiques entre l'âge et le sexe entre la psychopathologie et l'usage de substances, d'une part, et le bien-être subjectif, d'autre part.

Les analyses de régression linéaire multivariée ont indiqué cinq prédicteurs significatifs de BES: trois facteurs psychopathologiques (dépression-anxiété, anxiété sociale et comportement anti social) et l'âge ont montré une association négative, tandis qu'un facteur psychopathologique (résilience) présentait une association positive. Après extension de l'analyse de régression linéaire multivariée avec des effets d'interaction, des interactions significatives sont apparues concernant le genre et la résilience et l'âge et la consommation de substances.

Notre recherche met l'accent sur la nécessité d'obtenir des résultats fondés sur des données appuyés empiriquement afin de planifier des interventions préventives appropriées auprès des adolescents.

Mots clés: Bien-être psychologique subjectif, psychopathologie, adolescence, usage des substances

(El papel moderador de las diferencias de edad y género en la relación entre bienestar psicológico subjetivo, psicopatología y consumo de sustancias entre adolescentes uruguayos)

El objetivo de este estudio es explorar el bienestar psicológico subjetivo (BPS) de adolescentes uruguayos que van al colegio (N = 325, M edad = 14,67, SD = 1,62). Por un lado, investigamos las relaciones específicas, por edad y género, entre la psicopatología y el uso de sustancias, y por otro lado, el bienestar psicológico subjetivo. Los análisis de regresión lineal multivariante indicaron cinco predictores significativos de BS: tres factores psicopatológicos (depresión-ansiedad, ansiedad social y comportamiento disocial) y la edad, mostraron una asociación negativa, mientras que un factor psicopatológico (resiliencia) mostró una asociación positiva. Al extender el análisis de regresión lineal multivariante con efectos de interacción, aparecieron interacciones significativas con respecto al género, la resiliencia, la edad y el uso de sustancias.

Este estudio se enfoca en la necesidad de lograr resultados basados en evidencias para planificar intervenciones preventivas apropiadas para adolescentes.

Palabras clave: Bienestar psicológico subjetivo, psicopatología, adolescencia, uso de sustancias

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(Die moderierende Rolle von Alters- und Geschlechtsunterschieden im Verhältnis zwischen subjektivem Wohlbefinden, Psychopathologie und Substanzkonsum in uruguayischen Jugendlichen)

Ziel dieser Studie ist es, das subjektive Wohlbefinden (SWB) schulpflichtiger Jugendlicher in Uruguay zu untersuchen (N = 325; Mage = 14,67; SD = 1,62). Wir untersuchen alters- und geschlechtsspezifische Zusammenhänge zwischen Psychopathologie und Substanzgebrauch einerseits und subjektivem Wohlbefinden andererseits.

Multivariate lineare Regressionsanalysen ergaben fünf signifikante SWB Prädiktoren: drei psychopathologische Faktoren (Depressionsangst, soziale Angst und dissoziales Verhalten) und Alter ergaben eine negative Assoziation und nur ein psychopathologischer Faktor (Resilienz) ergab eine positive Assoziation. Bei der Erweiterung der multivariaten linearen Regressionsanalyse mit Interaktionseffekte ergaben sich signifikante Wechselwirkungen hinsichtlich Geschlechtes und Resilienz sowie Alter und Substanzkonsum.

Unsere Studie konzentriert sich auf die Notwendigkeit evidenzbasierter Ergebnisse um geeignete präventive Maßnahmen für Jugendliche zu planen.

Schlüsselwörter: Subjektives psychologisches Wohlbefinden, Psychopathologie, Adoleszenz, Substanzkonsumh

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Citação/Citation: Fernandez, M. E., Van Damme, L., De Pauw, S., Costa-Ball, D., Daset, L., & Vanderplasschen, W. (2018, setembro). The moderating role of age and gender differences in the relation between subjective well-being, psychopathology and substance use in Uruguayan adolescents. *Revista Latinoamericana de Psicopatologia Fundamental*, 21(3), 486-508. <http://dx.doi.org/10.1590/1415-4714.2018v21n3p486.5>.

Editores do artigo/Editors: Profa. Dra. Ana Maria Rudge e Profa. Dra. Sonia Leite.

Recebido/Received: 25.2.2018/ 2.25.2017 **Aceito/Accepted:** 13.6.2018 / 6.13.2018

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Financiamento/Funding: Os autores declaram não terem sido financiados ou apoiados / The authors have no support or funding to report.

Conflito de interesses/Conflict of interest: Os autores declaram que não há conflito de interesses / The authors have no conflict of interest to declare.

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MARIA EUGENIA FERNANDEZ

Universidad Católica del Uruguay.
Edificio Mullin | Facultad de Psicología, Departamento de Psicología Clínica y Salud.
Comandante Braga 2715, Piso 2 sala 10
Montevideo, CP 11600
Uruguay
maria.e.fp@gmail.com

LORE VAN DAMME

Ghent University. Faculty of Psychology and Educational Sciences
Department of Special Needs Education
Henri Dunantlaan 2, 9000, Gent, Belgium
lore.vandamme@ugent.be

SARAH DE PAUW

Ghent University. Faculty of Psychology and Educational Sciences
Department of Special Needs Education
Henri Dunantlaan 2, 9000, Gent, Belgium
Sarah.depauw@ugent.be

DANIEL COSTA-BALL

Universidad Católica del Uruguay
Departamento de Neurocognición
Montevideo, CP 11600
Uruguay
ccosta@ucu.edu.uy

LILIAN DASET

Universidad Católica del Uruguay.
Edificio Mullin | Facultad de Psicología, Departamento de Psicología Clínica y Salud.
Comandante Braga 2715, Piso 2 sala 10.
Montevideo, CP 11600
Uruguay

WOUTER VANDERPLASSCHEN

Ghent University. Faculty of Psychology and Educational Sciences
Department of Special Needs Education.
Henri Dunantlaan 2, 9000, Gent, Belgium



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