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Title: Victimization and Substance Use Among Adolescents in Residential Child Care

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Abstract

Background: Adolescents in Residential Child Care (RCC) report high levels of victimization. This has been linked to mental health problems and a higher risk of substance use and substance use problems. The present study aimed to evaluate the specific impact of different forms of victimization on alcohol and cannabis use problems among adolescents in RCC, attending to sex differences. **Methods:** 321 adolescents from 38 residential therapeutic care facilities in Spain participated in the study. Thirty-six different forms of victimization were evaluated, as well as alcohol and cannabis use problems. Impact of polyvictimization and specific forms of victimization on alcohol and cannabis use problems and disorders were calculated using Analysis of Variance (ANOVA) and logistic regression models. **Results:** Girls in RCC reported significantly more experiences of victimization. Polyvictimization was associated with alcohol use problems but not cannabis use problems. Property, domestic and community victimization showed the highest predictive role regarding alcohol and cannabis use disorders, with significant interactions with gender and migrant family background. **Conclusions:** Adolescents in RCC reported considerably high levels of victimization and alcohol and cannabis use problems. In this population, property victimization, as well as indirect domestic and community victimization were predictors of further substance use problems, with girls being particularly sensitive to victimization. Migrant family backgrounds can also have an influence on the impact of some victimization forms on substance use. Victimization associated to high-risk environments and families could contribute to explain the high levels of substance use problems in this population.

1. Introduction

Victimization is defined as any harm caused by human agents acting in violation of social norms (Finkelhor, 2008). Among adolescents in Residential Child Care (RCC), over 75% report victimization by peers and siblings, over 65% child maltreatment, over 50% have witnessed family violence, and over 40% have experienced sexual victimization (Indias, Arruabarrena & De Paúl, 2019). These figures are of great concern given that a significant dose-response association has been reported between victimization and poorer self-rated health (Boynton-Jarret, Ryan, Berkman & Wright., 2008). According to Norman, Byambaa, De, Butchart, Scott & Vos (2012), the impact of emotional and physical abuse produces a two-fold increase in the likelihood of adverse mental health outcomes.

Adolescents in RCC present not only high rates of victimization, but also higher rates of mental health problems compared to those from the general population (Campos et al., 2019; González-García et al., 2017), and compared to those under other care measures, such as family foster care (James, Roesch & Zhang, 2011). For instance, among adolescents in RCC, epidemiological studies confirm that 76% of Norwegian adolescents (Jozefiak et al. 2015) had a DSM-IV-TR diagnosis; 47.2% of Americans reported at least one mental health disorder (Heneghan et al., 2013); and 61.1% of Spaniards presented with clinical levels of mental health problems (González-García et al., 2017). Of particular concern is the solid evidence of the high rates of externalizing problems in adolescents in RCC (Keil & Price, 2006). Between 20% and 78% of adolescents in child welfare settings present with externalizing problems (Keil & Price, 2016), and between 15%-39% of them with externalizing disorders (Bronsard et al., 2016). Particularly in Spain, 51.1% of adolescents in RCC reported externalizing problems (González-García et al., 2017).

Among the externalizing problems presented by adolescents, substance use is particularly prevalent. Approximately 37.2% of adolescents in RCC are frequent users of drugs (Martin, González-García, Fernández del Valle & Bravo, 2017), and drug use has shown to be one of the factors predicting referral to Therapeutic Residential Care (TRC; Martín et al., 2017). In TRC, 73.3% of adolescents are substance users (Sabaté-Tomás, Sala-Roca & Arnau, 2017) and up to 66.3% are frequent substance users (Martín et al., 2017). Twenty-three percent of American adolescents in RCC (Heneghan et al., 2013) and 14.6% of Norwegians in RCC (Josefiak et al. 2015) have a substance

use disorder (SUD). More specifically, Aarons et al. (2008) found rates of 12.5% of substance abusers and 4.8% of substance dependents in this population.

Previous studies indicate that poorer psychological adjustment and worse mental health problems are linked precisely to victimization experiences and Polyvictimization (Segura, Pereda, Abad & Guilera, 2016, Davis et al., 2018, Davis et al., 2019, Cyr et al., 2017, Adams et al., 2016). Polyvictimization is defined as experiencing multiple forms of victimization and in multiple contexts (Finkelhor, Ormrod & Turner, 2007). Evidence on the association between victimization and substance use in adolescents and young adults is also well established (Davis et al., 2019; Norman et al., 2012). According to previous research, the more domains in which youth are exposed to violence, the fewer safe havens they have available (Wright, Faga & Pinchevsky, 2013), and the more likely it is that strong negative emotions impact self-regulation (Adrian, Jenness, Kuehn, Smith & McLaughlin, 2019) and cognitive impulsivity (Walter & Espelage, 2018). As a consequence, individuals might rely on specific substances and their effects as maladaptive coping strategies (Agnew, 2006), increasing the risk of further problems (Casajuana et al. 2019). In this context, unique associations might exist between subtypes of victimization and substances of abuse (Moran, Vuchinich & Hall, 2004), and better understanding of such links is crucial to our efforts to improve prevention and treatment of substance abuse in this population (Cyr et al., 2017; Gilreath, Astor, Estrada, Benbenishty & Unger, 2014).

Of all types of victimization, sexual abuse has shown to be the most strongly associated with substance use (Moran et al., 2004). Sexual harassment has been linked to the use of alcohol and drugs (Rinehart, Espelage & Bub, 2017), and sexual victimization with marijuana use (Tyler, Gervais & Davidson, 2012). Among girls, more frequently exposed to sexual harassment and victimization (Rinehart et al., 2017), re-victimization after sexual assaults has been associated with consuming more alcohol, more frequent drinking, binge drinking, problem drinking and use of illicit substances (Angelone, Marcantonio & Melillo, 2017). Other studies have not detected significant differences in the effect of sexual abuse versus physical abuse regarding substance use disorders (Shin, Edwards & Heeren, 2009). Moreover, research has also suggested that the co-occurring sexual abuse and physical abuse has the highest risk profile for further substance use (Moran et al., 2004). Physical abuse has also been linked to the use of tobacco, alcohol and illegal drugs in different populations (Tyler et al., 2012; Tyler,

Kort-Butler & Swendener, 2014), with a stronger link in the case of illegal drugs among girls (Moran et al., 2004). Other forms of direct victimization such as peer victimization and bullying have been linked to high-risk drinking and marijuana use among adolescents (Díaz-Geada et al., 2019; Kelly et al., 2015; Maniglio, 2015; Maniglio, 2016; Priesman, Newman & Ford, 2017). Not only direct forms of victimization have an impact on adolescent's substance use. Violence in the community has been associated with the use of tobacco (Poquiz & Fite, 2016), substance use disorders (Hautala & Sittner, 2018), alcohol use (Taylor & Kliewer, 2006; Pinchevsky, Fagan & Wright, 2014) and marijuana use (Wright et al., 2013; Pinchevsky et al., 2014). In fact, in the study by Pinchevsky et al. (2014) adolescents experiencing both direct and indirect community violence presented the highest risk of later substance use. The effect of indirect victimization on substance use can vary based on ethnicity, peer substance use and other characteristics of the neighborhood (Kulis, Marsiglia, Sicotte & Nieri, 2007; Poquiz et al., 2016).

In recent years, and besides addressing specific subtypes of victimization, some authors have proposed focusing on polyvictimization (Davis et al., 2018; Davis et al., 2019), given its particular link with mental health problems (Finkelhor, Ormrod & Turner, 2007b), substance use and substance use disorders (Segura, Pereda, Guilera & Abad, 2016; Cyr et al., 2017; Adams et al., 2016). Accordingly, exposure to multiple forms of violence and victimization has shown the strongest longitudinal association with substance use (Wright et al., 2013, Pinchevsky et al., 2014; Davis et al., 2018; Davis et al., 2019). High levels of victimization, presented conjointly with high levels of substance use, are in turn linked with more severe profiles of psychological distress and SUD (Pahl, Brook & Lee, 2012).

However, despite the high rates of victimization, substance use and SUD in adolescents in RCC, little is known about the relationship between these constructs in this population. This is not surprising given that these resources and their users are often understudied (Pérez-García et al., 2019). Research has shown that parental support might act as a buffer for mental health problems derived from early victimization (Rasalingam, Clench-Aas & Raanaas, 2017). Adolescents in residential care would lack in some of these buffers that protect them against the negative consequences of victimization, including substance use and SUD. Such interrelation between victimization and substance use may have profound implications for service workers in

the field of adolescent mental health and substance use (Tyler & Melander, 2015), and RCC settings are no exception.

1.1.Current study

The present study has several goals. Firstly, to evaluate the overall prevalence and the sex differences with regards to different forms of victimization, as well as severity of alcohol and cannabis-related problems in a sample of adolescents in Residential Child Care. Based on previous studies we expect that girls will have more victimization and substance use problems than boys (Heneghan et al., 2013; Josefiak et al., 2015). Secondly, previous research has suggested that polyvictimization has a significant impact on substance use and substance use problems. In our study, we aimed at evaluating whether polyvictimization is significantly and independently associated with alcohol and cannabis use problems, accounting for possible sex differences. We hypothesize that a significant relationship might exist between polyvictimization and alcohol and cannabis use problems, but it is unclear if specific associations will appear based on sex or the different substances. Finally, in order to evaluate the possible predictive role of the different forms of victimization on the presence of specific substance use disorders, logistic regression models are built. As indicated above, previous studies have suggested a particularly significant impact of sexual and physical abuse on further substance use problems in different samples of adolescents (e.g. Moran et al., 2004; Tyler et al., 2014).

2. Methods

2.1.Procedure

Firstly, and before data collection, informed consent for participation in the study was obtained from legal tutors and representatives of the adolescents. Secondly, informed consent was also obtained from the adolescents. Thirdly, the team explained the research study to participants and clarified all possible questions. Finally, the evaluators conducted the assessment in person, at the residential care setting, collecting the information for all instruments in one session.

The study meets all ethical requirements established by the 1964 Declaration of Helsinki for research studies with human beings. It has been approved by the Secretariat of Welfare and Social Affairs of the Ministry of Economy and Competitiveness of the

Kingdom of Spain, as well as from the respective Child Welfare authorities from each of the participating Autonomous Communities. The Ethics Committee of Tenerife has approved this study.

2.2.Participants

The sample comprised 321 adolescents, (65.1% boys, 34.9% girls) between 11 and 18 years of age ($M = 15.25$, $SD = 1.34$) who had been living in 38 residential care facilities, particularly therapeutic residential care (TRC) services, across eight different autonomous regions of Spain. TRC refers to a constructed, multi-dimensional living environment designed to enhance or provide treatment, education, socialization, support, and protection to children and youth with identified mental health or behavioral needs in partnership with their families and in collaboration with a full spectrum of community-based formal and informal helping resources (Whittaker, Del Valle & Holmes, 2015, p.24). Adolescents with families from foreign origin made up 23.7% of the sample. More descriptive data can be found in Table 1. The only exclusion criteria for the present study was being an unaccompanied migrant minor, given their unique characteristics as well as an insufficient proficiency with Spanish speaking.

2.3.Instruments

Information was collected through interviews on sociodemographic variables (sex, age) and migrant family background (immigrant origin: yes/no).

The Spanish translation conducted by GREVIA (Research Group on Child and Adolescent Victimization at the University of Barcelona; Pereda, Gallardo-Pujol, & Guilera, 2018) of the Juvenile Victimization Questionnaire (Hamby, Finkelhor, Ormrod & Turner, 2005) was utilized to gather information on a broad range of lifetime victimization experiences. The JVQ collects information on 36 different forms of victimization along the adolescents' lifetime in six general areas: Conventional Crime (CC), Child Maltreatment (CM), Peer and Sibling Victimization (PSV), Sexual Victimization (SV), Witnessing and Indirect Victimization (IV), and Internet Victimization (IntV). In turn, Conventional Crime can be divided in person victimization and property victimization; and SV can be divided into sexual victimization with and without contact. IV comprises indirect domestic victimization and indirect community victimization. Detailed definitions of every form of victimization can be found in the JVQ manual (Hamby, 2005). Internal consistency of

the JVQ is very good, with an internal reliability of $\alpha = .80$ (Finkelhor, Hamby, Ormrod & Turner, 2005). Following the authors recommendation (Hamby et al., 2005), scores from the JVQ have been aggregated into the aforementioned modules, in a dichotomous manner (absence/presence of any victimization in every module).

Following previous studies (Pereda et al., 2014; Segura et al., 2016), victimization scores were also recoded to evaluate the presence of levels of lifetime polyvictimization. Firstly, and following suggestions from the developers of the JVC (Finkelhor, Ormrod & Turner, 2009), the polyvictimization threshold for our sample was established as that of the top 10% with the highest victimization exposure. The authors also indicate that classification of lifetime victimization experiences should take into account differences associated to the age of the adolescents (Finkelhor, Ormrod & Turner, 2009). Therefore, we followed the categorization used by Pereda et al. (2014) with a community sample of Spanish adolescents to create two age groups (children under 14 years of age, and adolescents aged 14 years or older), in order to establish different polyvictimization thresholds for each one. The 10% threshold was then calculated for each age group. In both groups, polyvictimization was defined as presenting more than 20 victimization experiences (“high polyvictimization” group).

Secondly, and given that adolescents in RC often present with considerably higher rates of victimization (Indias, Arruabarrena & De Paúl, 2019) than community samples, we also introduced a “mid polyvictimization” threshold with the cut-offs established by Pereda et al. (2014) with the community sample of adolescents in Spain, adjusted also for age; namely: 7 or more victimization experiences for children under 14, and 9 or more victimization experiences for adolescents aged 14 or older. As a result, three polyvictimization categories were created, in line with previous studies (Segura et al., 2016), but adjusting also for age: “low polyvictimization” (suffering between 1–6 forms of victimization for adolescents under 14 years of age; and 1-8 forms of victimization for adolescents older than 14), “mid polyvictimization” (7-20 forms for under 14, and 9–20 forms for 14 years or older), and “high polyvictimization” (≥ 21 forms of victimization). The no-victimization group was excluded from the analysis given its low prevalence (2 girls and 11 boys).

Alcohol use problems (AUP) were evaluated using the Spanish version (López-Núñez, Fernández-Artamendi, Fernández-Hermida & Campillo-Álvarez, 2012) of the Rutgers Alcohol Problems Index (RAPI; White and Labouvie, 1989). This self-reported

questionnaire includes 23 questions with Likert-type responses (where 0 = never; 1 = 1 to 2 times; 2 = 3 to 5 times; 3 = more than 5 times) on the frequency of alcohol-related events that occurred in the last 12 months. This version has shown excellent reliability (Cronbach's $\alpha = 0.91$) with adolescents, and a cut-off level of 7 points showed a sensitivity and specificity of 81,9% and 73,1% respectively for the presence of Alcohol Use Disorders (AUD; López-Núñez et al., 2012).

Cannabis use problems (CUP) were evaluated using the Spanish version (Fernández-Artamendi, Fernández-Hermida, Muñoz-Fernández, Secades-Villa & García-Fernández, 2012) of the Cannabis Problems Questionnaire for Adolescents – Short Form (CPQ-A-S; Proudfoot, Vogl, Swift, Martin & Copeland, 2010). This questionnaire includes 12 dichotomous items screening for the presence of different problems commonly associated with cannabis use. A score of 3 points presents a sensitivity and specificity of 83% and 77,5% respectively for Cannabis Use Disorders (CUD; Fernández-Artamendi et al., 2012).

2.4.Data analysis

Firstly, descriptive analyses were carried out on the sociodemographic characteristics (sex, age, immigrant family) of the sample, including prevalence of victimization in each of the submodules of the JVC; and mean scores and standard deviations of the RAPI and CPQ-A-S. Secondly, bivariate analyses were carried out to evaluate the sex differences in the aforementioned variables. Chi-square statistics and Analysis of Variance (ANOVA) with Bonferroni correction to control for Type I error were utilized for categorical and continuous variables, respectively. Size effects were calculated using Cramer's V for categorical variables and Eta-squared (η^2) for ANOVA. Thirdly, bivariate analyses were carried out, segregated by sex, to evaluate the relationship between lifetime polyvictimization and scores on the RAPI and CPQ-A-S, by means of ANOVA with Bonferroni correction.

Lastly, two independent logistic regression models were developed to evaluate the predictive value of subtypes of victimization regarding the presence of AUD and CUD, according to RAPI and CPQ-A-S cut-off scores, respectively. Each model was developed following several steps: Firstly, preliminary bivariate analyses were carried out between subtypes of victimization, possible confounding variables (sex, immigrant family) and presence of an AUD/CUD, using chi square estimated risk odd ratios.

Those variables with significant odd ratios ($p < .05$) were considered for inclusion in each respective model. Secondly, possible interactions between predictor (presence of subtypes of victimization) and confounding variables (sex, immigrant family) were evaluated using the Breslow-Day test. In the case of sex, “male” was the reference group, and in the case of “migrant family background”, the non-immigrant family was considered the reference. Those interactions that resulted significant ($p < .05$) were considered for inclusion in the final models. With the selected variables, two separate logistic regression models were created for AUD and CUD.

3. Results

3.1. Descriptive results for the whole sample

The average RAPI score in the whole sample was 15.93 ($sd = 15.35$), and the mean score in the CPQ-A-S was 3.28 ($sd = 2.66$), in both cases above the clinical thresholds established for the respective instruments (López-Núñez et al., 2012; Fernández-Artamendi et al., 2012). More specifically, 62.7% of participants presented scores over the clinical threshold according to the RAPI, and 58.4% according to the CPQ-A-S. The average number of victimization experiences was 12.34 ($sd = 16.46$), in an average of 4.24 areas ($sd = 1.46$). The highest prevalence was for indirect community victimization (91.0%) and the lowest was sexual victimization with contact (25.5%). As of lifetime polyvictimization, 24.1% were categorized in the “low polyvictimization” group, 63.5% in the mid polyvictimization group and 10.8% in the high polyvictimization group.

3.2. Sex differences

Results from ANOVA indicate that no significant differences ($F = 2.578$, $df = 320$, $p = .109$, $\eta^2 = .005$) exist regarding age between boys ($M = 15.34$, $sd = 1.35$) and girls ($M = 15.09$, $sd = 1.29$). No significant differences were found either in AUP ($F = 0.005$, $df = 313$, $p = .943$, $\eta^2 = .004$; boys: $M = 15.89$, $sd = 15.15$; girls: $M = 16.02$, $sd = 15.80$) or CUP ($F = 0.040$, $df = 316$, $p = .841$, $\eta^2 = .001$; boys: $M = 3.30$, $sd = 2.62$; girls: $M = 3.24$, $sd = 2.76$).

Results indicate that girls reported a significantly higher number of victimization experiences, areas of victimization, prevalence of property victimization and person victimization, child maltreatment, sexual victimization (including with and without contact), indirect domestic victimization and internet victimization; compared to boys (p

< .05). Significant sex differences were also found in levels of polyvictimization ($p = .001$), with standardized residuals indicating that a significantly higher number of girls were highly polyvictimized, whereas a significantly higher number of boys were in the “low polyvictimization” group. Despite the statistical significance of these gender differences, it has to be noted that effect sizes were small in all cases. Sex differences in victimization are shown in *Table 1*.

--- Insert Table 1 here ---

3.3. Polyvictimization

Regarding the relationship between polyvictimization and AUP and CUP, results from the bivariate analyses indicate that significant differences existed among boys and girls in alcohol use problems (*Table 2*). Post-hoc analyses revealed that highly polyvictimized girls reported significantly more alcohol use problems than those in the low ($p < .001$) and mid-polyvictimization ($p = .001$) groups. Highly polyvictimized boys reported significantly more alcohol use problems than those in the low polyvictimization group ($p = .027$).

--- Insert Table 2 here ---

3.4. Logistic regression analyses

AUD Model. According to preliminary bivariate analyses, none of the subtypes of victimization or the confounding variables resulted a significant predictor ($p > .05$) of AUD. As indicated by the Breslow-Day test, significant interactions were detected between CC Property * Sex ($\chi^2 = 4.828, p = .028$), IV Domestic * Sex ($\chi^2 = 6.279, p = .012$) and IV Domestic * Immigrant family ($\chi^2 = 5.090, p = .024$). A backwards logistic regression model was created including these interactions, the variables involved and the confounding variables. Resulting model is presented in *Table 4* (R^2 Nagelkerke = .087). Predictive model of AUD indicated that being a girl is a significant protective factor for AUD (o.r. = .117), whereas an immigrant family background was a risk factor (o.r. = 2.867). Also, the interaction between CC Property and sex (o.r. = 4.380), and IV Domestic and sex (o.r. = 1.545) were risk factors for AUD; and the interaction between indirect domestic victimization and immigrant family was a protective factor (o.r. = .321).

--- Insert Table 3 here ---

CUD Model. According to the results from preliminary bivariate analyses, IV Community ($\chi^2 = 6.402, p = .011, \text{o.r.} = 2.747$), and belonging to an Immigrant Family ($\chi^2 = 6.468, p = .011, \text{o.r.} = 0.484$) resulted significant predictors of CUD. Breslow-Day tests indicated that significant interactions existed between CC Property * Imm Family ($\chi^2 = 3.975; p = .046$) and IV Domestic * Sex ($\chi^2 = 5.352, p = .021$). A backwards logistic regression model was created with these interactions and their variables. The full model is included in *Table 5* (R^2 Nagelkerke = .095). Results indicated that female sex is a protective factor for CUD ($\text{o.r.} = .468$), as well as the interaction between CC Property and Immigrant Family ($\text{o.r.} = .348$). On the contrary, CC Property ($\text{o.r.} = 2.894$), IV Community ($\text{o.r.} = 2.313$) and the interaction between IV Domestic and sex ($\text{o.r.} = 2.842$) resulted risk factors.

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4. Discussion

Adolescents in RCC present high rates of externalizing disorders and externalizing mental health symptoms (Keil & Price, 2006), among which substance use disorders are highly prevalent (Heneghan et al., 2013; Josefiak et al., 2015; Martin et al., 2017). Also, this population reports high rates of victimization (Indias et al., 2019). However, little is known about the association between such experiences of victimization and the development of specific substance use problems in this population. Evidence is also scarce regarding the possible sex differences in this relationship.

Our study replicates the high rates of victimization found in previous research with adolescents in RCC (Indias et al., 2019, Segura et al., 2015). In our study, adolescents in RCC reported an average of 12 victimization experiences, in an average of 4 areas. Moreover, 36.1% of the sample reported high levels of polyvictimization (meaning more than 20 forms of victimization), including 6.6% of boys and 20.0% of girls. In line with the observed trends in the general population (Bohle & de Vogel, 2017) we have detected significantly higher rates of victimization among girls, including a higher number of victimization experiences, more victimization areas and more polyvictimization. Our results extend data from previous studies with general population to adolescents in RCC, indicating that girls are in a particularly vulnerable situation regarding victimization.

On the other hand, our results indicate that no significant sex differences exist in the severity of AUP and CUP among adolescents in RCC. It is of great concern though that the average scores of the CPQ-A-S and the RAPI are over the clinical thresholds established with general populations (López-Núñez et al., 2012; Fernández-Artamendi et al., 2012). Also, the absence of sex differences in this population is surprising given that the prevalence of substance use (EMCDDA, 2005, 2006) and substance use disorders (Merikangas et al., 2019) are usually higher among males in the general population. In previous studies, girls in RCC have shown higher rates of externalizing problems (Connor, Doerfler, Toscano, Volungis & Steingard, 2004) and a higher representation among those with severe rehabilitation needs (Lanctôt, 2017) compared to boys. In our study, girls also exhibited a particularly severe profile of substance use problems, but with no significant differences with respect to boys.

Previous results on the links between victimization and substance use and abuse have been replicated with specific populations, including homeless and run-away adolescents (Tyler et al., 2012), imprisoned women (Triposi & Pettus-Davis, 2013), juvenile offenders (Davis et al., 2017; Davis et al., 2018), ethnic minorities (Pahl et al., 2012), sexual minorities (Swann, Forscher, Bettin, Newcomb & Mustanski, 2018) and indigenous groups in North America (Hautala et al., 2018), among others. Our results extend this association to adolescents in RCC. Moreover, they indicate that substance specific differences exist in this regard, since polyvictimization was not associated with CUP neither in boys nor in girls, whereas AUP was linked to polyvictimization in boys and girls. According to our results, we hypothesize that polyvictimization could contribute to explain the high levels of alcohol use problems among adolescents in RCC. However, it has to be noted that several forms of victimization were included in our study under the label “polyvictimization”, including, among others, sexual victimization. Previous research indicates that sexual victimization might be a risk factor for alcohol use (Sartor et al., 2007), while at the same time alcohol use has been found to be a risk factor for sexual victimization (Mouilso & Fischer, 2016). Given our cross-sectional design, hypothesized directionality must be interpreted with caution.

Regression models indicate that girls are at a lower risk of developing AUD and CUD, in line with previous studies (Moran et al., 2004) and research showing lower rates of SUD among girls (Goldstein, Dawson, Chou & Grant, 2012) across different developmental stages (Duncan et al., 2015). However, interactions in regression models

suggest that victimization is a stronger risk factor among girls. The poorer psychological adjustment of girls in RCC has already been specifically associated with child maltreatment and other traumas (Van Vugt, Lanctôt, Paquette, Collin-Vézina & Lemieux, 2014) and the necessity of addressing the specific needs of girls' mental health and other consequences of victimization has been already pointed out (Lanctôt, 2017). Additionally, significant differences in victimization have been reported between adolescents from immigrant and local families (Indias et al., 2019). In our study, belonging to an immigrant family was a risk factor for developing AUD, with a threefold increase compared to adolescents with a local family. Spain is a "wet drinking culture" with normalized alcohol drinking (Gual, 2006; Room & Mäkelä, 2000) and frequent underage binge drinking (Cortés-Tomás, Espejo Tort & Jiménez Costa, 2010). Thus, socialization of adolescents from immigrant families in our culture could be facilitating high-risk drinking patterns, increasing the risk of AUD. Nevertheless, and as indicated above, given our cross-sectional design, further research should clarify the hypothesized directionally.

Several forms of violence seemed to be significant predictors of AUD and CUD. Particularly, property victimization, and indirect domestic and community victimization were the only predictors of AUD or CUD. Contrary to Agnew (2006), indirect victimization was a more significant predictor than direct forms of victimization among adolescents in RCC, at least with regards to SUD. Surprisingly, other forms of victimization consistently and strongly linked to substance use problems in other populations, such as sexual and physical victimization (Moran et al., 2004; Rinehart et al., 2007; Tyler et al., 2012), were not significant predictors of AUD and CUD in our sample. Finally, the role of sex and belonging to an immigrant family seemed determinant in these associations. Results indicate that property victimization is associated with a higher risk of CUD among all adolescents, regardless of sex.

However, it is only among girls that property victimization is a significant risk factor for AUD, pointing to sex-specific effects of this form. This result would suggest a higher sensitivity of girls to present SUD associated to different forms of victimization. Property victimization refers to experiences such as robberies and assaults (Hamby et al., 2005), which could be linked to specific high-risk environments. It has been widely reported that disordered neighborhoods are associated with higher substance use among adolescents (Latkin, Curry, Hua & Davey, 2007; Mannis & Mason, 2011), and increase

the likelihood of trying and using illegal drugs (Storr, Chen & Anthony, 2004). Accordingly, our results indicate that indirect community victimization is associated with a higher risk of cannabis use disorders (an illegal substance in Spain) in both sexes. Taken together, our results suggest that indirect victimization and high-risk neighborhoods and environments would have the most significant impact on alcohol and cannabis use disorders among adolescents in RCC.

Finally, indirect domestic victimization increases the risk of AUD and CUD only among girls. Experiences of domestic violence can be a significant source of emotional stress, and in line with previous studies (Romito & Grassi, 2007) we have also found that girls are more likely to report such experiences. Our results suggest again that girls would turn significantly more to alcohol and cannabis as a consequence of victimization; but given our cross-sectional design this hypothesis has yet to be confirmed. On the other hand, interactions from the regression model indicate that belonging to an immigrant family might act as a buffer against the impact of indirect domestic victimization on AUD and CUD. Prevalence of domestic violence in countries of origin of immigrant families (mostly South America and Northern Africa) is higher than in Spain (WHO, 2013), where it is considered a key social problem that attracts public interest and that has triggered the deployment of numerous public prevention and educational measures in previous years (Ministry of Equality of Spain, n.d.). This could increase the emotional impact of domestic violence in the offspring of local families, in contrast with adolescents from foreign origin. This hypothesis however would still require more research.

4.1. Limitations

This study is not without limitations. Firstly, victimization has been evaluated by means of self-reports, and therefore, we cannot account for possible biases in the reporting of such experiences. Nevertheless, the JVC is a robust, reliable and valid instrument to assess victimization and our results are consequently comparable to most studies in the field. Secondly, questionnaires utilized to evaluate alcohol and cannabis use problems have clinical thresholds that have been established with general population samples of adolescents, and their interpretation must be done with caution, more so when it comes to the diagnoses of AUD and CUD. Thirdly, only sex and immigrant family background could be included as control variables in the regression analyses, and other potential confounding variables might have an impact on the relationship between victimization

and substance use. Moreover, recent studies indicate that additional characteristics associated with victimization experiences such as perceived risk, perpetrator trust and social reactions to disclosure could also mediate such relationship (Davis et al., 2019). In our study, such variables were not included due to the extent of the evaluation battery and the possible fatigue of participants. Therefore, further studies should be carried out with additional mediating variables including also mental health symptoms and disorders. Lastly, given the cross-sectional design of our study, we cannot make strict inferences about causality or about the directionality of the associations found in this study.

Conclusions

According to our results, girls reported significantly more experiences of victimization and in more areas than boys. Regarding alcohol and cannabis use problems, average scores of the evaluated sample were over the clinical thresholds established by the corresponding assessment instruments, indicating a high level of substance use problems in this population. However, no significant sex differences were found in this regard; which contradicts figures among the general population of adolescents, where boys often present with higher rates of alcohol and cannabis use, as well as of related problems. Also, polyvictimization was significantly associated with alcohol use problems, but not with cannabis use problems, with no significant differences between sexes. According to our regression models, the risk of presenting AUD associated to victimization is stronger among adolescent girls in RCC. Finally, different forms of victimization showed a different relation to the presence of clinical levels of alcohol and cannabis-related problems. Particularly, property victimization, and indirect victimization (domestic and communitarian) were the greatest risk factors, moderated by sex and the immigrant background of the family. Our study stresses the importance of implementing early screening of victimization experiences and their consequences among adolescents in RCC, as well as appropriate interventions to address them.

5. References

Aarons, G. A., Monn, A. R., Hazen, A. L., Connelly, C. D., Leslie, L. K., Landsverk, J. A., ... Brown, S. A. (2008). Substance involvement among youths in child welfare: The role of common and unique risk factors. *American Journal of Orthopsychiatry*, 78(3), 340–349. <http://doi.org/10.1037/a0014215>

Adams, Z.W., Moreland, A., Cohen, J.R., Lee, R.C., Hanson, R.F., Kmett Danielson, K., ... Briggs, E.C. (2016). *Psychological Violence*, 6(1). doi:10.1037/a0039713.

Angelone, D.J., Marcantonio, T. & Melillo, J. (2018). An evaluation of adolescent and young adult (Re) victimization experiences: Problematic substance use and negative consequences. *Violence against women*, 24(5). 586-602.

<https://doi.org/10.1177/1077801217710001>

Adrian, M., Jenness, J.L., Kuehn, K.S., Smith, M.R., & McLaughlin, K. (2019). Emotion regulation processes linking peer victimization to anxiety and depression symptoms in adolescence. *Development and Psychopathology*, 31, 999-1009. doi:10.1017/S0954579419000543

Agnew, R. (2006). *Pressured into crime: An overview of general strain theory*. Cary, NC: Roxbury Publishing Company.

Bohle, A. & de Vogel, V. (2017). Gender differences in victimization and the relation to personality disorders in forensic psychiatry. *Journal of Aggression, Maltreatment and Trauma*, 26(4), 411-429. <http://dx.doi.org/10.1080/10926771.2017.1284170>

Boynton-Jarret, R., Ryan, L.M., Berkman, L.F., & Wright, R.J. (2008). Cumulative Violence Exposure and Self-Rated Health: Longitudinal Study of Adolescents in the United States *Pediatrics*, 122(5). doi: 10.1542/peds.2007-3063.

Bronsard, G., Alessandrini, M., Fond, G., Loundou, A., Auquier, P., Tordjman, S., & Boyer, L. (2016). The Prevalence of Mental Disorders Among Children and Adolescents in the Child Welfare System. *Medicine*, 95(7), e2622.

Campos, J., Barbosa-Ducharne, M., Dias, P., Rodrigues, S., Martins, A.C. & Leal, M. (2019). Emotional and behavioral problems and psychosocial skills in adolescents in residential care. *Child and Adolescent Social Work Journal*, 36(3), 237-246.

<https://doi.org/10.1007/s10560-018-0594-9>

Casajuana Kogel, C., López-Pelayo, H., Oliveras, C., Colom, J., Gual, A. & Olivero-Balcells, M.M. (2019). The relationship between motivations for cannabis consumption and problematic use. *Adicciones*. doi: 10.20882/adicciones.1221

Connor, D.F., Doerfler, L.A., Toscano, P.F., Volungis, A.M. & Steingard, R. (2004). Characteristics of children and adolescents admitted to residential treatment center.

Journal of Child and Family Studies, 13(4), 497-510. doi:
10.1023/B:JCFS.0000044730.66750.57

Cortés-Tomás, M.T., Espejo Tort, B. & Jiménez Costa, J.A. (2007). Características que definen el fenómeno del botellón en universitarios y adolescentes. *Adicciones*, 19(4). doi.org/10.20882/adicciones.295

Cyr, K., Chamberland, C., Clement, M.E., Wemmers, J.A., Collin-Vezina, D., Lessard, G., ... Damant, D. (2017). The impact of lifetime victimization and polyvictimization on adolescents in Quebec: Mental health symptoms and gender differences. *Violence & Victims*, 32(1), 3-21. doi: 10.1891/0886-6708.VV-D-14-00020.

Davis, J.P., Dumas, T.M., Berey, B.L., Merrin, G.J., Cimpian, J.R. & Roberts, B.W. (2017). Effect of victimization on impulse control and binge drinking among serious juvenile offenders from adolescence to young adulthood. *Journal of Youth and Adolescence*, 46(7), 1515-1532. doi: 10.1007/s10964-017-0676-6

Davis, J.P., Dumas, T.M., Berey, B., Merrin, G.J., Tan, K., Madden, D.R. (2018). Poly-victimization and trajectories of binge drinking from adolescence to young adulthood among serious juvenile offenders. *Drug and Alcohol Dependence*, 186. 29-35. <https://doi.org/10.1016/j.drugalcdep.2018.01.006>

Davis, J.P., Dworkin, E.R., Helton, J., Prindle, J., Patel, S., Dumas, T.M. & Miller, S. (2019). Extended poly-victimization theory: Differential effects of adolescents' experiences of victimization on substance use disorder diagnoses upon treatment entry. *Child Abuse & Neglect*, 89, 165-177.

Díaz-Geada, A., Espelt, A., Bosque-Prous, M., Obradors-Rial, N., Teixidó-Compañó, E. & Caamaño-Isorna (2019). Association between negative mood states, psychoactive substances consumption and bullying in school-aged adolescents. *Adicciones*.

Duncan, S.C., Grau, J.F., Farmer, R.F., Seeley, J.R., Kosty, D.B. & Lewinsohn, P.M. (2015). Comorbidity and temporal relations of alcohol and cannabis use disorders from youth through adulthood. *Drug and Alcohol Dependence*, 149. 80-86. doi: 10.1016/j.drugalcdep.2015.01.025

European Monitoring Centre on Drugs and Drug Abuse (2005). Differences in patterns of drug use between women and men. Lisbon: EMCDDA.

European Monitoring Centre on Drugs and Drug Abuse (2006). Annual Report 2006, Selected Issue 2: A gender perspective on drug use and responding to drug problems. Lisbon: EMCDDA.

Fernández-Artamendi, S., Fernández-Hermida, J.R., Muñiz-Fernández, J., Secades-Villa, R., García-Fernández, G. (2012). Screening of cannabis-related problems among youth: The CPQ-A-S and CAST questionnaires. *Substance abuse treatment, prevention and policy*, 7(13). doi: 10.1186/1747-597X-7-13

Finkelhor, D., Hamby, S.L., Ormrod, R. & Turner, H. (2005). The Juvenile Victimization Questionnaire: Reliability, validity, and national norms. *Child Abuse & Neglect*, 29, 383-412. doi:10.1016/j.chiabu.2004.11.001

Finkelhor, D., Ormrod, R.K., & Turner, H. A. (2007). Polyvictimization and trauma in a national longitudinal cohort. *Development and Psychopathology*, 19(01),149–166. doi: 10.1017/S0954579407070083

Finkelhor, D., Ormrod, R.K. & Turner, H.A. (2009). Lifetime assessment of Polyvictimization in a national sample of children and youth. *Child Abuse & Neglect*, 33, 403-433. doi: 10.1016/j.chiabu.2008.09.012

Gilreath, T.D., Astor, R.A., Estrada Jr, J.N., Benbenishty, R. & Unger, J.B. (2014). School victimization and substance use among adolescents in California. *Prevention Science*, 16(6), 897-906. doi: 10.1007/s11121-013-0449-8

Goldstein, R.B., Dawson, D.A., Chou, S.P., & Grant, B.F. (2012). *Journal of Studies on Alcohol and Drugs*, 73(6). 938-950. DOI: 10.15288/jsad.2012.73.938

González-García, C., Bravo, A., Arruabarrena, I., Martín, E., Santos, I., & Del Valle, J. F. (2017). Emotional and behavioral problems of children in residential care: Screening detection and referrals to mental health services. *Children and Youth Services Review*, 73, 100–106. <http://doi.org/10.1016/j.chilyouth.2016.12.011>

Gual, A. (2006). Alcohol in Spain. Is it different? *Addiction*, 101(8), 1073-1077. <https://doi.org/10.1111/j.1360-0443.2006.01518.x>

Hamby, S. L., Finkelhor, D., Ormrod, R., & Turner, H. (2005). *The Juvenile Victimization Questionnaire (JVQ): Administration and Scoring Manual*. Durham, NH: Crimes Against Children Research Center.

Hautala, D. & Sittner, K. (2018). Moderators of the association between exposure to violence in community, family, and dating contexts and substance use disorder risk among North American Indigenous adolescents. *Journal of Interpersonal Violence*. doi: 10.1177/0886260518792255

Heneghan, A., Stein, R. E. K., Hurlburt, M. S., Zhang, J., Rolls-Reutz, J., Zhang, J., ... Horwitz, S. M. (2013). Mental health problems in teens investigated by U.S. child welfare agencies. *Journal of Adolescent Health*, 52(5), 634–640. <http://dx.doi.org/10.1016/j.jadohealth.2012.10.269>;

Indias, S., Arruabarrena, I. & De Paúl, J. (2019). Child maltreatment, sexual victimization and peer victimization experiences among adolescents in residential care. *Child and Youth Services Review*, 100. <https://doi.org/10.1016/j.chilyouth.2019.03.014>

James, S., Roesch, S., & Zhang, J. J. (2011). Characteristics and Behavioral Outcomes for Youth in Group Care and Family-Based Care. *Journal of Emotional and Behavioral Disorders*, 20(3), 144–156. <http://doi.org/10.1177/1063426611409041>

Jozefiak, T., Kayed, N. S., Rimehaug, T., Wormdal, A. K., Brubakk, A. M., & Wichstrøm, L. (2015). Prevalence and comorbidity of mental disorders among adolescents living in residential youth care. *European Child & Adolescent Psychiatry*, 25(1), 33–47. <http://doi.org/10.1007/s00787-015-0700-x>.

Keil, V. & Price, J.M. (2006). Externalizing behavior disorders in child welfare settings: Definition, prevalence, and implications for assessment and treatment. *Children and Youth Services Review*, 28(7), 761-779. doi:10.1016/j.chilyouth.2005.08.006

Kelly, E.V., Newton, N.C., Stapinski, L.A., Slade, T., Barrett, E.L., Conrod, P.J. & Teeson, M. (2015). Concurrent and prospective associations between bullying victimization and substance use among Australian adolescents. *Drug and Alcohol Dependence*, 154, 63-68. <http://dx.doi.org/10.1016/j.drugalcdep.2015.06.012>

Kulis, S., Marsiglia, F.F., Sicotte, D. & Nieri, T. (2007). Neighborhood effects on youth substance use in a Southwestern city. *Sociological Perspectives*, 50(2). 10.1525/sop.2007.50.2.273

Lanctôt, N. (2017) Gender-responsive programs and services for girls in residential centers. (2017). *Criminal Justice and Behavior*, 45(1). 101-120.

<https://doi.org/10.1177/0093854817733495>

Latkin, C.A., Curry, A.D., Hua, W. & Davey, M.A. (2007). Direct and indirect associations of neighborhood disorder with drug use and high-risk sexual partners. *American Journal of Preventive Medicine*, 32(6S). doi:10.1016/j.amepre.2007.02.023

López-Núñez, C., Fernández-Artamendi, S., Fernández-Hermida, J.R., Campillo-Álvarez, A. & Secades-Villa, R. (2012). Spanish adaptation and validation of the Rutgers Alcohol Problems Index (RAPI). *International Journal of Clinical and Health Psychology*, 12(2).

Maniglio, R. (2015). Association between peer victimization in adolescence and cannabis use: A systematic review. *Aggression & Violent Behavior*, 25(B). 252-258. <https://doi.org/10.1016/j.avb.2015.09.002>

Maniglio, R. (2016). Bullying and other forms of peer victimization in adolescence and alcohol use. *Trauma, Violence & Abuse*, 18(4). 457-473. DOI: 10.1177/1524838016631127

Mannis, J. & Mason, M.J. (2011). People, places, and adolescent substance use: Integrating activity space and social network for analyzing health behavior. *Annals of the Association of American Geographers*, 101(2). DOI:10.1080/00045608.2010.534712

Martín, E., González-García, C., del Valle, J. F., & Bravo, A. (2017). Therapeutic residential care in Spain. Population treated and therapeutic coverage. *Child & Family Social Work*, 23(1), 1–7. <http://doi.org/10.1111/cfs.12374>

Merikangas, K.R., He, J-p., Burstein, M., Swanson, S.A., Avenevoli, S., Cui, L. ... Swendsen, J. (2019). Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Survey Replication– Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry*, 49(10). doi:10.1016/j.jaac.2010.05.017

Ministry of Equality of Spain (n.d.). Planes de Actuación [Action Plans]. Retrieved from: <http://www.violenciagenero.igualdad.gob.es/en/planActuacion/home.htm>

Moran, P.B., Vuchinich, S. & Hall, N.K. (2004). Associations between types of maltreatment and substance use during adolescence. *Child Abuse & Neglect*, 28(5). 565-576. doi: 10.1016/j.chiabu.2003.12.002

Norman, R.E., Byambaa, M., De, R., Butchart, A., Scott, J. & Vos, T. (2012). The long-term health consequences of child physical abuse, emotional abuse, and neglect: A systematic review and meta-analysis. *PLOS Medicine*, 9(11). doi: 10.1371/journal.pmed.1001349

Pahl, K., Brook, J.S. & Lee, J.Y. (2012). Joint trajectories of victimization and marijuana use and their health consequences among urban African American and Puerto Rican young men. *Journal of Behavioral Medicine*, 36(3). 305-314. doi: 10.1007/s10865-012-9425-1

Pereda, Gallardo-Pujol, & Guilera (2018). Good practices in the assessment of victimization: The Spanish adaptation of the Juvenile Victimization Questionnaire. *Psychology of Violence*, 8(1), 76-86.

Pinchevsky, G.M. Fagan, A.A. & Wright, E.M. (2014). Victimization experiences and adolescent substance use: Does the type and degree of victimization matter? *Journal of Interpersonal Violence*, 29(2). DOI: 10.1177/0886260513505150

Poquiz, J.L. & Fite, P.J. (2016). The role of perceived peer substance use in the associations between community violence and lifetime substance use among Latino adolescents. *Journal of Community Psychology*, 44(7). 945-952. doi: 10.1002/jcop.21819

Priesman, E., Newman, R. & Ford, J.A. (2017). Bullying victimization, binge drinking, and Marijuana use among adolescents: Results from the 2013 National Youth Risk Behavior Survey. *Journal of Psychoactive Drugs*, 50(2). doi: 10.1080/02791072.2017.1371362

Proudfoot, H., Vogl, L., Swift, W., Martin, G. & Copeland, J. (2010). Development of a short cannabis problems questionnaire for adolescents in the community. *Addictive Behaviors*, 35(7). 734-737. <https://doi.org/10.1016/j.addbeh.2010.03.012>

Rasalingam, A., Clench-Aas, J. & Raanaas, R.K. (2017). Peer victimization

and related mental health problems in early Adolescence: The mediating role of parental and peer support. *Journal of Early Adolescence*, 37(8). 1142-1162. <https://doi.org/10.1177/0272431616653474>

Rinehart, S.J., Espelage, D.L. & Bub, K.L. (2017). Longitudinal effects of gendered harassment perpetration and victimization on mental health outcomes in adolescence. *Journal of Interpersonal Violence*. DOI: 10.1177/0886260517723746

Romito, P. & Grassi, M. (2007). Does violence affect one gender more than the other? The mental health impact of violence among male and female university students. *Social Science & Medicine*, 65(6). doi:10.1016/j.socscimed.2007.05.017

Room, R. & Mäkelä, K. (2000). Typologies of the cultural position of drinking. *Journal of Studies on Alcohol*, 61(3). DOI: 10.15288/jsa.2000.61.475

Sabate-Tomàs, M., Sala-Roca, J. & Arnau, L. (2017). Els CREI de Catalunya. Intervenció, perfil i evolució dels joves atesos. [CREI en Catalonia. Intervention, profile and evolution of youth looked after] Catalunya: Direcció General d'Atenció a la Infància i l'Adolescència.

Segura, A., Pereda, N., Abad, J. & Guilera, G. (2015). Victimization and polyvictimization among Spanish youth protected by the child welfare system. *Child and Youth Services Review*, 59, 105-112.

Segura, A., Pereda, N., Guilera, G. & Abad, J. (2016). Poly-victimization and psychopathology among Spanish adolescents in residential care. *Child Abuse & Neglect*, 55. 40-51. doi: 10.1016/j.chiabu.2016.03.009

Shin, S.H., Edwards, E.M., & Heeren, T. (2009). Child abuse and neglect: Relations to adolescent binge drinking in the national longitudinal study of Adolescent Health Study. *Addictive Behaviors*, 34(3), 277–280. doi: 10.1016/j.addbeh.2008.10.023

Storr, C.L., Chen, C-Y & Anthony, J.C. (2004). “Unequal opportunity”: neighborhood disadvantage and the chance to buy illegal drugs. *Journal of Epidemiological Community Health*, 58. 231-237. doi: 10.1136/jech.2003.007575

Swann, G., Forscher, E., Bettin, E., Newcomb, M.E. & Mustanski, B. (2018). Effects of victimization on mental health and substance use trajectories in young sexual minority men. *Development and Psychopathology*, 31(4). doi:10.1017/S0954579418001013

Taylor, K.W. & Kliwer, W. (2006). Violence exposure and early adolescent alcohol use: An explanatory study of family risk and protective factors. *Journal of Child and Family Studies*, 15(2). 207-221. DOI: 10.1007/s10826-005-9017-6

Tripodi, S.J. & Pettus-Davis, C. (2013). Histories of childhood victimization and subsequent mental health problems, substance use, and sexual victimization for a sample of incarcerated women in the US. *International Journal of Law and Psychiatry*, 36(1), 30-40. <http://dx.doi.org/10.1016/j.ijlp.2012.11.005>

Tyler, K.A., Gervais, S.J. & Davidson, M.M. (2012). The relationship between victimization and substance use among homeless and runaway female adolescents. *Journal of Interpersonal Violence*, 28(3), 474-493. DOI: 10.1177/0886260512455517

Tyler, K.A., Kort-Butler, L.A. & Swendener, A. (2014). *Violence & Victims*, 29(2). <http://dx.doi.org/10.1891/0886-6708.VV-D-12-00091R1>

van Vugt, E., Lanctôt, N., Paquette, G., Collin-Vézina, D. & Lemieux, A. (2014). Girls in residential care: From child maltreatment to trauma-related symptoms in emerging adulthood. *Child Abuse & Neglect*, 38(1), 114-122.

<https://doi.org/10.1016/j.chiabu.2013.10.015>

Tyler, K.A. & Melander, L.A. (2015). Child abuse, street victimization, and substance use among homeless young adults. *Youth & Society*, 47(4), 502-519. doi: 10.1177/0044118X12471354

Walter, G.D. & Espelage, D.L. (2018). Exploring the victimization-early substance misuse relationship: In search of moderating and mediating effects. *Child Abuse & Neglect*, 81, 354-365

White, H.R. & Labouvie, E.W. (1989). Towards the assessment of adolescent problem drinking. *Journal of Studies on Alcohol*, 50(1).

World Health Organization (2013). Global and regional estimates of violence against women. Prevalence and health effects of intimate partner violence and non-partner

sexual violence. Geneva: World Health Organization (WHO). Retrieved from:
<https://www.who.int/reproductivehealth/publications/violence/9789241564625/en/>

Wright, E.M., Fagan, A.A. & Pinchevsky, G.M. (2013). The effects of exposure to violence and victimization across life domains on adolescent substance use. *Child Abuse & Neglect*, 37(11), 899-909. doi: 10.1016/j.chiabu.2013.04.010

Table 1. Descriptive results and gender differences in victimization

	Full sample N = 321	Boys N = 209	Girl N = 112	Statistic	P	η^2 / Cramer's V
N° Victimization experiences (M, sd)	12.34 (16.46)	11.08 (6.07)	14.66 (6.55)	23.671	< .001	.047
N° victimization areas (M, sd)	4.24 (1.46)	3.88 (1.45)	4.89 (1.24)	38.402	< .001	.074
Conventional Crime (property)	75.4%	70.2%	85.7%	9.515	.002	.172
Conventional crime (person)	84.4%	81.3%	91.9%	5.415	.020	.230
Child Maltreatment	76.9%	71.2%	88.4%	12.287	< .001	.196
Peer and Siblings Victimization	81.3%	79.9%	83.9%	0.777	.378	.049
Sexual Victimization - Contact	25.5%	12.4%	50.5%	54.958	< .001	.414
Sexual Victimization – No contact	26.5%	17.7%	43.3%	24.242	< .001	.275
Indirect Victimization – Domestic	51.7%	47.1%	60.7%	5.393	.020	.130
Indirect Victimization – Community	91.0%	90.4%	92.9%	0.557	.455	.042
Internet Victimization	45.5%	35.3%	65.2%	26.200	< .001	.287
Polyvictimization						
- Low	24.1%	28.8%	18.2%	14.502	.001	.217
- Mid	63.5%	64.6%	61.8%			
- High	10.8	6.6	20			

* Significance levels highlighted in bold indicate $p < .05$

Table 2. Polyvictimization and gender differences in substance use problems

	Low polyvictim	Mid polyvictim	High polyvictim	Statistic value	Df	p	η^2
Boys							
AUP	14.53 (13.67)	16.12 (14.91)	27.08 (21.38)	3.500	194	.032	0.04
CUP	3.09 (2.62)	3.51 (2.67)	3.23 (2.31)	.0510	196	.601	0.01
Girls							
AUP	8.84 (11.87)	14.42 (14.37)	28.36 (17.10)	10.588	107	<.001	0.17
CUP	2.80 (2.57)	3.09 (2.60)	4.32 (3.21)	2.061	107	.132	0.04

Table 3. Logistic regression model for AUD

	B	Sig.	Exp (B)	CI95	
				Lower	Upper
Sex (girl)	-2.146	.001	0.117	0.032	0.427
Imm fam (yes)	-1.053	.020	2.867	1.183	6.949
CC Property X sex	1.477	.015	4.380	1.327	14.454
IV Domestic X sex	1.294	.003	3.647	1.545	8.613
IV Domestic X Imm Fam	-1.138	.041	0.321	0.108	0.953

* Significance levels highlighted in bold indicate $p < .05$

Table 4. Logistic regression model for CUD

	B	Sig.	Exp (B)	CI95	
				Lower	Upper
Sex (girl)	-.759	.030	0.468	0.235	0.931
CC Property IV	1.062	.010	2.894	1.291	6.488
Community CC	0.838	.048	2.313	1.008	5.305
Property X Imm Fam IV	-1.056	.004	.0348	0.170	0.712
Domestic X sex	1.045	.011	2.842	1.266	6.379

* Significance levels highlighted in bold indicate $p < .05$

Highlights

- Adolescents in Residential Child Care (RCC) present with high levels of victimization and substance use problems.
- Girls in RCC report higher levels of victimization than boys.
- Polyvictimization was associated with alcohol use problems, but not cannabis use problems, in boys and girls
- Domestic victimization and victimization against the property were associated with alcohol use problems in girls
- Community victimization resulted predictor of cannabis use disorders.
- Girls seem more sensitive to the impact of victimization on substance use problems.