



# Adverse Childhood Experiences and Mental Health: When Well-Being Matters

Loreto Leiva<sup>1</sup> · Betzabé Torres-Cortés<sup>1</sup> · Andrés Antivilo-Bruna<sup>2</sup>

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## Abstract

This study analyzed the relation between Subjective Well-Being, Adverse Childhood Experiences and Mental Health in Chilean children and adolescents. It evaluated the cumulative effect of adverse experiences and subjective well-being. The sample included 2699 children and adolescents from 11 municipal educational establishments of the Antofagasta Region, Chile. All were in the 6<sup>th</sup> to 12<sup>th</sup> grades; 52.1% (n = 1405) identified as female; ages ranged from 11 to 17 years (Mean = 14.35 years, SD = 1.82). We evaluated Well-Being, Adversities and Mental Health with the Kidscreen-27, Inventory of Adversities and PSC-17, respectively. We used Student t-tests for independent samples and one-way ANOVA for comparisons. Pearson product-moment coefficients were used to estimate the level of association between two or more variables. The results showed significant differences in all dimensions of subjective well-being between those who presented some adversity and those who did not. The cumulative effect of adversities was associated with poor well-being, and mental health was favored when the subjective well-being was higher. We discuss the relation between well-being, adversities and mental health in Chilean children and adolescents.

**Keywords** Subjective well-being · Adverse childhood experiences · Mental health · Child-adolescent population

## 1 Introduction

Research on Well-Being (WB) in children and adolescents has increased in recent decades with quantitative and qualitative methodologies, and from “subjective” and “objective” perspectives (Ben-Arieh et al., 2014). The results indicate that the

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✉ Loreto Leiva  
loretoleivab@u.uchile.cl

<sup>1</sup> Departamento de Psicología, Universidad de Chile, Avenida Capitan Ignacio Carrera Pinto 1045, Ñuñoa, Santiago, Chile

<sup>2</sup> Santiago, Chile

capacity to understand one's own mental state emerges in childhood through cognitive development and interaction with significant others, such as parents/caregivers (Allen et al., 2008; Fonagi et al., 1991); allowing the generating of more sophisticated forms of WB (Lansford, 2018). A progressive decrease in WB has been observed in adolescence, which would be related to insecurity and the challenge of having to define many life aspects such as identity and profession, among others (Castellá Sarriera et al., 2012). Adequate WB in this stage of the life cycle is associated with improvement in the quality of social relations, perception of security, better physical health, high levels of school satisfaction, improvement in the perception of the relation with teachers, better academic achievements and less risky behavior, among others (Huebner et al., 2014; Suldo & Shaffer, 2008; Suldo et al., 2006).

There is no universal definition of WB, due to which sometimes terms such as satisfaction with life, happiness or quality of life are used to refer to it (Lloyd & Emerson, 2017), although some authors refer to different phenomena (Medvedev & Landhuis, 2018).

Currently WB is analyzed from the social WB, psychological (PWB) and subjective (SWB) perspectives. Social WB is the valuation of the person above the circumstances and functioning in society (Keyes, 1998). It is composed of the dimensions of social acceptance, social coherence, social contribution, social updating and social integration; the last two would have greater weight for the development of this type of well-being (Blanco & Díaz, 2005).

PWB has been described as the perception a person has of their capacity to progress faced with the existential challenges of life (Keyes et al., 2002). It includes aspects such as self-esteem, quality interpersonal relations, mastery of the surroundings, continual growth and development, the purpose of life and self-determination (Ryff & Keyes, 1995). Finally, SWB refers to the subjective evaluation of people about their overall quality of life based on their own goals, values and culture (Diener et al., 2018). It includes cognitive evaluations such as the sense and purpose of life, satisfaction with life and the emotional responses to the experiences of life (Brajša-Žganec et al., 2018; Kahneman et al., 1999). It also has three essential characteristics associated with its origin based on personal experiences and how they are evaluated; the absence of negative aspects and presence of positive aspects; and a general evaluation of life (Diener, 1984).

This study uses the SWB concept to analyze its relation to Adverse Childhood Experiences [ACEs] and Mental Health [MH], as it allows using the reports of children and adolescents on their WB (Rees & Main, 2015). It also allows the incorporation of contextual elements that will influence the evaluation they make of their own WB, as well as the personal factors. There are studies of childhood and adolescence which indicate that SWB is better when there are positive experiences in the family, school and community, which are natural development contexts for children and adolescents (Fernandes Ferreira Lima & Araujo de Morais, 2018).

This study considers SWB in children and adolescents, due to the studies of SWB have mainly been oriented to adults (Casas et al., 2013; Fernandes Ferreira Lima & Araujo de Morais, 2018), justifying the need for more knowledge in the child-juvenile population. Also, the current information comes mainly from Anglo-Saxon countries, which can not necessarily be extrapolated to other populations. Given that

SWB is associated with cultural elements, it must be analyzed from a contextual perspective (Lima & Morais, 2016), thus the importance of including a Latin American perspective.

The results of WB studies of children and adolescents show that there are many factors in both stages related to low SWB levels, such as school bullying (Grané et al., 2020), living in the street (Lima & Morais, 2016), drug consumption, depression, anxiety, difficulties in regulating behavior (Fernández et al., 2020) and belonging to a sexual minority (Perales, 2016), among others. Drug consumption in adolescents is negatively associated with SWB. Some studies have indicated that a lower SWB level would increase the probability of behavior which is a risk to health (Phillips-Howard et al., 2010). There are also studies that show that alcohol consumption would be one of the determinants of SWB (Park & Lee, 2013). Factors associated with higher SWB include parental involvement (Yap & Baharudin, 2016), friends and peer-group acceptance (Holder & Coleman, 2015), positive family relations (Lansford, 2018), satisfaction with the school they attend and the neighborhood in which they live (Gómez et al., 2017), among others.

Especially in Latin America, SWB has been linked importantly to the context of children and adolescents. For example, a Brazilian study found that the sense of community is a relevant variable associated with SWB and is greater in those who live in rural areas than in those who live in urban zones (Abreu et al., 2016). In Chile, it has been observed that sense of community in adolescents has a positive effect that improves their mental health and their evaluation of their satisfaction with their lives (Guzmán et al., 2019). There is also better perception in the different dimensions of physical and psychological well-being, autonomy and relations with parents, as well as better perception of social and peer support (Leiva, Antivilo-Bruna, et al., 2021; Leiva, Mendoza, et al., 2021). A Mexican study indicated that a coherent relationship between parents and values transmitted by the school have a positive impact on SWB (Cubas-Barragán, 2016).

This information allows considering the interrelation between SWB, the ACEs and mental health of children and adolescents, since as Keyes (2009) indicated, adequate child-adolescent mental health requires experiencing positive well-being.

## 1.1 Well-being and Adverse Childhood Experiences

ACEs refer to stressful or potentially traumatic experiences that occur in the first 18 years of life (Carsley & Oei, 2020). Their effects may become traumatic if the child or adolescent does not have the resources to confront them, *i.e.* individual potential, family and contextual support (Kalmakis & Chandler, 2014; Purewal et al., 2016).

ACEs were first described by Felitti et al. (1998), including physical or psychological mistreatment, sexual abuse, negligence, intra-family violence, separation of the parents and living with a mentally ill family member, among others. Other authors later amplified the concept of ACE, including factors related to the socio-economic environment, incorporating low socioeconomic level, rejection or isolation by peers (Finkelhor et al., 2015), experiences of discrimination, living in an insecure

neighborhood, having lived in a foster home (Cronholm et al., 2015), bullying and exposition to community violence (Cronholm et al., 2015; Finkelhor et al., 2015).

The impact of ACEs begins in early stages of development (Bethell et al., 2014), which is related to problems of mental and physical health in children (Bright et al., 2016; Elmore et al., 2020). These experiences continue to have an impact in these two ambits (Hughes et al., 2017), associated with risky behavior which may lead to premature death (Cronholm et al., 2015; Felitti et al., 1998).

ACEs also have a specific impact in the SWB of children and adolescents, as studies indicate that having more of these experiences implies lower probability of developing positive WB (Moore & Ramirez, 2016). This is related to the cumulative effect of ACEs, because it is probable that a greater number of them will lead to difficulties in mental and physical health and WB during childhood, adolescence and adulthood (Atkinson et al., 2015; Bielas et al., 2016; Leiva, Antivilo-Bruna, et al., 2021; Leiva, Mendoza, et al., 2021; Scott et al., 2013).

Several studies have shown that having three or more ACEs implies greater risk, because during childhood and adolescence these are related to internalizing problems such as anxiety and somatic complaints (Clarkson Freeman, 2014; Liming & Grube, 2018; Seiler et al., 2016); attention difficulties (Jimenez et al., 2016; Leiva, Antivilo-Bruna, et al., 2021; Leiva, Mendoza, et al., 2021; Liming & Grube, 2018), decreased literacy, language and mathematics ability (Jimenez et al., 2016); externalized problems such as behavioral difficulties (Choi et al., 2019) and problems with social relations and aggressiveness (Jimenez et al., 2016; Liming & Grube, 2018), among others. In adults it is associated with higher risk of drug consumption (Barrera et al., 2019; Merrick et al., 2020); mental health problems (Barrera et al., 2019) such as psychosis (Ding et al., 2014), ideation and suicide attempts (Thompson et al., 2019), among others.

Living in poverty implies negative effects on WB and health. It would have social and emotional implications for young people's development, including externalizing and internalizing disorders and lower school engagement and educational success (Moore & Ramirez, 2016). Mistreatment or psychological neglect are associated with lower SWB, a lower level of satisfaction with life and lower sensation of social support (Festinger & Baker, 2010). Being exposed to parental conflicts develops emotions associated with SWB, due to children and adolescents feel trapped in the middle of the problems of their parents (Amato & Afifi, 2006). As well, living in a foster home may generate insecurity or disorganized attachment in children and adolescents, which affects their perception of their SWB (Orúzar et al., 2019). In addition, living with a family member who has a mental illness is associated with lower SWB levels compared to those children or adolescence who do not experience this situation (Hagen et al., 2019).

In the community surroundings of children and adolescents, bullying is related to a more precarious SWB (Long et al., 2017). This association is bi-directional, due to having a low SWB may cause the child or adolescent to have a greater perception of being isolated, or more memories of situations in which they have been beaten, but may also make them more prone to suffer bullying due to their isolation (Bradshaw et al., 2017). Community violence is considered in international literature as a critical element of WB in children and adolescents (Savahl et al., 2013), thus living in a

neighborhood where there is violence and crimes implies a decrease in SWB (Valois et al., 2020).

## 1.2 Well-being and Mental Health

The World Health Organization [WHO] (2001, 2004) defines mental health (MH) as a state of well-being that allows persons to identify their own cognitive, affective and relational capacity, confront the normal tensions experienced in life, be productive in jobs and contribute to the community. MH is influenced by many factors, which if modified may generate changes in MH; problems in this ambit may impede or decrease the possibility of developing adequate MH (Dogra et al., 2009). Thus identifying these difficulties in persons allows evaluating their state of development in their MH.

Studies such as those of Annan et al. (2017), Penner et al. (2021) and Veldman et al. (2014) studied the mental health of children and adolescents through problems or difficulties: (1) internalizing (IP) associated with the individual ambit (*e.g.* depression, anxiety), (2) externalizing (EP), referring to behavior directed exteriorly (*e.g.* aggressiveness, behavior disorders) and (3) of attention (AP). The evidence indicates that SWB is linked to IP, EP and AP (Suldo et al., 2011); there are a number of results on this relation. Some studies suggest that there is an inverse association (Arslan & Renshaw, 2019; Balázs et al., 2018), while others indicate that identifying the SWB allows these types of problems to be explained (Haranin et al., 2007); some studies suggest that the externalized symptoms allow predicting SWB and the internalizing symptoms (Kjeldsen et al., 2016).

Based on the background information presented, this study analyzed the relation among SWB, ACEs and MH in Chilean children and adolescents. It also incorporated drug consumption, due to its link with WB. The study evaluates the accumulative effect of ACEs in the SWB of the participants in the study. It was expected that children and adolescents with higher SWB will have better mental health, fewer ACEs and less drug consumption.

## 2 Method

### 2.1 Design

This was an cross sectional study, the variables were evaluated quantitatively in different groups (socio-demographic characteristics, SWB, existence of ACEs and MH problems) to describe and understand the relations among this set of variables (Ato et al., 2013).

### 2.2 Participants

Using a non-probabilistic sampling for convenience we sampled 2699 students from 11 municipal educational establishments of the commune of Calama (Antofagasta

Region, Chile). All students were from the 6<sup>th</sup> to 12<sup>th</sup> grades; their ages ranged from 11 to 17 years (mean = 14.35 years; Median = 14; SD = 1.82); the largest group were age 13 years (n = 455; 16.9%) and the smallest group 11 years (n = 180; 6.7%). Females represented 52.1% of the sample (n = 1405); 0.6% (n = 17) chose the option “other”.

## 2.3 Instruments

### 2.3.1 Kidscreen-27

This is a self-report instrument which is an abbreviated version of the original questionnaire developed by the KIDSCREEN project *Screening for and Promotion of Health Related Quality of Life in Children and Adolescents* (called Kidscreen-52 and developed by Ravens-Sieberer et al. in 2005); it evaluates the subjective level of well-being and quality of life in children and adolescents aged 8–18 in the dimensions of well-being associated with physical and psychological health, relations with parents and friends, and autonomy.

This study used Kidscreen to measure SWB, as previous studies have done (Lloyd & Emerson, 2017; Soriano et al., 2014), because as indicated above the conceptualization of well-being is diverse, and some authors claim that it may be homologous to concepts such as quality of life or satisfaction with life (Lloyd, & Emerson, 2017; Medvedev, & Landhuis, 2018).

Specifically, this study administered the version validated in Chilean adolescents (Molina et al., 2014), which includes 27 items with five graduated response categories that range from “nothing” to “a lot”, or from “never” to “always”. The items are distributed in five dimensions as follows: physical well-being (PHW; 5 items), psychological well-being (PSW; 7 items), autonomy and relations with parents (ARP; 7 items), social and peer support (SPS; 4 items) and school environment (SE; 4 items). The evidence of construct validity of the scale was obtained by confirmatory factor analysis, reporting good fit indicators (CFI and GFI > 0.95; RMSEA < 0.08) and factor loadings above 0.50. In addition, evidence of discriminant validity is provided; all dimensions have Cronbach alpha coefficients above 0.75, except for SE, which was 0.69 (Molina et al., 2014).

Finally, it must be stated that in order to compare among dimensions, as suggested by the authors of the instrument, the results were standardized in a scale of 0–100 points. This was done with a linear transformation using Formula (1), subtracting the minimum observed score from an observed score and dividing the result by the difference between the maximum and minimum scores (Quintero et al., 2011).

$$\text{Transformation} = \frac{\text{ScoreObtained} - \text{MinimumScore}}{\text{MaximumScore} - \text{MinimumScore}} \quad (1)$$

### 2.3.2 Inventory of Adverse Childhood Experiences

This is a brief inventory elaborated ad hoc by the research team to include information on some of the ACEs identified by the original studies (Felitti et al., 1998) and

those that include community experiences (Cronholm et al., 2015; Finkelhor et al., 2015). It is a self-administered instrument composed of five questions, which were constructed considering three ACEs related to the family ambit and three linked to the socio-economic ambit. ACEs may be evaluated in this way, because their impacts have been studied in several forms using individual categories of the evaluation of multiples of these experiences (Masseti et al., 2020).

Table 1 presents the ACEs evaluated, the studies that identified them and the list of items created for this study.

Two dichotomous questions referring to drug use in general and alcohol consumption were included, due to these variables have been shown to have a significant relation to SWB, especially during adolescence (Park & Lee, 2013; Phillips-Howard et al., 2010). Thus the inventory was composed of seven questions with only two options for answering (Yes–No). Finally, we incorporated three characterization questions to determine grade, age and gender self-reported by the students.

### 2.3.3 Pediatric Symptom Checklist 17, self-report version (PSC-17-Y)

The PSC is initially a broadband screening questionnaire composed of 35 items, which has been revised and re-formulated several times since its creation (Jellinek et al., 1986, 1999, 1988; Murphy & Jellinek, 1988; Murphy et al., 1989, 2016). One of these reformulations is the PSC-17, a brief version which is widely used (Leiva et al., 2019). This instrument evaluates the general psychosocial functioning, detecting emotional and behavioral difficulties in children and adolescents (Jellinek et al., 1999; Pagano et al., 2000).

The PSC-17 is answered by parents or tutors for the youngest children, but later can be self-responded, evaluating the existence of internalizing and external difficulties, and difficulties with attention (Leiva et al., 2019; Murphy et al., 2016). The scale of internalizing problems evaluates internal difficulties experienced by the child or adolescent, such as desperation and sadness; the scale of externalizing problems mainly measures conflicts in social relations, such as disobeying rules and fighting with others; the scale of attention difficulties evaluates difficulty in concentration. This study used the PSC-17 to evaluate mental health, as in the studies of Annan et al., (2017), Penner et al., (2021) and Veldman et al. (2014), who analyzed the mental health of children and adolescents using internalizing, externalizing and attention problems. It is worth mentioning that this instrument has only been validated locally for children; however, ongoing studies have shown that the structure for adolescents is the same (Leiva, 2021; Leiva, Mendoza, et al., 2021).

## 2.4 Data Analysis

Frequency tables were constructed to analyze the distribution of the responses in the categorical variables examined by the ACEs inventory and those of the questions on drug consumption. We calculated descriptive statistics (mean, median, standardized asymmetry coefficient and standard deviation) for the observed scores in the five dimensions of Kidscreen-27. Means were compared of the ACEs present, alcohol

**Table 1** Traceability and list of items

Type of Adversity	Studies	Items
Living with family member with mental illness (EME)	Cronholm et al., 2015; Felitti et al., 1998; Finkelhor et al., 2015	Does someone in your close family have any type of mental illness?
Physical neglect (PN)	Finkelhor et al., 2005, 2015	Do you think your family takes care of you?
Emotional neglect (EN)	Finkelhor et al., 2005, 2015	Do you feel you receive enough affection from your family?
Victimization by peers (VP)	Cronholm et al., 2015; Finkelhor et al., 2015	Do you feel that you have been bullied by your schoolmates?
Exposition to community violence (ECV)	Cronholm et al., 2015; Finkelhor et al., 2015	Do you feel that you are exposed to violence in your community?
Own elaboration		



and drug consumption and the sex of the students. After checking for normality, Student's *t* tests for independent samples were used; we report the level of statistical significance and the size of the effect with Cohen's *d* statistic. When the assumptions of normality were not met, we used the Walsh statistic.

One-way analysis of variance (ANOVA) was used to compare the means of three or more groups (sex and age); we report the *F* values, the corresponding size effect with partial  $\eta^2$ , the percentage of variance of the dependent variable explained by the independent variable, and a brief analysis of *post-hoc* tests when appropriate (when variances were homogeneous we used the Tukey test, when they were not we used the Games-Howell test).

Pearson product-moment correlations were used to establish the level of association between two or more quantitative variables; values of  $R^2$  are reported. To interpret the size of the effect of all the calculated statistics we followed the guidelines of Cohen (1988). All analyses were calculated with the program Jamovi version 1.2 (The Jamovi Project, 2020).

## 2.5 Ethical Considerations

The study guaranteed the anonymity of the participants, respect for their rights and the principle of confidentiality (Emanuel et al., 2000). The schools were contacted through the Municipality; there were meetings with the directors of these schools to explain the study. Participating schools sent a formal letter detailing their acceptance and agreement to facilitate the development of the study. Then the parents or tutors of the students signed informed consents to authorize their participation. Those students whose parents or tutors authorized their participation signed an informed consent to participate in the study. The informed consent and assent included the characteristics of the study and the method to guarantee the rights of the participants. In addition, the study was approved by the Ethics Committee of the Faculty of Social Sciences at the Universidad de Chile, the institution to which the first and second authors belong.

## 3 Results

### 3.1 Well-Being and Adverse Childhood Experiences

The percentages of school children who reported ACEs and substance consumption were calculated first. About one fourth of the students (26.6%;  $n = 701$ ) reported having been exposed to some form of violence in the community, while 21.9% ( $n = 590$ ) did not feel sufficient affection from the family group. Far fewer of the participants indicated that a close family member has a mental illness or that the family does not provide them with enough care (in both cases about 10%). Only 4.4% of the students ( $n = 120$ ) said they had been bullied in school. Almost 15% ( $n = 384$ ) said they drink alcohol, while 5.4% ( $n = 146$ ) consume some kind of drug. The details of percentages of adversities and substance consumption are given in Table 2.

**Table 2** Percentages of presence of and substance consumption

N° ítem	Item topic	No	Si
1	Does someone in your family have any type of mental illness?	89.0%	<b>11.0%</b>
2	Do you think your family takes care of you?	<b>9.4%</b>	90.6%
3	Do you feel that you have been bullied by your schoolmates?	95.6%	<b>4.4%</b>
4	Do you feel that you are exposed to violence in your community?	74.0%	<b>26.0%</b>
5	Do you feel you receive enough affection from your family?	<b>21.9%</b>	78.1%
Questions about consumption			
6	Do you drink alcohol?	85.8%	14.2%
7	Do you use some kind of drug?	94.6%	5.4%

Percentages in bold represent ACEs

**Table 3** Descriptive statistics of the dimensions of the Kidscreen-27 questionnaire

Dimensions	Mean	SD	Median	SCA*
Physical Well-being [PHW]	57.40	21.99	55.00	.89
Psychological Well-being [PSW]	66.25	18.70	67.86	-12.05
Autonomy and relation with parents [ARP]	68.10	19.62	71.43	-10.21
Social and Peer Support [SPS]	78.93	19.28	81.25	-23.14
School Environment [SE]	65.88	17.67	68.75	-5.80

\*SCA = Standardized coefficient of asymmetry

One hundred thirty (4.8%) of the students reported three or more ACEs -placing them in the high risk group of having their quality of life affected- only two students reported all five of the adversities studied. The high risk group (three or more adversities) will be used to make comparative analyses of SWB levels.

The standardized scores on the sub-scales of Kidscreen-27 are shown in Table 3. The marked asymmetry in four of the five dimensions is notable, which implies high scores for PSW, ARP, SPS and SE; these all had means and medians above 65 points. This means that students value positively factors such as psychological well-being, relations with parents, school environment, and especially social and peer support. It must be noted that the psychological well-being scale of Kidscreen evaluates both positive and negative emotions (Molina et al., 2014), encompassing the affective aspects of SWB.

Coding as “no” all responses that indicate the absence of an adversity and “yes” the responses that do indicate an adversity, the total number of ACEs and the two responses on drug and alcohol consumption, there were substantive differences in the mean scores in the five dimensions of Kidscreen-27 between those who did or did not report ACEs. Table 4 shows the means by subgroup, the significance level of differences among means and their levels of effect.

It is notable that all dimensions of SWB had significant differences between those who did or did not have adversities, and that the greatest effect sizes were for physical and emotional neglect ( $d_{\text{Cohen}} > 0.80$ ). Specifically, those children and adolescents who reported physical negligence had scores at least 10 points lower in the five

dimensions; there was a strong effect on both their psychological well-being (PSW) and relations with their parents (ARP); which means a lower level of well-being.

A similar result was found in the scores of those who reported emotional negligence; these scores were substantially lower in the mentioned dimensions. The differences in PHW, SPS and SC between those who did or did not report adversities only indicated medium and low effects, not statistically significant. The most notorious gap was found in the SPS adversity; the average of those who had not been bullied was nearly 10 points greater than for those who had.

A binary indicator linked to the total number of adversities school children reported they had suffered is called high risk when there are three or more adversities. It is clear that the scores of the children and adolescents at risk were about 7–14 points lower. There was a marked tendency to higher scores in the five dimensions of SWB in those who do not consume alcohol or drugs. This was most notable in SE; the mean of scores of those who do not consume was nearly 15 points greater, which produced a high size effect. These results are shown graphically in Fig. 1.

The effect of sex and age on the SWB of students is summarized in Table 5. Although all differences were significant in the post-hoc contrasts, considering the group means and the percentage of the variance explained by gender, only the differences in PHW and PSW should be considered significant. In other words, ARP, SPS and SE are not sufficiently explained by gender, because the partial  $\eta^2$  statistic was less than 0.1. Male participants had on average 10 points more than females in the PHW and PSW dimensions and almost 20 points more than those of the “other” category. It should be noted that although there were only 17 “others”, their scores were systematically lower in all dimensions.

The level of SWB decreased importantly at higher ages, as is seen in Table 6. The differences between those of age 11 and age 17 were greater than 10 dimensions except for SPS where the difference was only 8 points (but still significant).

Comparing the means of the five dimensions by age clearly indicates that SWB decreased with age. Thus it is not surprising that the association between age and scores was negative, although the size effects tended to be low (Pearson  $r$  values are in the last row of Table 5).

### 3.2 Well-being and Mental Health

The association between SWB levels and the levels of difficulty in MH was examined with the three dimensions of PSC-17. The main results are shown in Table 7.

The table shows inverse associations with high effect size between internalizing problems and four of the five dimensions of SWB (the effect was moderate only for SPS), which implies that those students with more internalizing problems have lower SWB. Even though there were significant correlations of SWB with externalizing problems, none of them explained more than 15% of the variance ( $R^2$ ) which indicates that these associations are not substantive in the population. Finally, we discard a link between attention problems and SWB in children and adolescence, due to the observed correlations among these variables were close to zero.

**Table 4** Subjective well-being means by dimension, presence of adverse childhood experiences and consumption of drugs and alcohol

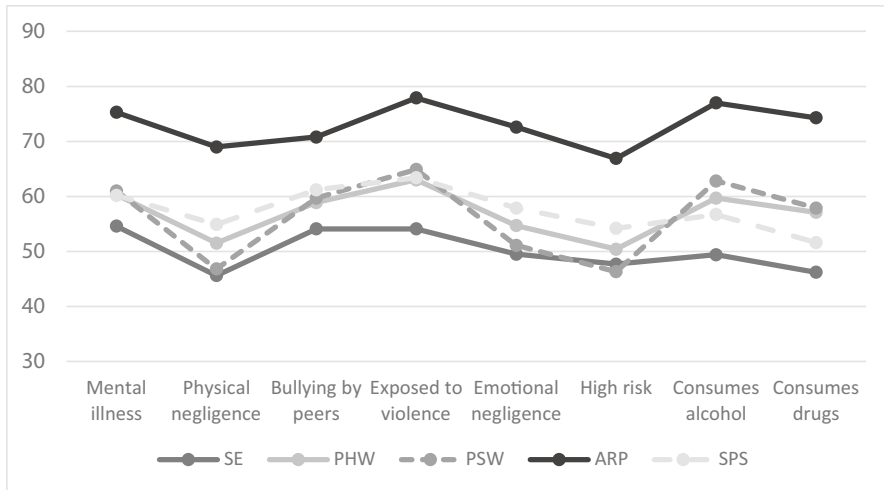
Dim		Mental illness	Physical negligence	Bullying by peers	Exposed to violence	Emotional negligence	High risk	Consumes alcohol	Consumes drugs
PHW	No	57.7	58.6	57.5	58.6	59.6	57.9	58.7	58.0
	Yes	54.6	45.6	54.1	54.1	49.5	47.7	49.4	46.2
	Levene <sup>1</sup>	.60	.48	.91	.88	.13	.13	.18	.50
	t <sub>student</sub>	2.33*	9.13***	1.69	4.54***	10.14***	5.18***	7.79**	6.42***
PSW	d <sub>Cohen</sub>	.14	.60	.16	.20	.47	.47	.43	.55
	No	67.0	67.8	66.6	67.4	69.5	67.1	67.3	66.8
	Yes	60.3	51.5	58.9	63.0	54.7	50.4	59.7	57.1
	Levene <sup>1</sup>	.14	<.01	.20	.96	<.01	.01	.06	.92
ARP	t <sub>student</sub>	5.81***	11.9***	4.41***	5.33***	16.48***	9.22***	7.74***	6.13***
	d <sub>Cohen</sub>	.36	.84	.41	.23	.80	.87	.41	.52
	No	69.0	70.3	68.5	69.2	72.8	69.2	69.0	68.7
	Yes	61.0	46.8	59.7	64.9	51.1	46.3	62.8	57.9
SPS	Levene <sup>1</sup>	.27	.042	.27	.94	<.01	.36	.34	.15
	t <sub>student</sub>	6.65***	17.51***	4.83***	5.05***	24.92***	13.39***	5.70***	6.49***
	d <sub>Cohen</sub>	.41	1.21	.45	.22	1.20	1.20	.31	.54
	No	79.5	80.0	79.4	79.4	80.8	79.6	79.3	79.3
Levene <sup>1</sup>	Yes	75.3	69.0	70.8	77.9	72.6	66.9	77.0	74.3
	t <sub>student</sub>	.13	<.01	<.01	.52	<.01	<.01	.49	.02
	d <sub>Cohen</sub>	3.56***	7.26***	3.92***	1.76**	8.37***	6.18***	2.15*	2.76**
	No	.22	.52	.40	.08	.41	.61	.12	.25

Dim	Mental illness	Physical negligence	Bullying by peers	Exposed to violence	Emotional negligence	High risk	Consumes alcohol	Consumes drugs
SE	No 66.6	67.0	66.1	66.8	68.1	66.5	67.4	66.7
	Yes 60.2	54.9	61.2	63.4	57.9	54.2	56.7	51.6
Levene <sup>1</sup>	.26	.008	.06	.22	.11	<.05	.39	.99
t <sub>student</sub>	5.97**	9.30**	2.98**	4.40**	12.83**	6.78**	11.30**	10.30**
d <sub>Cohen</sub>	.37	.65	.28	.19	.60	.65	.62	<b>.88</b>

<sup>1</sup> Significance associated with the F of the Levene test is informed. Welch's t is informed in the cases where there was not homogeneity of variances

\*Significant at 0.05 \*\*significant at 0.01

Differences with high effect size are indicated in bold



**Fig. 1** Subjective well-being, presence of adverse childhood experiences and consumption of drugs and alcohol

**Table 5** Means of subjective well-being by dimension and gender

	PHW	PSW	ARP	SPS	SE
Female (n = 1405)	50.2	62.2	65.2	78.6	64.8
Male (n = 1277)	65.4	70.9	71.4	79.5	67.3
Others (n = 17)	47.9	54.2	62.9	68.1	50.9
Levene Test significance	.11	<.01	<.001	.07	.20
F	185.0**	79.4***	34.7**	3.5*	13.1**
% Variance Explained	12.1%	5.7%	2.5%	.3%	1%
Partial Eta <sup>2</sup>	.12	.05	.02	.00	.01

\*Significant at 0.05 \*\*significant at 0.01

Since variances were not homogeneous for PHW and ARP, Welsh's F statistic is reported. In these cases the *post-hoc* tests used the Games-Howell procedure

## 4 Discussion

This study analyzed the relation between SWB, ACEs and mental health in Chilean children and adolescents, hypothesizing that those with better SWB would report fewer adversities and better mental health. The results sustain this hypothesis, and demonstrate differences associated with gender and consumption of drugs and/or alcohol.

**Table 6** Subjective well-being means by dimensions and ages

Age (sample size)	PHW	PSW	ARP	SPS	SE
11 years (n=180)	67.7	74.5	74.2	83.1	75.3
12 years (n=321)	67.1	72.0	71.2	81.0	73.5
13 years (n=455)	59.2	66.9	68.7	80.8	67.1
14 years (n=445)	55.0	65.3	67.5	79.9	65.1
15 years (n=424)	55.4	63.8	66.3	79.0	62.3
16 years (n=473)	53.4	63.7	67.0	75.4	61.4
17 years (n=401)	52.3	63.9	65.9	76.7	64.2
Test de Levene (sign.)	.88	<.01	.83	.25	.03
F	26.8**	17.0**	6.1**	6.6**	27.5**
% Variance Explained	5.6%	3.3%	1.4%	1.4%	6.1%
Partial Eta <sup>2</sup>	.05	.03	.01	.01	.06
Pearson r	-.22**	-.16**	-.10**	-.11**	-.21**

\*\*Significant at 0.01

Since variances were not homogeneous for PHW and ARP, Welch's F statistic is reported. In these cases the *post-hoc* tests used the Games-Howell procedure

**Table 7** Correlations (and R<sup>2</sup>) between mental health problems and the dimensions of subjective well-being

Salud mental	PHW	PSW	ARP	SPS	SE
Internalizing Problems	-.45** (19.9%)	-.70** (49.4%)	-.45** (19.8%)	-.34** (11.8%)	-.43** (18.1%)
Externalizing Problems	-.15** (2.3%)	-.24** (5.7%)	-.22** (4.9%)	-.15** (2.2%)	-.36** (13.1%)
Attention Problems	-.01 (0.0%)	-.03 (0.1%)	-.08** (0.7%)	-.09** (0.8%)	-.12** (1.3%)

\*\*Significant at 0.01

#### 4.1 Well-being and Adverse Childhood Experiences

The most frequent ACEs among those studied were being exposed to violence in the community (26.6%) and emotional neglect (21.9%). This percentage of children and adolescents exposed to community violence is consistent with those of other studies in Latin America (Kappel et al., 2021) and North America (e.g. Finkelhor et al., 2010; Grasso et al., 2016). However, it was lower than the percentages reported in Africa (e.g. Cluver et al., 2015; Mwakanyamale et al., 2018). The frequency of emotional neglect was similar to those reported in studies in Latin America (e.g. Reisen et al., 2019; Soares et al., 2016) and elsewhere (e.g. Stoltenborgh et al., 2013). These results suggest that experiences in the community surroundings should be included when adversities are evaluated, because these include the different ecological and social dimensions that are involved in the development of ACEs (Anda et al., 2010). It also allows incorporating cultural, economic and ethnic differences of the children

and adolescents (Cronholm et al., 2015), which are central aspects to understand development.

The results also showed that SWB was lower in those children and adolescents who suffered adversities, which was more unfavorable for those who had physical or emotional neglect. It is important to note that children and adolescents who have suffered some of the types of negligence evaluated had a decrease in those aspects of their SWB linked to the affective dimension and the relations with their parents. Although only 4.8% of the students reported three or more ACE, these showed more precarious SWB in all its dimensions. This corroborates results of studies which demonstrated the negative impact of ACEs on SWB (Moore & Ramirez, 2016), especially with respect to the negative influence of parental neglect on SWB, which makes the child or adolescent feel less satisfied with life and perceive less social support (Festinger & Baker, 2010). These results are susceptible in the case of Chile, since the first cause of child and adolescent admissions to protection services is due to experienced neglect, reaching 31.2% of the cases (Subsecretaría de la Niñez, 2020). The aforementioned corroborate the cumulative effect of ACEs on WB in childhood and adolescence (Atkinson et al., 2015; Bielas et al., 2016; Scott et al., 2013) and the impact of parental neglect experienced by this group.

## 4.2 Well-being and Mental Health

The results indicate that children and adolescents who have less WB have poorer MH.

Specifically, the more internalizing problems children and adolescents have, the poorer is their SWB. This is coherent with studies that suggest the link between SWB and depressive symptomatology (*e.g.* Haranin et al., 2007) and with those which suggest that internalizing difficulties would be the main factor that contributes to the illness and disability of this population worldwide (WHO, 2014). It should be noted that this type of difficulty is associated with lack of interest or energy, a pessimistic view of life and separation of social relations (Kjeldsen et al., 2016), which could explain the decrease in SWB, due to an important part of this is associated with relational links; the capacity of adolescence to generate social connections increases the SWB (Gillham et al., 2011).

## 4.3 Well-being, Gender and Drug Use

The males in this study had higher SWB levels linked to the physical and emotional ambit than did females. Previous studies have produced contradictory results; some have not reported differences between sexes (*e.g.* Castellá Sarriera et al., 2012), while some have found higher SWB in males (*e.g.* The Children's Society, 2017). Fewer studies have found higher SWB in females (*e.g.* Tomyrn & Cummins, 2011). This may occur because gender is a dimension impacted by cultural differences, due to the social construction of the roles, identities and behaviors affects the way that people perceive themselves and others. (Heidari et al., 2016). Thus studies in



different contexts may produce contradictory results with respect to which gender would have better or worse SWB (Mendonça & Simões, 2019).

In this study, more students reported alcohol consumption (14.2%) than the use of other types of drugs (5.4%). Drug consumption was similar to that found in the United States, but lower than that of European and Latin American studies (e.g. Arab et al., 2020; Nardi et al., 2012). The differences among countries may be due to factors such as the diversity of preventive actions, availability of drugs, the economic resources to access them and the socioeconomic conditions of each society, among others (Hibell et al., 2012).

The results show that drug and alcohol consumption was associated with lower SWB; the perception of the aspects linked to the school environment was the most affected. This corroborates the results of studies that link SWB with drug and alcohol consumption (Park & Lee, 2013; Phillips-Howard et al., 2010), which would be related to higher a probability of adolescents with lower SWB developing health-damaging behavior (Phillips-Howard et al., 2010). Finally, it should be mentioned that as in other studies (Castellá Sarriera et al., 2012; Tomyń & Cummins, 2011), SWB decreased as age increased. This is coherent with studies performed in different cultural contexts, which have shown that SWB begins to decrease at about the middle of adolescence (Castellá Sarriera et al., 2012; Tomyń & Cummins, 2011). This may be related to the challenges and complexities that the adolescent confronts in becoming an adult, which generates insecurity until they manage to affirm their identity (Castellá Sarriera et al., 2012; Tomyń et al., 2015).

#### 4.4 Limitations

This study has several limitations. The first refers to the limited number of ACEs evaluated and the use of non-standardized scales to measure them, which reduces the scope of this study, due to other adversities not considered in this study may have greater impact of the lives of children and adolescents. However, given that international studies were used as references for the identification of the ACEs in this study, it is probable that the results would be maintained if other ACE measures are used. Also, the analyses performed only account for the relations between the variables; the predictive value that SWB may have on MH and drug consumption was not evaluated. Because it was a transversal study, the impact of time on the level of SWB experienced is not known.

Another limitation of this study is the gender of the participants and the “Other” option. Given that only a few individuals chose this option ( $n=17$ ), the results must be evaluated cautiously. However, the results obtained are interesting, because those who chose “Other” had lower scores in all the dimensions of well-being compared to the rest of the participants. This is a reflection of the results of studies on LGT-BIQ persons and well-being, which indicate that those who belong to sexual minorities have poorer SWB (Perales, 2016), which was also observed in studies with adolescents (Rieger & Savin-Williams, 2012). These partial results should be examined more deeply, increasing the number of children and adolescents who identify themselves in this category, to be able to extrapolate the results found.

Finally, although the differences found in [well-being and mental health](#) corroborate the appropriate choice of ECAs (given that they were theoretically and statistically relevant), for future work, it would be advisable to contrast the list of selected adversities through the judgment of expert professionals in the field.

#### 4.5 Implications of the Study

The results of this study show the relation existing between SWB, adversities and MH; they suggest that SWB matters if it is desired to mitigate the negative effect of ACEs, promote MH and prevent drug consumption. The need to evaluate SWB is obvious, especially in the school context, because it helps identify students at risk who require intervention (Tomyń & Cummins, 2011). Performing preventive actions would make better SWB possible and favor better academic achievement (Heffner & Antaramian, 2016).

SWB is relevant to cope with ACEs, given that children who experience ACEs have lower levels of SWB, which worsens in those who suffer the cumulative effect of ACEs (three or more adversities simultaneously). This result is a significant input for the Latin American and Chilean context, because evidence about ACEs is scarce in low- and middle-income countries (Kappel et al., 2021). Thus interventions are necessary, oriented to prevent the negative effect of ACEs by promoting SWB. Taking into account that the main ACEs identified in this study are related to community violence and parental neglect, these actions should include an global perspective, involving the student, family, school and community, given that the social determinants of health allow understanding the importance of construction healthy social environments, developing a better sense of community and promoting SWB (Abreu et al., 2016).

Finally, this study also emphasizes that SWB is a dimension that could possibly contribute to encourage MH in children and adolescents, especially with respect to anxiety and depressive symptomatology. Some studies have shown the mediating role of SWB between stressful events and depressive symptomatology (McKnight et al., 2002), which emphasize the relevance of including it if the aim is to prevent the development of depression (Arslan, 2020).

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A.A. analyzed the data.

All authors provided critical feedback and helped shape the research, analysis and manuscript.

All authors discussed the results and contributed to the final manuscript.

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**Data Availability** Data generated during the current study are available from the corresponding author on reasonable request.

## Declarations

**Conflict of Interest** We have no known conflict of interest to disclose.

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