Introduction

Chile has one of the largest population in prison in the world with 242 prisoners per 100,000 people (World Prison Brief, 2016). The total number of arrests in Chile during 2014 was 432,764 individuals, and 8.0% of them were adolescents under 18 (Fundación Paz Ciudadana, 2015). In the same year, 94,689 people were condemned (45.2% serving the sentence in jail). From these convicted people, 10,338 were young offenders (15.2% serving the sentence in prison) (Fundación Paz Ciudadana, 2015). Since 2008, the number of convicted juvenile delinquents has been increased steadily (Fundación Paz Ciudadana, 2015).

The prevalence of psychiatric disorders in the adolescent population of Chile has reached 18.2% in Santiago (Vicente et al., 2012) and 20.7% among young adults (Vicente et al., 2006). However, the prevalence of mental pathology in young offenders appears to be much higher. International studies show that most of the young individuals who enter the penal system suffer from a psychiatric disorder (Fazel, Doll, & Langstrom, 2008). A review involving 13,778 boys and 2,972 girls (mean age 15.6 years) in juvenile detection and correctional facilities showed a high prevalence of mental disorders, particularly conduct disorder (52.8% among boys and girls) (Fazel et al., 2008) (Fazel et al., 2008). For example, Washburn et al. conducted one of the most extensive studies on this population to date, interviewing 1829 (10 to 18 years old) youth who were arrested and detained in Cook County, Illinois. They found that 66.3% of the males and 73.8% of the females displayed a psychiatric disorder according to version 2.3 of the Diagnostic Interview Schedule for Children (DISC) (Washburn et al., 2008). Another study that was representative of the population of young males aged 12 to 18 years old who were incarcerated in the Netherlands (n=204) showed that 90% of the participants reported at least one psychiatric diagnosis using the same instrument

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mentioned above, with disruptive behaviour (75%) and substance use (55%) disorders being the most prevalent (Vreugdenhil, Doreleijers, Vermeiren, Wouters, & Van Den Brink, 2004). A larger Dutch study comparing native versus ethnic minority juvenile defendants (12 to 17 years old) found a high prevalence of mental disorders in both groups (76.8% versus 74.4%) (Vinkers & Duits, 2011).

The prevalence of psychiatric disorders among young offenders seems to be similar to the rates reported internationally. The few studies available in Chile have shown that prevalence of psychiatric disorders rages between 62% (Fundación Tierra Esperanza, 2007) to 64% (Rioseco et al., 2009), and the substance use disorders are the most prevalent.

We recently presented a study of juvenile offenders (n=489; 12 to 17 years old), where we found that 86% of them suffered from a major mental disorder, with substance use disorder being more prevalent than others (Gaete, Labbe, Del Villar, Allende, & Valenzuela, 2014).

Few studies have indicated which factors may be associated with the presence of psychiatric pathology in this population. Mental health problems in this population have been associated with a history of childhood maltreatment (Gretton & Clift, 2011; Moore, Gaskin, & Indig, 2013), sexual abuse (Gretton & Clift, 2011; Lader, Singleton, & Meltzer, 2000), death of a parent/sibling (Lader et al., 2000), low parental educational background (Maniadaki & Kakouros, 2008), poverty (Maniadaki & Kakouros, 2008), history of antisocial behaviour (Ginner Hau, 2010), history of homelessness (Lader et al., 2000), and substance use at an early age, cannabis in particular (Miettunen et al., 2014). Many of the studies mentioned above have been conducted in developed countries; to the best of our knowledge, there have been no Latin American studies specifically exploring the association between psychiatric disorders and personal factors

among young offenders. We found only one Chilean study that explored the differences between adolescent offenders and a control group regarding several features, including mental health. That study found that young offenders had a higher prevalence of psychiatric disorders, lower educational achievement and lower intellectual capacity when compared to control adolescents. No differences between groups were found regarding history of maltreatment or parental history of psychopathology (Rioseco et al., 2009).

A better understanding of the risk factors associated with mental health problems among young offenders may help relevant resources or interventions be specifically designed to either reduce the impact of those factors or empower adolescents with the necessary skills to manage those factors.

The aim of this study was to determine the factors associated with psychiatric pathology in young offenders.

Material and methods

Participants

All of the participants were part of a larger longitudinal study funded by a regular Fondecyt grant (Nº1121107), which aims to determine the effect of substance abuse in the criminal careers of young offenders. Written authorization was obtained from the National Service for Minors (*Servicio Nacional de Menores*, SENAME) and from the Directors of the centres in which participants were serving their sentence.

Given the wide range of ages, consent was sought in two different ways: for those under 18, parents or legal custodians were asked for consent, and those over 18 provided their own consent. The participants who agreed to participate were serving their sentences as follows: 357 in closed centres (CRC), 84 in semi-closed centres (CSC), 154 in centres

operated by special assisted liberty programs (PLE), and 353 in assisted liberty programs (PLA). Of these, 935 (age ranged 14-23 years old; 80.8% aged ≤18 years old), provided complete information for the variables included in this study and were included in the final analyses.

Measurements

Demographic variables

Individual factors, such as the participants' age, substance use history, criminal history, and life events, were collected through an interview designed by a team of researchers at the Pontificia Universidad Católica de Chile's Institute of Sociology. The interview lasted approximately 45 minutes and was conducted by trained sociologists.

Psychiatric diagnosis

The psychiatric diagnoses were based on the Mini International Neuropsychiatric Interview (MINI), a semi-structured interview, which was conducted by trained psychologists. The MINI lasts approximately 30 minutes and explores the most prevalent disorders at the population level using criteria derived from the fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). The MINI has been widely used in research worldwide (Sheehan et al., 1998; Sheehan et al., 2010), and the authors have prior experience using the MINI in other studies conducted in Chile (Araya et al., 2013; Araya et al., 2003). Because of the limited time available for the interview, psychopathological conditions that would require more time and expertise for their evaluation (e.g., psychotic disorders and (hypo)manic episodes) and conditions that were expected to have a low prevalence based on the population studied (e.g., autistic spectrum disorders, eating disorders) were excluded. Keeping the interview as short as possible may also help increase the reliability of the information collected by

avoiding excessive fatigue. Some disorders are only assessed in specific versions of the MINI. The MINI KID, which is designed for children and adolescents, includes disorders that are more prevalent among this population such as Separation Anxiety Disorder, Specific Phobia, Attention Deficit Hyperactivity Disorder, Conduct Disorder and Oppositional Defiant Disorder. The MINI for adults does not include the disorders mentioned above, but does include the assessment of Antisocial Personality Disorder, which is not included in the MINI KID. The age cut-off for the MINI was 17/18. Both, the MINI for adults and MINI KID have been translated in Spanish and validated (Bobes, 1998).

Procedure

After obtaining authorization from the Directors of the centres where participants were serving their sentence and receiving consent from the legal representatives of the offenders, all centres were visited and a suitable place to perform the interviews was arranged. The location was considered appropriate if it met two conditions: safety of the interviewer and privacy for the participant. The two interviews with the participants (one with the sociologist and the MINI with the psychologist) were conducted on the same day and were separated by a break.

Independent variables

Three types of variables were included. i) Age of onset of behavioural problems or criminal behaviours, e.g., age of onset of thieving conduct. These responses were arranged as follows: 1= never (did not initiate behaviour), 2= at age 14 or older, 3= between ages 10 and 14, and 4= before age 10. ii) Life and personal events, such as a history of living on the street or suffering physical abuse. The responses were categorized as 1=Yes, present and 2= No. See Tables 1 and 2 for a description of these variables. iii) Serving of the sentence. The responses for this category were arranged

into two groups: offenders in community programs with no imprisonment (PLE and PLA) and offenders who were imprisoned (in closed or semi-closed centres).

Dependent Variables

The dependent variables were dichotomous (presence or absence of the disorder). We explored predictive models for three main groups of pathologies: depressive, anxiety and substance use disorders. Depressive disorders included the presence of a major depressive episode or a dysthymic disorder. Anxiety disorders included the presence of any of the following disorders: generalized anxiety disorder, panic disorder, posttraumatic stress disorder, agoraphobia, social anxiety disorder, or obsessive-compulsive disorder. Disorders due to substance use included the presence of any disorder due to dependence on or abuse of the following substances (including cocaine paste): tranquilizers, stimulants, inhalants, or hallucinogens.

<u>Statistical analyses</u>

All prevalences were calculated as percentages with a 95% confidence interval. Association analyses were conducted using multivariable logistic regressions. There was missing data only for exposure variables related to vital events, ranged from 1.5% (most of them) to 5.1% (history of father in prison). No missing data in variables related to age onset of behavioural problems or age onset of substance use. Regarding outcome variables, the missing data ranged from 1.2% (Any substance use disorder) to 2.3% (Any depressive disorder). Therefore, we used complete data as per the low missing data. Non-adjusted and adjusted logistic regression models were generated. The adjusted models included all covariates. The statistical package STATA 12.1 was used for all of the analyses. Any participants who were considered to be under the influence of any substance of abuse the day of the interview were excluded from the analyses.

Informed consent was provided by the participants themselves or by their legal representatives. This study was approved by the ethics board of the Pontificia Universidad Católica de Chile.

Results

General descriptive results

The mean age of the 935 participants was 17.6 (17.5-17.7) years. Most of them (61.3%) did not pursue secondary studies. Of the 935 participants, 21.3% mentioned having lived in a SENAME residence prior to serving their current sentence. Furthermore, 11.4% mentioned having spent some time living on the streets. Regarding their parents, 25.2% of the participants had fathers who had served or were serving time in prison at the time of the interview, and 9.4% of the sample's mothers had a history, past or present, of incarceration.

The age of onset of criminal behaviours and illegal drug use is presented in Table 1.

Insert Table 1

Prevalence of Psychiatric Disorders

A large majority of participants (89.8%) displayed a psychiatric disorder. Substance abuse or dependence was diagnosed in 78.1% and was the most common diagnosis present in the study population. In addition, 22.0% mentioned having symptoms of depression or dysthymia. Finally, 24.2% mentioned suffering from one of the anxiety disorders evaluated. Of the participants under 18 years old, the second most prevalent diagnosis was conduct disorder, followed by oppositional defiant disorder and attention

deficit hyperactivity disorder. In the young adult population (≥ 18 years old), antisocial personality disorder was found in two-thirds of the participants (Table 2).

Insert Table 2.

When considering the distribution of psychiatric disorders according to the type of crime (see Tables 3a and 3b), depressive disorders were more prevalent among those condemned for burglary. Any anxiety disorder was more common among those being condemned by murder or sexual offence than those condemned by other crimes. Any substance use was highly prevalent in the whole population studied except among sexual offenders (30.8%). In under 18 years old offenders, ADHD and disruptive disorders were more common among those condemned by burglary, and less prevalent among sexual offenders.

Insert Table 3a and 3b.

Factors associated with depressive, anxiety and substance use disorders

The fully adjusted model revealed that the factors associated with increased risk of depression or dysthymia were: years exposed to childhood maltreatment, early onset of thieving behaviour, early age of public order offence, and presence of an anxiety disorder. In contrast, a higher participant educational level was associated with a lower probability of suffering from a depressive disorder.

The fully adjusted model found that the factors related to increased risk of suffering from an anxiety disorder were: having a deceased mother, an early history of violent crime, serving one's sentence in a closed or semi-closed centre and having an anxiety or a substance use disorder. Similar to the depressive disorder analyses, the higher a

participant's educational level, the lower the probability they had of suffering from an anxious disorder.

The fully adjusted model revealed that the only factors that increased the likelihood of suffering from a substance use disorder were: early onset of marijuana use, serving one's sentence in a probation program and having an anxiety disorder. Additionally, participants who initiated a history of violent crime earlier on in life had a reduced risk of presenting any substance use disorder. The educational level achieved by the participant was not associated with the risk of having any substance use disorder. For further details, please see Table 4.

Insert Table 4.

Discussion

This study showed that there was a high proportion of young offenders with some psychiatric morbidity, independent of age and place where they were serving their sentence. This finding is consistent with others reported internationally (Fazel et al., 2008). The most common disorders were substance use disorders, in particular marijuana dependence. The second most common disorders were disruptive disorders, which is consistent with other studies (Fazel et al., 2008). Additionally, it appears that there was a high probability of comorbidity. A recent study found that having multiple psychiatric disorders at baseline increased the probability of an individual having a psychiatric disorder 5 years later (Abram et al., 2015).

It is plausible to consider that if actions are taken to provide early and effective psychiatric treatment, these young people may have a higher likelihood of rehabilitation from their crime behaviour and to have better opportunities to reintegrate into society. Hypothetically there could be a reduction in crime if these individuals were treated but

In this study, the higher the educational level achieved by the participant, the lower the risk of them having any depressive or anxiety disorder. This finding stresses the importance of education in providing youth with the resources needed to manage their psychopathology as well as the need to facilitate all possible measures to encourage young offenders to continue studying. Additionally, our findings are consistent with other studies regarding the association between having lived on the streets (Lader, Singleton, & Meltzer, 2000), early use of marijuana (Miettunen et al., 2014) and childhood abuse (Gretton & Clift, 2011; Moore, Gaskin, & Indig, 2013) and the presence of a psychiatric disorder. This information may help care providers identify the most vulnerable people among this population.

It is particularly important to note that the high prevalence of substance use disorders could be related to the relationship between drug use and criminal behaviour on the one hand, or the association between substance use and mental health problems on the other. During the training of the psychologists who conducted the psychiatric interviews, we placed special emphasis on the difficulty of categorizing psychiatric symptoms as primarily determined by a major disorder or secondarily determined by drug consumption. Therefore, every evaluator was asked to make a clinical judgment regarding this distinction, and comorbidity was allowed. Due to the cross-sectional nature of the analysis used in this study, we could not address the question regarding the effect of drug use and crime, which may require a longitudinal approach.

Since 2007 in Chile, there has been an explicit governmental policy that guarantees the treatment of substance use disorder for all people younger than 20 years old; since 2006, the same has been guaranteed for people with depression who are older than 15 years

old. Unfortunately, none of the people included in this study were in treatment during data collection (2013). We continue to call upon authorities to provide urgently needed help to these adolescents and young adults who have the same rights as others. This is especially urgent given the increasing number of young offenders condemned each year since 2008. This call for help for young offenders has not been the only one in recent years in Chile (Gaete et al., 2014; Prato, Espejo, Valdivieso, Aguirre, & Gonzalez, 2011; Rioseco et al., 2009) or in other countries worldwide (Alcorn, 2014).

Regarding the limitations of this study, our study only included boys, so it is not possible to draw any conclusions about the mental health of young female offenders. In diagnosing psychiatric illnesses, mental health assessments should include as much information as possible, for example, information from the family, the health system and observations about changes in symptoms over a long period of time. However, due to the limited time available, we based the diagnoses in our study on an interview with the participants only; therefore, we cannot consider the diagnoses to be definitive. Nonetheless, we present a good approximation of the mental health needs of this vulnerable population. Participant's history of stressful events and age of onset of criminal behaviours and substance use were based on participant recall, so there may have been some recall bias. Some variables that may be considered to be confounders were not available for this population, for example, intellectual capacity and parental psychopathology; therefore, our findings may have some residual confounding factors. Moreover, as not all disorders were assessed in the whole study population (e.g., conduct disorder and antisocial personally disorder), there may have been additional confounding effects in the association between early onset of violent crime and substance use. Finally, because the independent and dependent variables were collected

at the same time, reverse causality may be implied, especially in the case of age of drug use onset.

Conclusions

The present study had one of the largest numbers of participants recruited, not only in Chile but also globally (n=935, age ranged 14-23 years old), and revealed the high prevalence of psychiatric morbidity in a population that is, in and of itself, very vulnerable. Additionally, it described the factors that may be related to the presence of a range of psychiatric disorders.

The onset of some criminal behaviours at an early age increased the likelihood of psychiatric morbidity, which indicates that certain personal factors appear early on in people's lives and require attention. Furthermore, it was observed that traumatic events such as the death of a mother or having lived on the street made the participants more vulnerable to psychiatric illness. Finally, the early onset of marijuana use was found to be associated with a greater likelihood of suffering from disorders due to substance use.

References

Abram, K. M., Zwecker, N. A., Welty, L. J., Hershfield, J. A., Dulcan, M. K., & Teplin, L. A. (2015). Comorbidity and continuity of psychiatric disorders in youth after detention: a prospective longitudinal study. *JAMA Psychiatry, 72*(1), 84-93. doi:10.1001/jamapsychiatry.2014.1375

Alcorn, T. (2014). Rethinking mental health care for young offenders. *Lancet, 383*(9925), 1283-1284.

Araya, R., Montero-Marin, J., Barroilhet, S., Fritsch, R., Gaete, J., & Montgomery, A. (2013). Detecting depression among adolescents in Santiago, Chile: sex differences. *BMC Psychiatry, 13*, 122. doi:10.1186/1471-244X-13-122

Araya, R., Rojas, G., Fritsch, R., Gaete, J., Rojas, M., Simon, G., & Peters, T. J. (2003). Treating depression in primary care in low-income women in Santiago, Chile: a randomised controlled trial. *Lancet, 361*(9362), 995-1000. doi:10.1016/S0140-6736(03)12825-5

Bobes, J. (1998). A Spanish validation study of the mini international neuropsychiatric interview. *European Psychiatry, 13*, 198s-199s. doi:10.1016/S0924-9338(99)80240-5

Fazel, S., Doll, H., & Langstrom, N. (2008). Mental disorders among adolescents in juvenile detention and correctional facilities: a systematic review and metaregression analysis of 25 surveys. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(9), 1010-1019. doi:10.1097/CHI.ObO13e31817eecf3

Fundación Paz Ciudadana. (2015). *Balance de Delincuencia en Chile. Radiografí del Sistema de Seguridad y Justicia*. Retrieved from Santiago, Chile:

Fundación Tierra Esperanza. (2007). *Estudio Diagnóstico de la Situación Actual de la Atención en Salud Mental y Psiquiatría para la Población de Adolescentes que Cumplen Condena en CIP–CRC*. Retrieved from Santiago, Chile:

Gaete, J., Labbe, N., Del Villar, P., Allende, C., & Valenzuela, E. (2014). Prevalence of psychiatric disorders among teenage offenders. *Rev Med Chil, 142*(11), 1377-1384. doi:10.4067/S0034-98872014001100003

Gretton, H. M., & Clift, R. J. (2011). The mental health needs of incarcerated youth in British Columbia, Canada. *Int J Law Psychiatry, 34*(2), 109-115. doi:10.1016/j.ijlp.2011.02.004

Lader, D., Singleton, N., & Meltzer, H. (2000). *Psychiatric Morbidity among Young Offenders in England and Wales*. Retrieved from London:

Miettunen, J., Murray, G. K., Jones, P. B., Mäki, P., Ebeling, H., Taanila, A., . . . Moilanen, I. (2014). Longitudinal associations between childhood and adulthood externalizing and internalizing psychopathology and adolescent substance use. *Psychological Medicine, 44*(08), 1727-1738. doi:doi:10.1017/S0033291713002328

Moore, Elizabeth, Gaskin, Claire, & Indig, Devon. (2013). Childhood maltreatment and post-traumatic stress disorder among incarcerated young offenders. *Child Abuse & Neglect, 37*(10), 861-870. doi:http://dx.doi.org/10.1016/j.chiabu.2013.07.012

Prato, J. A., Espejo, N., Valdivieso, M. J., Aguirre, C., & Gonzalez, M. (2011). Mental health of young offenders deprived of liberty: a pending debt. *Rev Med Chil, 139*(7), 959-960. doi:/S0034-98872011000700021

Rioseco, Pedro, Vicente, Benjamin, Saldivia, Sandra, Cova, Félix, Melipillán, Roberto, & Rubi, Patricia. (2009). Prevalencia de trastornos psiquiátricos en adolescentes

infractores de ley: Estudio caso-control. *Revista chilena de neuro-psiquiatría, 47*, 190-200.

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., . . . Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry, 59 Suppl 20*, 22-33;quiz 34-57.

Sheehan, D. V., Sheehan, K. H., Shytle, R. D., Janavs, J., Bannon, Y., Rogers, J. E., . . . Wilkinson, B. (2010). Reliability and validity of the Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID). *Journal of Clinical Psychiatry, 71*(3), 313-326. doi:10.4088/JCP.09m05305whi

Vicente, B., Kohn, R., Rioseco, P., Saldivia, S., Levav, I., & Torres, S. (2006). Lifetime and 12-month prevalence of DSM-III-R disorders in the Chile psychiatric prevalence study. *American Journal of Psychiatry, 163*(8), 1362-1370. doi:10.1176/appi.ajp.163.8.1362

Vicente, B., Saldivia, S., de la Barra, F., Kohn, R., Pihan, R., Valdivia, M., . . . Melipillan, R. (2012). Prevalence of child and adolescent mental disorders in Chile: a community epidemiological study. *J Child Psychol Psychiatry, 53*(10), 1026-1035. doi:10.1111/j.1469-7610.2012.02566.x

Vinkers, D. J., & Duits, N. (2011). Crime and mental disorders among native Dutch and ethnic minority juvenile defendants in the Netherlands. *Int ernational Journal of Law and Psychiatry, 34*(2), 131-134. doi:10.1016/j.ijlp.2011.02.008

Vreugdenhil, Coby, Doreleijers, Theo A. H., Vermeiren, Robert, Wouters, Luuk F. J. M., & Van Den Brink, Wim. (2004). Psychiatric Disorders in a Representative Sample of Incarcerated Boys in The Netherlands. *Journal of the American*

Academy of Child & Adolescent Psychiatry, 43(1), 97-104. doi:http://dx.doi.org/10.1097/00004583-200401000-00019

Washburn, J. J., Teplin, L. A., Voss, L. S., Simon, C. D., Abram, K. M., & McClelland, G. M. (2008). Psychiatric disorders among detained youths: a comparison of youths processed in juvenile court and adult criminal court. *Psychiatr Serv, 59*(9), 965-973. doi:10.1176/appi.ps.59.9.965

World Prison Brief. (2016). Highest to Lowest - Prison Population Rate. Retrieved from http://www.prisonstudies.org/highest-to-lowest/prison_population_rate?field_region_taxonomy_tid=All [Accessed on August 13th 2016]

Table 1

Age of onset of criminal behaviours and illegal drug use

| Variable | Age of onset | | | |
| | Never | Over 14 | Between 10-14 | Under 10 |
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Criminal behaviours				
Theft	19.5 (17.0-22.0)	9.2 (7.3-11.0)	56.3 (53.1-59.5)	15.0 (12.7-17.3)
Grand theft	41.8 (38.6-45.0)	17.2 (14.8-19.6)	39.0 (35.9-42.1)	2.0 (1.1-2.9)
Violent robbery	10.8 (8.8-12.7)	34.1 (31.1-37.2)	52.2 (49.0-55.4)	2.8 (1.8-3.9)
Drug trafficking	92.9 (91.3-94.6)	5.0 (3.6-6.3)	2.0 (1.1-2.9)	0.1 (-0.1-0.3)
Violent crime	67.9 (65.0-70.1)	17.9 (15.5-20.4)	13.8 (11.6-16.0)	0.3 (-0.04-0.7)
Public order offence	76.6 (73.9-79.3)	8.9 (7.0-10.7)	13.1 (10.9-15.2)	1.5 (0.7-2.2)
Carrying of firearms	21.9 (19.3-24.6)	13.9 (11.7-16.1)	58.8 (55.4-61.7)	5.6 (4.1-7.1)
Illegal drugs				
Marijuana	6.6 (5.1-8.2)	12.1 (10.0-14.2)	69.3 (66.4-72.2)	11.9 (9.9-14.0)
Cocaine	30.7 (27.8-33.6)	30.5 (27.5-33.4)	37.6 (34.5-40.6)	1.3 (0.6-2.0)
Cocaine base paste	62.4 (59.4-65.5)	21.3 (18.7-23.9)	15.8 (13.5-18.2)	0.4 (0.0-0.8)

Psychiatric Disorder	<18 years old (n=473)		≥18 years old (n=425)	
	%	(95%CI)	%	(95%CI)
Any Psychiatric Disorder	**88.6**	**(85.4-91.2)**	**91.8**	**(88.7-94.0)**
Any depressive disorder	**20.9**	**(17.5-24.8)**	**24.7**	**(20.8-29.0)**
Major depressive disorder	19.7	(16.3-23.5)	23.3	(19.5-27.6)
Dysthymia	1.3	(0.6-2.8)	1.4	(0.6-3.1)
Any anxiety disorder	**27.1**	**(23.2-31.3)**	**26.8**	**(22.8-31.3)**
Panic disorder	5.1	(3.4-7.5)	3.1	(1.8-5.2)
Social anxiety disorder	2.1	(1.1-3.9)	4.9	(3.2-7.5)
Separation anxiety disorder	4.0	(2.6-6.2)	--	
Specific phobia	4.7	(3.1-7.0)	--	
Obsessive compulsive disorder	5.3	(3.4-7.7)	8.2	(6.0-11.3)
Post-traumatic stress disorder	2.3	(1.3-4.2)	4.5	(2.9-6.9)
Generalized anxiety disorder	4.9	(3.2-7.2)	7.3	(5.2-10.2)
Any substance use disorder	**77.4**	**(73.4-80.9)**	**78.8**	**(74.7-82.5)**
Alcohol dependence	26.8	(23.0-31.0)	28.5	(24.4-33.0)
Alcohol abuse	4.9	(3.2-7.2)	4.7	(3.1-7.2)
Marijuana dependence	51.0	(46.4-55.5)	48.5	(43.7-53.2)
Marijuana abuse	13.7	(10.9-17.2)	14.1	(11.1-17.8)
Cocaine dependence (includes Cocaine base paste)	19.2	(15.9-23.1)	24.0	(20.2-28.3)
Cocaine abuse (includes Cocaine base paste)	2.1	(1.1-3.9)	2.6	(1.4-4.6)
Nicotine dependence	21.8	(18.3-25.7)	25.4	(21.5-29.8)
Attention Deficit Hyperactivity Disorder	**25.6**	**(21.8-29.7)**	--	--
Combined type	11.4	(8.8-14.6)	--	--
Inattentive type	5.3	(3.4-7.7)	--	--
Hyperactive-Impulsive type	8.9	(6.6-11.8)	--	--
Any Disruptive Disorder	**37.8**	**(33.6-42.3)**	--	--
Conduct disorder	27.7	(23.8-31.9)	--	--
Oppositional defiant disorder	27.1	(23.2-31.3)	--	--
Antisocial Personality Disorder	-	--	**64.9**	**(60.3-69.3)**

Note. Cells with (--) are empty because these disorders were not assessed by the version of the MINI used because of the age of the participant.

Prevalence of psychiatric disorders over category of crime

Psychiatric Disorder	Any depressive disorder		Any anxiety disorder		Any Substance Use disorder	
Type of offence	%	95%CI	%	95%CI	%	95%CI
Robbery	21.0	(17.9-24.6)	23.7	(20.3-27.4)	80.4	(76.9-83.5)
Burglary	28.2	(22.4-34.8)	24.3	(18.8-30.7)	82.2	(76.3-86.9)
Murder	20.3	(12.7-30.6)	29.1	(20.1-40.1)	70.9	(59.9-79.9)
Sexual Offence	23.1	(10.6-43.2)	30.8	(16.0-51.0)	30.8	(16.0-51.0)
Other[a]	18.8	(8.6-36.3)	21.9	(10.7-39.6)	65.6	(47.6-80.0)

[a] Other category includes motoring offences, handling stolen goods, public order offences, among others.

Prevalence of psychiatric disorders assessed only among young offenders under 18 (n=474), over category of crime

Psychiatric Disorder	ADHD[a]		Disruptive Disorders	
Type of offence	%	95%CI	%	95%CI
Robbery	22.5	(18.1-27.5)	37.8	(20.3-27.4)
Burglary	37.7	(29.0-47.4)	42.5	(18.8-30.7)
Murder	25.0	(12.2-44.4)	28.6	(20.1-40.1)
Sexual Offence	13.3	(3.2-41.9)	13.3	(16.0-51.0)
Other[b]	27.8	(11.7-52.7)	50.0	(27.8-72.2)

[a] ADHD = Attention Deficit Hyperactivity Disorder.
[b] Other category includes motoring offences, handling stolen goods, public order offences, among others.

Table 4

Factors associated with psychiatric disorders. Multivariable logistic regression analysis

Variable	Any Depressive Disorder			Any Anxiety Disorder			Any Substance Use Disorder		
	Unadjusted	Model 1[a]	Model 2[b]	Unadjusted	Model 1[a]	Model 2[b]	Unadjusted	Model 1[a]	Model 2[b]
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)		OR (95% CI)	OR (95% CI)
Age	1.13 (1.02-1.24)	1.09 (0.97-1.24)	1.06 (0.93-1.20)	1.17 (1.06-1.28)	1.12 (0.99-1.26)	1.09 (0.96-1.24)	1.09 (0.99-1.21)	1.14 (0.99-1.31)	1.14 (0.99-1.32)
Educational level	0.79 (0.67-0.94)	0.75 (0.62-0.91)	0.81 (0.66-0.98)	0.85 (0.72-1.00)	0.75 (0.62-0.90)	0.80 (0.66-0.98)	0.87 (0.74-1.02)	0.89 (0.72-1.08)	0.92 (0.75-1.13)
Vital stressors									
Years exposed to physical abuse	1.16 (1.08-1.25)	1.11 (1.02-1.20)	1.09 (1.00-1.19)	1.11 (1.03-1.20)	1.07 (0.99-1.16)	1.03 (0.95-1.13)	1.19 (1.04-1.35)	1.12 (0.98-1.27)	1.09 (0.96-1.24)
Having lived on the street	2.38 (1.54-3.67)	1.63 (1.01-2.64)	1.61 (0.98-2.67)	1.55 (0.99-2.41)	1.24 (0.76-2.02)	1.10 (0.65-1.85)	1.48 (0.86-2.56)	0.87 (0.47-1.60)	0.80 (0.43-1.49)
Deceased father	1.11 (0.65-1.89)	1.08 (0.61-1.90)	1.07 (0.60-1.92)	1.37 (0.83-2.25)	1.10 (0.64-1.89)	1.09 (0.62-1.91)	1.12 (0.64-1.95)	1.02 (0.55-1.89)	1.15 (0.61-2.20)
Deceased mother	1.77 (0.84-3.71)	1.31 (0.59-2.90)	0.93 (0.39-2.19)	3.06 (1.52-6.17)	2.39 (1.14-4.99)	2.35 (1.05-5.25)	1.12 (0.48-2.61)	1.15 (0.46-2.87)	1.18 (0.44-3.18)
History of father in prison	1.18 (0.84-1.64)	1.00 (0.69-1.45)	0.92 (0.62-1.35)	1.57 (1.14-2.17)	1.37 (0.96-1.94)	1.41 (0.98-2.04)	1.22 (0.86-1.74)	0.98 (0.66-1.46)	0.94 (0.63-1.41)
History of mother in prison	1.14 (0.69-1.87)	1.04 (0.60-1.81)	1.00 (0.57-1.77)	1.61 (1.02-2.55)	1.22 (0.73-2.04)	1.29 (0.75-2.21)	0.92 (0.55-1.52)	0.66 (0.37-1.19)	0.62 (0.34-1.13)
Age onset of criminal behaviours									
Thieving behaviour	1.48 (1.23-1.77)	1.32 (1.05-1.66)	1.41 (1.12-1.79)	1.08 (0.92-1.27)	0.92 (0.75-1.12)	0.86 (0.69-1.06)	1.48 (1.27-1.74)	1.04 (0.84-1.29)	1.03 (0.82-1.28)
Grand theft	1.27 (1.08-1.50)	1.04 (0.85-1.28)	1.07 (0.87-1.33))	1.08 (0.92-1.27)	0.91 (0.75-1.12)	0.90 (0.73-1.10)	1.33 (1.13-1.58)	1.00 (0.80-1.25)	1.00 (0.80-3.02)
Violent robbery	1.21 (0.97-1.52)	0.92 (0.68-1.23)	0.86 (0.63-1.18)	1.18 (0.95-1.46)	1.06 (0.80-1.41)	1.05 (0.78-1.42)	1.73 (1.40-2.14)	1.18 (0.87-1.60)	1.23 (0.90-1.67)
Drug trafficking	1.03 (0.68-1.57)	0.87 (0.54-1.40)	0.89 (0.54-1.45)	0.81 (0.52-1.28)	0.85 (0.51-1.40)	0.84 (0.49-1.43)	1.42 (0.85-2.35)	1.47 (0.78-2.80)	1.56 (0.80-3.02)
Violent crime	1.33 (1.09-1.62)	1.17 (0.94-1.45)	1.11 (0.88-1.40)	1.33 (1.10-1.61)	1.29 (1.04-1.60)	1.30 (1.04-1.63)	0.87 (0.71-1.07)	0.78 (0.61-0.99)	0.74 (0.57-0.95)
Public order offence	1.41 (1.17-1.69)	1.36 (1.11-1.67)	1.42 (1.15-1.75)	0.94 (0.77-1.14)	0.96 (0.77-1.20)	0.87 (0.69-1.09)	1.22 (0.98-1.53)	1.06 (0.83-1.36)	1.07 (0.83-1.37)
Firearm carrying	1.21 (1.01-1.45)	0.91 (0.72-1.16)	0.90 (0.74-1.16)	1.09 (0.92-1.29)	0.94 (0.75-1.18)	0.93 (0.74-1.19)	1.59 (1.35-1.89)	1.19 (0.94-1.51)	1.24 (0.97-1.57)
Age onset of illegal drug use									
Marijuana use	1.17 (0.93-1.47)	0.77 (0.57-1.04)	0.71 (0.51-0.97)	1.18 (0.95-1.48)	1.09 (0.81-1.45)	1.06 (0.77-1.45)	2.47 (1.98-3.07)	2.05 (1.55-2.77)	2.14 (1.59-2.88)
Cocaine paste use	1.47 (1.21-1.77)	1.16 (0.91-1.48)	1.24 (0.96-1.60)	1.12 (0.93-1.36)	0.83 (0.64-1.06)	0.77 (0.60-1.00)	1.74 (1.37-2.23)	1.26 (0.93-1.70)	1.30 (0.95-1.77)
Cocaine use	1.39 (1.15-1.67)	1.13 (0.88-1.46)	1.13 (0.87-1.48)	1.16 (0.97-1.38)	1.00 (0.78-1.27)	0.95 (0.74-1.23)	1.92 (1.58-2.33)	1.23 (0.95-1.61)	1.23 (0.94-1.61)
Type of program (0=AL; 1=C)[c]	1.62 (1.19-2.22)	1.11 (0.72-1.72)	0.99 (0.62-1.56)	2.13 (1.57-2.90)	1.71 (1.12-2.61)	1.79 (1.15-2.79)	1.26 (0.92-1.72)	0.62 (0.39-0.98)	0.56 (0.35-0.89)
Any Depressive disorder	--		--	4.01 (2.87-5.60)		3.80 (2.62-5.52)	1.83 (1.20-2.79)		1.31 (0.80-2.15)
Any Anxiety disorder	4.01 (2.87-5.60)		3.86 (2.66-5.62)	--		--	1.93 (1.28-2.92)		2.17 (1.33-3.53)
Any Substance use disorder	1.83 (1.20-2.79)		1.37 (0.84-2.22)	1.93 (1.28-2.92)		2.14 (1.32-3.48)	--		--

[a]Model 1 = Adjusted by all variables except for "Any Anxiety disorders" and "Any Substance use disorder"

[b]Model 2 = Adjusted by all variables.

[c]AL = Assisted Liberty (PLE or PLA) centre; C= Closed or semi-closed centre.