DET PSYKOLOGISKE FAKULTET

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Childhood Trauma Exposure and Substance use. An Explorative Study Among Outpatients with dual Diagnoses.

HOVEDOPPGAVE

profesjonsstudiet i psykologi

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Author's note

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Sammendrag

Denne oppgaven utforsker relasjoner mellom flere former for barndomstraumer og tidlig debut med rusmidler i et utvalg på 76 unge, norske, hjelpsøkende rusmisbrukere med dobbel diagnose (rus og psykiatri). Barndomstraumer (emosjonelt, fysisk og seksuelt misbruk, emosjonell og fysisk omsorgsvikt), posttraumatiske og generelle psykologiske symptomer, og rusmisbruk ble målt med henholdsvis Childhood Trauma Questionnaire (CTQ), Impact of Event Scale-Revised (IES-R), Symptom Checklist-90-Revised (SCL-90-R) og Klientkartleggingsystem (KKS). Barndomstraumer var utbredt blant deltagerne, men var ikke signifikant korrelert med tidligere debut med rusmidler. De ulike formene for barndomstraumer var i ulik grad relatert til generelle psykologiske og posttraumatiske symptomer. En regresjonsanalyse viste at emosjonell mishandling og fysisk omsorgssvikt hadde de eneste signifikante bidragene til henholdsvis generell psykologisk uro og posttraumatisk hyperaktivering. Psykologisk uro og hyperaktivering var negativt korrelert med rusdebutalder, men hyperaktivering hadde det eneste signifikante bidraget. Resultatene indikerer en indirekte relasjon mellom barndomstraumer og debutalder for rusbruk, hvor forhøyet spenningsnivå kan sees som en mulig mediator mellom traume og rusmisbruk. Forskning har vist at seksuelt misbruk har en sammenheng med rusmisbruk, men når vi studerer fem former for barndomstraumer, finner vi at emosjonelt misbruk og fysisk forsømmelse fremstår som signifikante bidragsytere til psykologisk uro. Dette indikerer at det er et behov for å utvide forskningsfeltet til å inkludere flere former for barndomstraumer for å utforske deres relasjon med psykopatologi, inkludert rusmisbruk

Nøkkelord: barndomstraumer, rusmisbruk, barnemishandling, posttraumatisk stress symptomer, generelle psykiske plager

Abstract

This paper explores associations between all forms of childhood trauma and drug debut age in a sample of 76 young, Norwegian, help-seeking substance users with a dual diagnosis. Childhood trauma (emotional, physical and sexual abuse, emotional and physical neglect), posttraumatic and general psychological symptoms and substance abuse characteristics were assessed with Childhood Trauma Questionnaire (CTQ), Impact of Event Scale-Revised (IES-R), Symptom Checklist-90-Revised (SCL-90-R) and Klientkartleggingsystem (KKS) respectively. Childhood trauma was prevalent among the participants, but none of the childhood trauma subtypes were significantly related to earlier drug debut age. The different subtypes of childhood trauma have different associations with psychological and posttraumatic symptoms. A regression analysis showed that emotional abuse and physical neglect had the only significant contributions to general psychological distress and posttraumatic hyperarousal respectively. Psychological distress and hyperarousal were negatively correlated with drug debut age, but hyperarousal had the only significant contribution. The results indicate an indirect relationship between childhood trauma and drug debut age, where a heightened distress may be viewed as a possible mediator. Research has found associations between childhood sexual abuse and substance abuse, but when we study five subtypes of childhood trauma, we find that emotional abuse and physical neglect emerge as significant contributors to psychological distress. This indicates the need to broaden the field to include all forms of childhood trauma in order to explore its association with psychopathology, including substance abuse.

Keywords: childhood trauma, substance abuse, child maltreatment, posttraumatic stress symptoms, general psychological distress

Content

Childhood Trauma Exposure and Substance use

Substance use and Abuse

Substance abuse and dependency is one of the most serious social problems in the world. In Norway there has been a substantial increase in the use of substances in the past 10 to 15 years. Substance abuse concerns the individual, their family, workplace and society, all of which bears the costs. It has been estimated that in Norway, the total expenses related to substance abusers in 2001 was 2.2 billion Norwegian kroner (Official Norwegian Report [NOU], 2003; The Norwegian Institute for Alcohol and Drug Research [SIRUS], 2003; The Office of the Auditor general of Norway, 2004-05). In human costs, the World Health Organization (WHO) estimates that annually, alcohol and narcotics cause respectively 3.2% and 0.4% of all deaths worldwide (WHO, 2002a).

Definitions of Substance use and Abuse

There are many different terms related to use and misuse of substances. This paper will use the terms “substance use”, “substance abuse” and “substance use disorder” as follows. The term “substance use” refers to an occasional and unproblematic use of substances. Usage of an intensity which interferes with the individual’s work, education or relationships, or causes trouble with the law is referred to as “substance abuse”. “Substance use disorder” (SUD) refers to psychological and physical dependence and abuse (Gilvarry & McArdle, 2007). There are no clear dividing lines between substance use, substance abuse and substance dependency, and a person may fluctuate between the categories. In addition, harm may occur in all forms of usage (NOU, 2003). In addition “drug debut age” will in this paper be used to denote the first use of substances.

What constitutes problematic usage of substances will largely be decided by the society's norms, laws, knowledge and values, all of which change and vary over time and culture. A society's laws determine which substances are legal and freely available, which are restricted by, for instance, prescriptions, and which are completely prohibited. Any usage of illegal substances may be considered problematic as it violates the law (NOU, 2003). Age is an important factor, as the same amount of substance may be viewed as problematic for an adolescent, but not for an adult (Gilvarry & McArdle, 2007).

Prevalence of Substance use

In an epidemiological study, alcohol abuse and dependency was found to be the most common psychiatric disorder in Norway, with a lifetime prevalence of 22.7%. Unlike the other common psychiatric disorders, such as depression and anxiety, it was considerably more prevalent in men (33.4%) than in women (14.3%). The lifetime prevalence for drug abuse and dependency was 3.4% (Kringlen, Torgersen & Cramer, 2001). Substance use is associated with an increased risk of both somatic and psychological disorders such as depression, anxiety disorders including posttraumatic stress disorder (PTSD), psychosis and eating disorders (NOU, 2003). In 1998-1999 an estimated 4000 patients in Norway had a combination of substance dependency and another psychiatric disorder ("dual diagnosis"). This estimate is probably too low as it only includes those patients considered to need special treatment methods (Norwegian Board of Health Supervision, 2000).

Among young people there is a relatively high prevalence of substance use, and during middle and late adolescence substance use problems become increasingly more prevalent (Arteaga, Chen & Reynolds, 2010). Most Norwegian teenagers start drinking

before the legal age of 18. In 2008, Norwegian teenagers were on average 15 years the first time they drank a whole bottle of beer (SIRUS, 2009). By the end of their teens, most adolescents drink alcohol, and consumption peaks during young adulthood (Hoverak & Bye, 2007; Pape, 2007 as cited in Pape, 2009).

Unlike alcohol, the use of narcotics is more limited amongst Norwegian teenagers. Cannabis has always been the most used substance, and the prevalence of occasional use amongst 15-20 year olds has varied between 10% and 20% since 1999 (Pape, 2009; SIRUS, 2009).

Risk Factors for Substance Abuse

The risk factors which are most associated with substance abuse are individual, family, and peer contexts (Arteaga et al., 2010). Individual risk factors may include heritability, personality and behavioural problems. There is some evidence of the heritability of substance abuse and dependency in males (Gilvarry & McArdle, 2007). Adoption studies have shown that 18- 27% of adopted sons of alcoholics are themselves alcoholic, whereas only 5-6% of adopted sons of non-alcoholic parents are alcoholic (e.g. Cadoret, Cain, & Grove, 1980; as cited in Hawkins, Catalano, & Miller, 1992). However, approximately half of hospitalized alcoholics have no family history of alcoholism (Goodwin, 1985, as cited in Hawkins et al., 1992).

Another individual risk factor is early antisocial behaviour (Hawkins et al., 1992; Gilvarry & McArdle, 2007), for example conduct disorder, which studies have shown to be strongly correlated with both substance use and abuse (e.g. McArdle et al., 2002). Conduct disorder may be a greater risk for girls than for boys, while adolescent onset of depression poses a greater risk for substance abuse for boys. Sung, Erkanli,

Angold and Costello (2004) suggest that a disorder may be more problematic for the gender in which it is less common.

Peer factors have a direct and significant effect on adolescent's substance use (Brook et al., 1998). Both peer rejection and associating with substance-using peers, increases the risk of substance abuse. It is still uncertain whether there is a direct link between peer rejection and substance use (Hawkins et al., 1992), but having peers that use substances has been found to be one of the strongest predictors of substance abuse among adolescents (e.g. Brook, Brook, Gordon, Whiteman, & Cohen, 1990; as cited in Hawkins et al., 1992). Regardless of other risk factors, very few teenagers use substances if there are no substance-using peers present (Gilvarry & McArdle, 2007). Newcomb and Bentler (1986) found that the influence of peers on adolescent substance use was stronger than the influence of parents. However, the effect of peer factors lessens as people get older (Arteaga et al., 2010).

A family history of alcoholism, parental use of illegal drugs and family conflict are all associated with substance use in adolescence. In addition, adverse experiences in childhood, such as emotional and physical abuse and neglect, sexual abuse, and family dysfunction are all risk factors for substance use and abuse (Arteaga et al., 2010; Hawkins et al., 1992). However, the degree of influence on the development of substance abuse varies by gender. Block, Block and Keyes (1988) found that the home environment had more influence on substance use problems for girls than for boys (as cited in Arteaga et al., 2010).

Substance use and Posttraumatic Stress Disorder

It is common for people with substance use disorders to have been exposed to traumatic events (Mills, 2009), and posttraumatic stress disorder is common among

people with substance use disorders (Ouimette, Read & Brown, 2005; Ford, Hawke, Alessi, Ledgerwood & Petry, 2007). Up to 90% of adults with SUD report histories of psychological trauma exposure, and between 33% and 50% of these meet the criteria for PTSD (e.g. Brady, Killeen, Saladin, Dansky, & Becker, 1994; Ford et al., 2007). In Australia it has been found that prevalence of trauma exposure is especially high amongst users of opioids, sedatives and amphetamines (88-93%), and that between 25% and 33% of these have current PTSD. In contrast, they found that in the general population only 57% have been exposed, and of these, only 1.3% had current PTSD (Mills, Teesson, Ross, & Peters, 2006). However, trauma exposure alone is not enough to increase a person's risk of developing SUD, the risk increases if the person develops posttraumatic disorder after the trauma (Chilcoat & Breslau, 1998).

In the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, APA, 1994), Posttraumatic Stress Disorder is classified as an anxiety disorder. It is characterised by the development of three clusters of symptoms which follow exposure to trauma. The first cluster, "intrusion" consists of persistent re-experiencing of the traumatic event in the form of intrusive thoughts, nightmares, flashbacks and psychological reactivity to reminders of the trauma. The second cluster of symptoms, "avoidance"; consists of a repeated avoidance of stimuli associated with the trauma, by avoiding reminders and suppressing thoughts and feelings about it. Reactions also related to avoidance symptoms are numbing of general responsiveness, for instance an inability to feel close to others, experience positive emotions or enjoy pleasurable activities. Finally, the third cluster, "hyperarousal", consists of persistent symptoms of increased arousal such as exaggerated startle response, hypervigilance,

concentration problems, sleeping difficulties and irritability (Mills, 2009; Stenmark, 2008).

The Relationship Between PTSD and SUD

Two models which seek to explain the relationship between PTSD and SUD have been proposed (Raghavan & Kingston, 2006). The first model for understanding how trauma exposure and subsequent substance use are related is the concept of "self-medication", the idea that people sometimes turn to drugs in order to deal with pain and distress created by trauma in their lives (Etherington, 2008). The substance use is then a method to cope with the PTSD symptoms (e.g. Epstein, Saunders, Kilpatrick & Resnick, 1995; Chilcoat, & Breslau, 1998). Indeed, many people with both SUD and PTSD attribute their substance use to their need to cope with their PTSD symptoms, at least in part (Mills, 2009). However, exactly how early trauma leads to substance use is less understood (Etherington, 2008).

The second model proposes that it is the substance use that leads to PTSD. It suggests that lifestyle associated with (especially illegal) substance use increases the individual's vulnerability to trauma, and potentially traumatic events (PTE), and therefore to PTSD. For instance, substance use may increase the person's exposure to drug related crime, such as interpersonal violence (e.g. Darke, & Duflou, 2008)

Childhood Trauma

One population that often experience symptoms of PTSD are youth who have been maltreated, and PTSD is in fact a common consequence of such childhood trauma (Kearney, Wechsler, Kaur & Lemos-Miller, 2010). Like substance abuse, child maltreatment is also a serious social problem and carries huge costs for the community as well as the individual children and families it concerns (National Complex Traumatic

Stress network [NCTSN], 2003). To illustrate, WHO (2002b) estimate that between 0.1‰ and 0.2‰ of the world's children under 5 years of age die each year from physical violence. In addition, 0.1% of the world's deaths can be attributed to childhood sexual abuse (WHO, 2002a). In Norway, much attention has recently been given to the "Christoffer"- case. Christoffer was an eight year old boy who died in 2005 of severe head injuries. In July 2009, his stepfather was convicted of having abused and caused his deadly injuries, and the police are currently investigating whether or not his mother participated (Drugg, 2010).

Definitions of Childhood Trauma

This paper defines childhood trauma as being equivalent with the World Health Organization's (WHO, 1999) definition of child maltreatment. The paper uses the WHO's definitions of physical, emotional and sexual abuse, and neglect, but distinguishes between physical and emotional neglect. Both childhood trauma and child maltreatment will be used. In a report by the WHO child maltreatment is defined as:

> ... all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power. (WHO, 1999, p. 15)

This and other definitions of child maltreatment have in common that they include acts of omission as well as acts of aggression and exploitation. They also highlight the maltreatment context as a power-abusive relationship (Wekerle & Wolfe, 2003). The WHO (1999) report categorizes and defines four primary acts of child maltreatment: physical abuse, emotional abuse, sexual abuse and neglect.

Physical abuse is defined as acts, both single and repeated, that result in actual or potential harm from an interaction (or lack of it) that is reasonably within the control of the abuser; a parent or person in a position of trust, power or responsibility (WHO, 1999). Physical abuse involves both minor and severe injuries to the child, and most incidents occur in the context of discipline and child management (Wekerle & Wolfe, 2003).

According to WHO's (1999) definition, emotional abuse includes the failure to provide a developmentally appropriate, supportive environment, including the availability of a primary attachment figure, in order that the child can establish a stable and full range of emotional and social competencies in proportion with its personal potential, and in the context of the society in which the child lives. The definition also includes acts towards the child that cause or have a high likelihood of causing harm to the child's health, or mental, spiritual, moral, social or physical development. As with physical abuse, the acts must be within the reasonable control of the abuser. Examples of emotional abuse are patterns of threatening, rejecting, scapegoating or frightening the child. Some countries recognize exposing the child to domestic violence as a form of emotional abuse (Wekerle & Wolfe, 2003).

Sexual abuse is defined as the involvement of a child in sexual activity that he or she does not fully understand, is not developmentally prepared for, cannot give consent to, or that violates the laws or social taboos of society. The activity is intended to satisfy the needs of the perpetrator, who is an adult or another child who by development or age (usually considered five or more years older) is in a relationship of responsibility, power or trust (Wekerle & Wolfe, 2003; WHO, 1999).

Neglect and negligent treatment is defined as the failure to provide for a child in all spheres: physical and mental health, nutrition, education, shelter and safe living conditions, in the context of resources reasonably available to the family or caretakers. The neglect causes or has a high likelihood of causing harm to the child's health or physical, spiritual, mental, social or moral development. The failure to properly supervise and protect the child from harm is also included (WHO, 1999).

This paper distinguishes between physical neglect and emotional neglect. Physical neglect can be defined as ignoring the child's physical needs, such as the need for shelter, clothing, food and medical care. Emotional neglect is the ignoring of a child's emotional needs, such as the need for nurture and a secure base, intellectual needs for stimulation and social interaction, the need for age appropriate opportunities for autonomy and independence (Carr, 2006).

Prevalence of Childhood Trauma

There are two main ways of studying the prevalence of childhood trauma; a) looking at officially documented cases, such as those reported to child protection services, which are verifiable as actual cases of abuse and b) performing epidemiological studies which rely on self-reporting. However, because a majority of cases never come to the child protection service's attention, prevalence numbers based on surveys are much higher than the official data indicate (Carr, 2006). A disadvantage with these studies is that one cannot control for response biases, such as reluctance to report abusing one's child (Straus & Gelles, 1985).

It is difficult to compare estimates, as many studies vary in their definition of maltreatment and abuse. For example there is no consensus as to what degree of violence constitutes physical abuse, as this is largely decided by social norms.

According to American norms and laws, acts such as spanking or slapping a child are not considered abusive, as they are in Norway (Haeuser, 1985, as cited by Straus & Gelles, 1986). In addition, epidemiological studies vary in terms of who the respondents are. Some studies survey adults and ask them if they abuse their child, or if they have been abused themselves as a child. Others ask children or adolescents if they are being abused. Surveys also vary according to whether they are of the general population or clinical populations.

The different forms of childhood trauma have different prevalence levels. In the United States, the Department of Health and Human Services found that there were more than 800 000 maltreated children nationwide in 1999. Of these, 58.4% had experienced neglect, 21.3% physical abuse, 11.3% sexual abuse and 35.9% other forms of maltreatment (U.S. DHHS, 2001, as cited in Wekerle & Wolfe, 2003). In Norway, 7700 children were taken out of their homes in 2007 by the child protection services due to maltreatment (Follesø, 2009).

In the U.S, Straus and Gelles (1986) found that 10% of the sampled parents in the general population had used severe physical abuse against their child during the last year. However, the prevalence of overall violence, which included acts that are not considered abuse according to American norms, was 62%. In a study of 15-16 year olds in two Nordic countries, Peltonen, Ellonen, Larsen and Helweg-Larsen (2010) found that 9% in Finland and 7% in Denmark had experienced parental violence (including both severe and mild violence) during the last year. In Norway, Shou, Dyb and Graff-Iversen, (2007) found that 4% of 15 year olds had experienced violence from an adult during the past year. Mossige and Stefansen (2007) found that 18% of their sample of

Norwegian 18 year olds had been hit by an adult in the family at least once in their lives.

International studies of the prevalence of sexual abuse report rates ranging from 7% to 34% in girls, and from 3% to 29% in boys (Wekerle & Wolfe, 2003). Shou et al. (2007) found that among Norwegian 15 year olds, 6.1% of the girls and 1.6% of the boys in their sample had experienced a sexual violation in the past year. However, this study does not differentiate between sexual abuse as defined above, and other sexual violations, such as date rape, and includes indecent exposure ("flashing"). A Norwegian study of 18 year olds found a prevalence of serious sexual violations of 15% among the women and 7% among the men. Serious sexual violation was defined as all forms of unwanted sex, including rape and attempted rape. The prevalence of mild sexual violations, which included such acts as touching and masturbation, was 22% among the women and 8% among the men (Mossige & Stefansen, 2007)

Based on officially reported cases in the UK, Australia and North America in the 1990s, the annual incidence of neglect is between 1% and 10%. Approximately half of all cases of child maltreatment had suffered neglect, and physical neglect was the most common (Carr, 2006).

Twenty percent of the officially reported cases of child maltreatment in the UK, Australia and North America in the 1990s had suffered from emotional abuse. The annual incidence was between 0.9‰ and 2.3‰ (Carr, 2006). The World Studies of Abuse in the Family Environment (WorldSAFE) project found that shouting at children is common among parents in many countries, whereas other psychological punishments vary more. For instance the rate of mothers who reported threatening to abandon their child varied from 8% in Chile to 48% in the Philippines (WHO, 2002b).

Effects of Child Maltreatment

Child maltreatment happens to children of all nationalities, religions, ages, languages, ethnicities, social classes and both genders (Clancy, 2009; Wekerle & Wolfe, 2003), and has widespread biological, developmental and psychological effects (van der Kolk, 2005; Wekerle & Wolfe, 2003). A number of internalising and externalising behaviour problems are linked to maltreatment, such as depression, anxiety, and substance abuse. Other associated problems are low self-esteem, obesity and criminal behaviour (e.g. Kearney et al., 2010; Stirling & Amaya-Jackson, 2008).

Amongst the many biological effects of childhood trauma are systematic changes in the growth, maturation, neural development and plasticity of the brain. Neglect, poor attachment and stress also have indirect influences on the brain (Kearney et al., 2010). The brain changes can lead to sensory, motor and cognitive dysfunctions (e.g. De Bellis, 2005). One specific example is that early trauma can lead to dysfunction of the hypothalamic- pituitary- adrenal (HPA) axis, which is responsible for releasing glucocorticoids to strengthen stress coping. Both the HPA axis and the glucocorticoids are important for responding to situations that are new, have negative emotional content and feelings of lack of control (Carpenter et al., 2007; Kearney et al., 2010). The extended irregularity of glucocorticoids has been linked to anxiety and mood disorders, as well as deficits in learning and memory. HPA axis regulation problems might therefore be a mechanism through which maltreatment in childhood leads to later psychiatric disorders (Kearney et al., 2010). However, these correlational studies cannot determine that child maltreatment leads to HPA axis problems, and other explanations for the relationship are also possible.

There are also psychological effects of childhood trauma, such as disruptions in diverse developmental areas such as motor, emotional, language, social, academic and cognitive skills. Complex trauma exposure refers to children's exposure to multiple traumas occurring within the caregiving system (NCTSN, 2003). The timing of complex trauma distinguishes it from other forms of psychological trauma, as it happens during the developmentally vulnerable times of childhood and adolescence. This period is critical for the formation and consolidation of a wide range of developmental competencies, such as self-regulation, self-integrity and identity, the safety to explore the environment, self-agency. The early attachment relationship provides the basis for the development of these competencies, as well as early models of self, other and self in relation to others (Ford & Courtois, 2009; NCTSN, 2003; van der Kolk, 2005). Childhood trauma has been linked to difficulties with the identification, expression and modulation of emotions. It is especially modulation of emotions that seems to be difficult for many maltreated children. Adolescence is another critical period for development, and the many physical, cognitive and social changes have an impact on emotional experiences and affect regulation (Colder, Chassin, Lee & Villalta, 2010). Children and adolescents who are unable to consistently regulate affect may appear as emotionally labile, with extreme responses to minor stressors, and unable to self-sooth, and such difficulties with affect regulation may lead to maladaptive and self-destructive behaviours that represent attempts to manage painful affect (NCTSN, 2003; Wekerle & Wolfe, 2003). The functional value of such strategies as self-harm, compulsive sexual behaviour, compulsive risk taking, and substance abuse, may be escaping emotional numbness, introducing positive affect, or self medicating negative affect (Beitchman et al, 1991; Stewart & Israeli, 1992, as cited by Wekerle & Wolfe, 2003). Substance abuse

and risky sexual practices are two of the most prevalent self-destructive behaviours in adolescence, and child maltreatment increases the risk of both (Farley & Barkan, 1998; Kilpatrick et al., 2000; Wekerle & Wolfe, 2003). One long term effect of childhood trauma may be an increased likelihood to drift into high risk situations and engaging in a wider range of risky behaviours (Wekerle & Wolfe, 1998), Problems with emotional and behavioural self-regulation can also lead to maladaptive responses such as excessive anxiety, depression, cognitive distortions, aggression, and impulsivity (e.g. Kearney et al., 2010; van der Kolk, 2005).

Differential Effects of Specific Trauma Subtypes

There is also evidence that the specific subtypes of child maltreatment have different physical and psychological effects, both short- and long term. The physical effects of physical abuse include bruises, scars, disfigurement, visual or auditory impairment and a failure to grow (Carr, 2006). Short term psychological effects include negative self-evaluative beliefs, problems with the development of language and cognitive skills. While most of the physically abused children do not develop serious long term problems, they may have difficulty in their relationships with peers, and have problems with empathizing with others (Carr, 2006; Wekerle & Wolfe, 2003).

Unlike physical abuse, neglect is an act of omission, and there are therefore fewer physical signs, although infants may display diaper rashes, dehydration and diseases related to malnutrition (Wekerle & Wolfe, 2003). In the short term, both neglect and emotional abuse can lead to attachment problems, non-organic failure to thrive and developmental delays (Carr, 2006). Both neglect and emotional abuse are associated with inhibited reactive attachment disorder, which is characterized by persistent failure to initiate or respond in a developmentally appropriate fashion to most

social interactions (DSM-IV, 1994). Neglected children also tend to differ from nonabused children on measures of language ability and intelligence (Wekerle & Wolfe, 2003). Children who are physically neglected tended to have higher rates of school failures, whereas the emotionally neglected tended to have higher rates of psychiatric diagnoses (Erickson & Egeland, 2002, as cited by Wekerle & Wolfe, 2003). Neglected and emotionally abused children show more serious long-term adjustment problems than physically abused children (Wekerle & Wolfe, 2003). Examples include internalizing behaviour such as depression, social isolation and self-harm and externalizing behaviour problems such as impulsivity, aggression and substance abuse. In addition, the children may have significant difficulties in both making and maintaining intimate peer relationships (Carr, 2006).

About two thirds of children who have experienced sexual abuse develop psychological symptoms (Carr, 2003). The symptoms are often specific; sexualised behaviour, aggression, depression, anxiety and withdrawal. Acute physical symptoms that are specific to sexual abuse include infections, perineal bruises and sexual transmitted diseases. Unlike physical and emotional abuse and neglect, there is no evidence of cognitive impairment in sexually abused children. However, self blame and guilt is associated with sexual abuse (Wekerle & Wolfe, 2003), and may develop through stigmatization, where the perpetrator blames and denigrates the child. In addition, the family and surroundings may blame the child after the disclosure of the abuse. The concept of stigmatization comes from the traumagenic dynamics formulation. According to this view, four related, but distinct dynamics account for the variety of symptoms shown by sexually abused children; traumatic sexualisation,

stigmatization, betrayal and powerlessness (Browne & Finkelhor, 1986, as cited in Carr, 2006).

The sexually abused child may develop beliefs of generalized personal ineffectiveness due to the child's experience of being powerless to prevent the abuse because of the perpetrator's use of violence or coercion (Browne & Finkelhor, 1986, as cited by Carr, 2006). Clancy (2009), however points out that sexual abuse often is not experienced as terrifying when it happens, because most instances of childhood sexual abuse do not involve threats or violence. Rather, the perpetrator is most often a person the child knows, trust and loves, and the actions that the person wants do not physically hurt. In Clancy's and other's (see Clancy, 2009) studies, the victims usually did not understand what was happening and felt confused rather than terrified. As a consequence, many children did not fight or resist the abuse. They were used to doing as they were told by adults, including things they did not understand or like. In addition the abusers often used rewards to make their victims comply. According to Clancy, it is only when the victims get older and realizes that the confusing events actually were abuse, it becomes psychologically traumatic. When this happens though, sexual abuse is as damaging as the other forms of maltreatment. A meta-analysis preformed by Chen and colleagues (2010) found statistically significant associations between sexual abuse and lifetime diagnosis of anxiety, depression, PTSD, sleep disorders and suicide attempts.

Childhood Trauma and Posttraumatic Stress Disorder

Posttraumatic stress disorder was included in the official classification of psychiatric disorders in 1980. Since then there has been a disproportionate amount of research on veterans, compared to victims of specific traumatic events such as rape,

accidents and disasters (Breslau, 2002). However, maltreated youth often experience symptoms of PTSD and this population has received increased attention from researchers in recent years (Kearney et al., 2010). There has been an increase in research on the long-term effects of sexual abuse, but the research on other forms of childhood trauma is rarer (Duncan, Saunders, Kilpatrick, Hanson & Resnick, 1996).

PTSD is a common consequence of childhood trauma, and the two concepts share many epidemiological, aetiological, symptomatological, prognostic and clinical characteristics (Kearney et al., 2010). While, broadly defined, childhood trauma involves disasters and accidents as well as interpersonal violence and abuse (Punamäki & Peltonen, 2008), child maltreatment is an especially salient trauma for the development of PTSD as it may involve physical violence, injury, coercion and invasive contact, such as sexual penetration (Kearney et al., 2010). An important point however, is that many children and adolescents who experience trauma do not develop PTSD or other psychiatric disorders, and little is known about why some do and others do not (Ackerman, Newton, McPherson, Jones & Dykman, 1998; Clancy, 2009).

Researchers have estimated that between one fifth and one half of sexually abused youth, and up to one half of physically abused youth have PTSD (Kearney et al., 2010). Sexual abuse has been found to be a relatively stronger predictor of PTSD symptoms than physical abuse in youth who have experienced both types (Sullivan, Fehon, Andres-Hyman, Lipschitz & Grilo, 2006). PTSD is especially likely to occur in cases involving perceptions of being victimized, longer periods of maltreatment, threats or force, or both sexual and physical abuse (Kolko, Brow, & Berliner, 2002; Kearney et al., 2010¸ Romero et al., 2009; Tyler, 2002)

Most studies focus on either sexual or physical abuse although multiple victimization is likely, for instance in adolescent inpatients (Sullivan et al., 2006). In addition the different subtypes have been found to predict the severity of PTSD symptom clusters, and overall posttraumatic distress differently. One study on the relationship between child maltreatment and PTSD symptoms in adolescent psychiatric inpatients found that only emotional neglect was not associated with overall posttraumatic stress or each of the three PTSD symptom clusters (hyperarousal, intrusion and avoidance). Emotional abuse had the highest correlation with each cluster and overall distress and it was the only subtype which had significant contributions to all symptom clusters and overall distress. Sexual abuse had a significant contribution to intrusion symptoms (Sullivan et al., 2006).

The PTSD diagnosis is controversial and has been criticised on several points, for example the stressor criterion which some think is too inclusive (e.g. McNally, 2004). There is also controversy about its use as a diagnosis for maltreated children, as some researchers believe it does not capture the extent of the developmental impact of multiple and chronic trauma exposure (e.g. van der Kolk, 2005). Children who experience multiple forms of abuse and neglect (complex trauma exposure) often show developmental delays across many domains, and therefore tend to display complex disturbances that often vary in their presentation. The current diagnosis of PTSD does not describe these widespread developmental effects, and the children are therefore often given different comorbid diagnosis. This has been criticised by van der Kolk (2005), who maintains that the developmental effects are not independent of the PTSD symptoms. In addition, neglect and emotional abuse do not necessarily meet the stressor criteria for PTSD, as they do not involve actual or threatened death or injury. Given

these and other issues The Complex Trauma Taskforce of the National Child Traumatic Stress Network has conceptualized a new disorder they call Developmental Trauma Disorder (van der Kolk, 2005).

Childhood Trauma and Substance use

Although a causal relationship has not been determined, studies consistently find that female substance users are likely to have experienced childhood trauma. For men the findings are more ambiguous (Wekerle & Wolfe, 2003). Several studies find that exposure to child maltreatment is related to earlier substance debut, which is important because early debut predicts later substance abuse. The earlier the start of substance use, the greater involvement with other substance use. In addition, early onset of substance use has been associated with several developmental difficulties such as school dropout, conduct problems and unemployment (Anthony & Petronis, 1995; Fergusson & Horwood, 1997). In a study of young adults from a low income minority background, Arteaga et al., (2010) looked at predictors of onset of substance use. They found that involvement with child protective services at ages 4-9 increased the relative risk of earlier substance use by 39% compared to those who were not involved with child protective services. Arteaga et al.'s overall findings suggest that family adversity exerts a relatively large impact on the onset of substance abuse. The study provides indirect evidence for an effect since involvement of childhood protective services indicates the presence of childhood trauma exposure, although it does not specify which type of childhood trauma. Other researchers study narrower, but more specific variables, such as sexual abuse, and find this associated with earlier drug debut age.

Kilpatrick, Acierno, Saunders, Resnick, Best and Schnurr (2000) conducted a structured telephone interview with 4000 adolescents from the general population. They

found that 7% of the sample met the DSM-IV diagnostic criteria for alcohol, marijuana or hard drug abuse/dependence. The prevalence of sexual assault was 8%, that of physical assault, 23%. Victims of sexual or physical assault or those who had witnessed violence all had a higher risk of substance abuse than those who had none of these experiences. Sexual assault was measured using five questions (6 for boys) about different ways the adolescent could be made to participate in unwanted sexual acts. Physical assault was measured with eight questions on physical violence by family members, friends or strangers. Only one affirmative answer was required for the answerer to be classified as a victim of sexual or physical assault. The onset of ”nonexperimental” alcohol use was defined as the age at which the respondents reported “drinking five or more drinks of alcohol on a given day” (p 21). Similarly, onset age for nonexperimental marijuana and hard drug use was defined as the debut age only for those who had reported using more than four times or on four or more occasions. The victimized substance users started using a given substance earlier than the nonvictimized users. This effect was found for both alcohol and marijuana use, though how much earlier the victimized users started differed. With alcohol the victimized users were on average 0.7 years younger than nonvictimized users, whereas for marijuana users the victimized users were 1.4 years younger than nonvictimized users. As all but one of the hard drug users had been victimized, the authors could not analyze the difference in onset of hard drug use (Kilpatrick et al., 2000).

Hawke, Jainchill and De Leon (2000) reported similar findings when they assessed 938 adolescents in therapeutic community drug treatment. They conducted both a face to face interview and a self-administered questionnaire to determine the prevalence of sexual abuse. The interview obtained information about six categories of

childhood abuse, two of which pertained to sexual abuse; molested/fondled, and raped/sodomized. It also ascertained at what age the abuse first happened, how often it happened and who the perpetrator was. The self-administered questionnaire was the Personal Experience Inventory (PEI, Winters & Henly, 1989), which was collected at the time of the interview. It asks three questions on whether or not the adolescent has been sexually abused, but it also includes a fourth question about whether or not someone else in the family has been sexually abused by another family member. Substance use was measured by asking the adolescents to identify any pretreatment use of substances (including tobacco), debut age and frequency of usage. In the analysis, data on sexual abuse from the interview and the questionnaire was used, and an important finding was that they had different prevalence rates of sexual abuse. According to the questionnaire 33% of the respondents had experienced sexual abuse, 13% higher than the prevalence obtained from the interview. The difference was biggest amongst the boys, where the prevalence of sexual abuse doubled from 10.7% on the interview to 23.7% on the PEI. Amongst the girls there was a 10 % increase, from 51.9% to 60.4%. According to the results, having a history of sexual abuse increased the likelihood of earlier use of alcohol and illicit substances, but not tobacco. The article does not state how much earlier the debut age was (Hawke et al., 2000).

In another study of childhood sexual abuse (CSA), Raghavan and Kingston (2006) found that was it significantly related to earlier debut of substance use amongst 644 poor, adult, women with an admitted drug problem. Child sexual abuse was measured on one item on the Post Traumatic Diagnostic Scale (PDS, Foa, Cashman, Jaycox, & Perry, 1997). The item asks if the respondent had experienced “sexual contact when you were younger than 18 years old with someone who was 5 or more

years older than you" (Raghavan & Kingston, 2006, p. 272). Age of first use of substances was measured by items in the Addiction Severity Index (McLellan et al., 1992) which asks when the participants first used alcohol or one of ten illicit substances. About a third of the participants in the study had experienced CSA. Child sexual abuse was significantly correlated with earlier debut of substance use, increased rates of lifetime traumatic events and PTSD.

In summary all of the above studies found an association between sexual abuse and earlier drug debut age. However, to be classified as sexually abused, the respondents only had to have one affirmative answer. In Hawke et al.'s (2000) study this may have caused the sexually abused category to include respondents whose family members, rather than themselves, had been sexually abused. Raghavan and Kingston (2006) only ask one question, which is formed in such a way that it allows the respondent to define what "sexual contact" is. The authors themselves state that this means that sexual ambiguous experiences occurring in adolescence which were not experienced as traumatic may have been included (p. 275). This question formulation makes it difficult to compare the results to other studies which use behaviour specific questions. Other issues that make it difficult to compare the studies are the varying sampling and assessment procedures. None of the studies use the same measurement procedure or study the same population. This may explain the differences in prevalence found. As would be expected, the prevalence of CSA is much higher in the two clinical samples (Hawke et al., 2000; Raghavan & Kingston, 2006) than in the general population (Kilpatrick et al., 2000). But in Hawke et al.'s study the prevalence of CSA is twice as high as Raghavan and Kingston's, which may reflect the difference made by behaviour specific questions. Although all the studies find correlations between CSA

and earlier drug debut age, only Kilpatrick et al. state how much earlier the victimized users debut with substances, thus enabling the reader to learn if the difference is clinically as well as statistically significant.

The studies mentioned above are all retrospective, and only studied one or two forms of child maltreatment. However, research has demonstrated the predictive usefulness of studying child maltreatment at a more specific level, for example by the different subtypes of childhood trauma (Sullivan et al., 2006). Also, Ackerman et al. (1998) found a higher prevalence of behavioural problems among those who had experienced physical abuse, or both physical and sexual abuse, rather than sexual abuse only. In a prospective study of childhood trauma and substance abuse, Wilson and Widom (2010) compared 908 children with documented cases of trauma (processed by court) with a matched control group without documented cases of childhood trauma. The participants were assessed for illicit substance use at young adulthood (29 years) and middle adulthood (39 or 41 years). This study found that physical neglect was associated with a *late* onset of drug use, defined as those who reported debuting with substances between the assessment in young adulthood and the one in middle adulthood. The physically neglected were more than twice as likely to fall in the late onset group, compared to controls. Wilson and Widom suggest that the childhood neglect may have contributed to a range of long-term disadvantages and failure to achieve social roles, leading to use of illicit substances after the age when most individuals mature out of such behavior (p. 808).

This paper will explore how childhood trauma is related to drug debut age among young adults with dual diagnoses in Norway. It seeks to address some of the problems of the previous research on the relationship between childhood trauma and

substance use debut by studying all five subtypes of childhood trauma and by using a standardized measurement instrument with good psychometric qualities. Like previous research the hypothesis is that the higher level of childhood trauma exposure, the earlier debut of substance use. In addition, the paper explores the relationship between childhood trauma and both PTSD symptoms and general psychological symptoms, and between symptom levels and substance use debut. All of these issues are in accordance with the Norwegian government's stated priorities when it comes to health research. The National Health plan (Ministry of Health and Care Services, 2007) states that research on substance abuse, trauma, children, psychiatry and the relations between them, are needed and have high priority.

Method

Participants and Procedures

This study is a part of a larger study on trauma in members of risk exposed groups such as substance users, prison inmates and children in foster care. The present sample (N = 76) comprised of 59.2% men and 40.8% women and the participants ranged in age from 17 to 30 years (M = 23.43 years, SD = 3.14). The participants were recruited from young adult substance users seeking treatment for drug and/or alcohol dependence and mental disorder ("dual diagnoses") at a psychiatric out-patient clinic at Haukeland University Hospital. The participants were invited by their therapists to participate in a trauma screening that could be a part of the assessment for treatment and also be used in research. Unfortunately, records of the rate of refusal were not kept. All participants received written and oral information about the study before they signed the consent form. The study was approved by the Regional Committee for Medical and

Health Research Ethics, Western Norway (REK-Vest). The participants did not receive any economic compensation for participating in the study.

Measures

Substance use. Substance use was measured with Klientkartleggingssystem (KKS, client mapping system), a standardised method of client registration developed by The Bergen Clinics and The Norwegian Institute for Alcohol and Drug Research. It is a self- report measure of the number and type of substances used at the debut, and the number and type of substances used the last six months. The participant can report which substances they use in order of priority, up to six different substances. The substances are categorized into None, Cannabis, Alcohol, Opiates, Benzodiazepines, Amphetamines, Hallucinogens and Others, which include LSD, ecstasy, solvents and methylated spirits (Iversen, Lauritzen, Skretting & Skutle, 2009).

Childhood Traumatic Events. The Childhood Trauma Questionnaire (CTQ; Bernstein, 2002; Bernstein et al., 1994) measures self-reported occurrence and severity of traumatic events related to neglect and abuse up to 18 years of age. Item response anchors follow a Likert scale (1-5) from *Never true* to *Very often true*. The responses are summed up in five subscales; Emotional Abuse (example item: "Family said hurtful things"), Physical Abuse ("Hit hard enough to leave bruises"), Sexual Abuse ("Made to do sexual things"), Emotional Neglect ("Made to feel important", reversed) and Physical Neglect ("Not enough to eat"). By using the recommended cut-off, the scores can be classified as none, low, moderate or severe. The most recent version is the short form (CTQ-SF), which contains 28 items. Of these, 3 items relate to a minimization/denial subscale (Bernstein et al., 1997). The internal reliability (Cronbach's alpha) for the CTQ in this sample was: $\alpha = .88$. In the analysis the five

subscale scores on the CTQ were dichotomized so that those who scored 2 or more (moderate or severe level) on a subscale were classified as exposed to that type of childhood trauma, whereas those who scored 1 or less (none or low level), were classified as not exposed.

Posttraumatic and general psychological symptoms. Occurrence and severity of current specific posttraumatic symptoms were measured with the Impact of Event Scale- Revised (IES-R; Weiss & Marmar, 1997), which is widely used as a self-report measure for PTSD symptoms (Rash, Coffey, Baschnagel, Drobes & Saladin, 2008). The IES-R measures PTSD symptom intensity during the last seven days. The item response anchors follow a Likert scale (0-4) from *Not at all* to *Extremely*. The responses are summed up in three subscales; Intrusion, Avoidance and Hyperarousal. Although the IES-R is not directly tied to the diagnostic criteria of DSM-IV, the cut-off scores have been used to discern a caseness symptom level of a possible PTSD diagnosis. Rash et al. (2008) suggest that a cut-off value of 22 is optimal for a substance-using population. The internal reliability (Cronbach's alpha) for the IES-R in this sample was: $\alpha = .95$.

General current psychological symptoms during the last week were measured with the Symptom Checklist-90- Revised (SCL-90-R; Derogatis, 1994). This checklist measures self-reported occurrence and severity of general psychological symptoms. The symptoms are scored on nine symptom scales and a global symptom index which measure overall psychological distress. The internal reliability (Cronbach's alpha) for the SCL-90-R: Global Severity Index for this sample was: $\alpha = .96$.

Results

Participant Characteristics

The sample consists of young adults, 97.4% of whom are between the ages of 18 and 29 years (Table 1). The participants were relatively well educated; more than half (52.6%) had finished high school or higher education. Most of the participants were either married or cohabiting (75%), and they lived in their own home or with their parents (85.5%). Nearly half (48.7%) of the participants worked, and an additional 18.4% were students.

Substance use

The average age of substance use debut was 14 years (M = 13.97, SD = 1.95). The participants had on average been substance users for more than 9 years (M =9.61, SD = 2.93). Almost a fifth (18.42%) had debuted before the age of 12, and 71.05% debuted between the ages of 13 and 17. Figure 1 shows the distribution of debut substances, and alcohol was the most common debut substance (40.8%), while one fifth (21.1%) reported using cannabis as their first substance. Almost a quarter (23.7%) reported using more than one substance at the time of the drug debut (polysubstance use).

At the time of testing, 79% of the participants reported using more than one substance, and the distributions can be seen in Figure 2. Cannabis is given as the first choice by 35.5%, making this the most preferred substance. Alcohol is next, 27.6% prefer it. Figure 2 also shows that many of the participants used three or four different substances, and less than 20% used six substances.

Nearly half (44.7%) of the participants had experienced an overdose and 26.3% of these more than once.

Childhood Trauma

The participants could roughly be divided into thirds based on their experiences of childhood trauma. One third (34.21%) had not experienced any childhood trauma. One third (28.95%) had experienced one form of childhood trauma; 10.53% sexual abuse, 6.58% emotional abuse and physical neglect respectively, and 5.26% emotional neglect. None of the participants had experienced physical abuse alone; it was always in combination with other forms of trauma. In fact, the remaining third (36.84%) had experienced several forms of childhood trauma, and one person (1.32%) had experienced all of them.

The most common form of traumatic event, according to the CTQ, was emotional neglect, which 34.2% reported to have experienced (Table 2). The second most common traumatic events were emotional abuse and physical neglect, each of which 31.6% reported to have experienced.

Posttraumatic and General Psychological Distress

The means and standard deviations of the participants' scores on the SCL-90-R and the IES-R can be found in Table 4. A majority of the participants (63.9%) scored above the IES-R sumscore cut-off of 22, indicating a symptom severity level of probable PTSD according to Rash et al.'s (2008) study of substance abusers.

Cross-tabulations

The participants were categorized into a probable PTSD group, and a no PTSD group and Pearson Chi-square was used to explore if moderate-severe levels of childhood trauma (yes/no) were related to probable PTSD diagnostic level (yes/no). The cross-tabulations of clinically significant levels of childhood trauma and of PTSD symptom level reveal no statistically significant relationship (Table 6).

Correlations

Table 3 shows the differences in mean drug debut age between those who had experienced severe levels of childhood trauma (CTQ) and those who had not. None of the different forms of childhood trauma were significantly correlated with drug debut age for the sample as whole, or for either gender. For example the mean drug debut age for those who had experienced sexual abuse was 13.50 (*SD*= 2.62), vs. a mean drug debut age of 14.13 (*SD*=1.66) for those with no sexual abuse; t(21.85)= -0.96, p >.05. Similarly, there was no significant difference in the drug debut age between those exposed to any form of childhood trauma compared to those who were exposed to none of them (t(58.03) = -0.23, p > .05). There were no statistically significant difference in drug debut age between those who scored above the cut-off for probable PTSD on the IES- R, and those who did not (t(36.82) = -0.43, p > .05).

However, childhood trauma was significantly related to current symptom levels, both general psychological (SCL-90-R) and posttraumatic stress (IES-R) symptom clusters. As can be seen in Table 4 and Figure 3, the correlations between the CTQ sum score and the SCL-90-R Global Index Score was moderately strong (SCL-90-Rgsi; r = .38, p < .05). The CTQ sum score was correlated with the IES Global Index Score (IES-Rgsi; r = .25, p < .05), but of the three PTSD symptom clusters, CTQ sum score was only significantly correlated with hyperarousal (r = .29, p < .05). The results indicate that current psychological distress was related to exposure to severe childhood trauma.

The different subtypes of childhood trauma had different relationships with the general and posttraumatic symptoms, as can be seen in Figure 4. Physical neglect was positively correlated with hyperarousal (r = .36), avoidance (r = .23) and SCL-90-Rgsi (r = .38, all p < .05). However, the strongest relationship was between emotional abuse

and SCL-90-Rgsi ($r = .40$, $p < .05$). Sexual abuse was not significantly correlated with any symptom level in this sample.

Both general psychological symptom level and level of hyperarousal had significant, negative correlations with drug debut age. The correlation between hyperarousal symptoms and drug debut age was moderately strong ($r = -.31$, $p < .05$), and indicates that earlier drug debut was related to a high current level of hyperarousal. Similarly, the correlation between SCL-90-Rgsi and drug debut age was $r = -.24$, $p < .05$, indicating that earlier onset of drug use was related to high current level of general psychological symptoms. The SCL-90-Rgsi was also positively correlated with number of current drugs ($r = .26$, $p < .05$), indicating that multiple substance use was related to current symptom level.

There was a significant positive correlation ($r = .26$, $p < .05$) between SCL-90-Rgsi and the number of current drugs, indicating that a high current level of distress was related to using higher number of substances. There were no statistically significant differences in number of current drugs in those who scored above the PTSD cut-off and those who did not ($t(53.24) = -0.55$, $p > .05$).

The number of debut drugs was not significantly correlated with any other study variable. The difference in number of debut drugs between those who scored above and below the PTSD cut-off was not significant ($t(49.41) = 0.43$, $p > .05$).

Regressions

A multiple regression analysis was performed to further explore the relations between childhood trauma, symptom levels and drug debut age by finding which variable had significant contributions. The regressions were controlled for gender and age, except drug debut age, which was only controlled for gender as the dependent

variable was age. Table 5 shows that the only variable with a statistically significant contribution to drug debut age was hyperarousal ($\beta = .61$, $p < .05$). Collectively, gender, the five types of childhood trauma and the current general psychological and PTSD symptoms explained 9% of the variance in drug debut age.

The different subtypes of childhood trauma contributed differently to symptom levels. Emotional abuse had the only significant contribution to the SCL-90-Rgsi score ($\beta = .31$). Physical neglect ($\beta = .38$) and gender ($\beta = - .24$) had significant contributions to hyperarousal. Together, the five types of childhood trauma, gender and age explained 22% of the variance in the SCL-90-R scores and 12% of the variance in the hyperarousal scores.

Discussion

Main Findings

The sample consisted of young, help-seeking, Norwegian, active substance users with dual diagnoses. Reflecting the Scandinavian welfare society, the participant's demographic properties differ somewhat from other, international, samples of substance users (e.g. Raghavan & Kingston, 2006). Not unlike the general population of Norway, the participants are well educated, most of them work or study and the vast majority are in a romantic relationship and have their own homes. In spite of this the participants have a serious substance use. They debuted with substances as young teenagers and have been substance users for an average of 9.5 years, more than a third of their lives. Almost 80% use multiple substances and half of them have experienced an overdose.

Although the participants in this study are demographically better off than those in other studies of substance users, this study finds, like those other studies (e.g. Mills et al., 2006), that a history of trauma is prevalent. Two thirds of the sample had

experienced at least one type of childhood trauma and emotional neglect was the most prevalent, with emotional abuse and physical neglect close behind. All five types of childhood trauma were included in the analysis of the relationship between childhood trauma and drug debut age. No relationship was found for any of them and so the hypothesis was not supported; a higher level of childhood trauma exposure was not related to earlier debut of substances for this sample.

Exposure to childhood trauma was positively correlated with both current general symptom level and the hyperarousal cluster of the posttraumatic symptoms. Both of these are measures that indicate a presence of anxiety and distress, and both were negatively correlated to drug debut age (see Figure 1). In other words, those that had experienced severe levels of childhood trauma had a higher current level of psychological distress. And those that had a higher current level of distress had an earlier drug debut. This indicates that there is an indirect relationship between childhood trauma and drug debut age for this sample, where distress may be viewed as a mediator. The earlier drug debut may not be linked to the experience of childhood trauma per se, but rather to the psychological distress the trauma may cause.

The findings can be taken to support the self-medication hypothesis. Of the three different PTSD symptom clusters measured on the IES-R, only hyperarousal was related to earlier drug debut. In addition, only hyperarousal had a significant contribution to drug debut age. This, along with the relationship between general psychological distress and drug debut age, indicates that it is the internal distress and constant arousal that poses the biggest problem for substances users, rather than intruding images and memories, or seeking to avoid trauma related stimuli. It may be that the substance users are trying to reduce their hyperarousal and distress through any

means possible. This is also supported by the fact that almost a quarter of the participants debuted with more than one substance. It is as if they took anything they could get their hands on in order to obtain relief.

There may be several reasons why substances are chosen as the means to reduce distress. For example, young adolescents may have less well developed strategies for coping with the anxiety inducing aspects of their experiences (Sullivan et al., 2006). Early attachment patterns affect information processing quality throughout life and children with secure attachment learn how to regulate their emotions and internal thought processes. Maltreated children on the other hand, often form insecure attachments (Carr, 2006; van der Kolk, 2005) and the childhood trauma may cause difficulties with affect regulation. This may cause the maltreated child to rely on external means, such as substances, to help regulate internal distress.

Like Sullivan and colleagues (2006), this study also finds that the different subtypes of maltreatment predict posttraumatic symptoms differently. In addition, the study finds that they also predict general psychological symptoms differently. In fact, there seems to be a pattern emerging as to which type of trauma leads to which kind of symptom. The emotional maltreatment forms, emotional neglect and abuse, are both related to general psychological symptoms (SCL-90-R). Both the physical maltreatment types are related to posttraumatic symptoms (IES-R), specifically hyperarousal and avoidance. The fact that emotional maltreatment is not related to posttraumatic distress is consistent with the DSM-IV diagnostic criteria for PTSD, which requires that the stressor is experienced as a threat to oneself or others, and causes intense fear, horror or helplessness. These criteria are more consistent with the experience of physical abuse and neglect. Sexual abuse was not related to PTSD symptoms in this study. A possible

explanation for this may be that childhood sexual abuse often is not experienced as threatening when it happens, as Clancy (2009) points out. In fact, sexual abuse is not related to any current symptom levels in this study.

This study finds remarkably few relationships between the participants' experiences of childhood trauma, their current substance use and their current psychological symptoms. For instance, neither number of current drugs, number of debut drugs or drug debut age was significantly different in those who scored above the PTSD cut-off and those who did not. In addition, there are no statistically significant relationships between clinically significant levels of childhood trauma and current PTSD symptom levels. In other words, both the participants with childhood trauma, and those without, are equally likely to score above the PTSD cut-off. This holds true for all the different subtypes of trauma. This is interesting as it is markedly different from the strong relationships between childhood trauma and PTSD found in the other risk groups in this project, as well as other, international studies (e.g. Sullivan et al., 2006), even though the present participants do not distinguish themselves from those in other samples in terms of reported PTSD symptoms or childhood traumas. A reason for the lack of relationship between childhood trauma and PTSD may therefore lie in the fact that the present participants are currently using substances, which may be regarded as an attempt to self-medicate. Active substance use might mask a potential relationship between childhood trauma and probable PTSD in several ways. For instance, the escape from affective distress serves as a negative reinforcement of substance use, according to the reformulated negative reinforcement model of drug motivation (Baker et al, 2004, cited in McCarthy, Curtin, Piper & Baker, 2010). The model proposes that an experienced substance user may take drugs before consciously detecting the distress that

motivated the behaviour. The substance use might thus blur the relationship between one's emotions and one's experiences, making it difficult to realize how past events and current symptoms may be connected.

Although experiencing a traumatic stressor is a criterion for a PTSD diagnosis, there has been little research on the reliability of retrospective reports of such stressors among substance users (Ouimette, Read & Brown, 2005). In addition, most research on emotionally arousing events has focused on consistency rather than accuracy (van Giezen, Arensman, Spinhoven & Wolters, 2005). Studies have indicated that substance users display impairments in cognitive functions such as memory, attention, ability to integrate and organize complex information, processing speed, and mental flexibility. These studies suggest that most of these effects will subside when the substance use ends. There is also evidence that different substances have different effects on cognition (Lundqvist, 2004).

Also, research on mood-congruent memory has shown that one is more likely to remember events that are congruent with one's current mood. Individuals with clinical depression often show memory deficits regarding positive autobiographical events (Holland & Kensinger, 2010). However, there exists little data on how the effects of substances influence a person's responses to questionnaires on childhood trauma and psychological symptoms. The responses made by active substance users may be affected by more than just the memory impairments associated with substance use, or mood-congruent memory. A substance user's memory might also be affected by intoxication level at the time of assessment. There may be large differences in what a substance user reports of his or hers childhood, depending on whether he or she is in withdrawal, craving substances, or intoxicated ("high"). Moreover, there are large

individual differences in how one reacts to intoxication, a person might become aggressive, angry, euphoric, happy, uninhibited, melancholic, sad, or tired. The same person's reactions may also vary according to which substance is used at the time of assessment. Any one, or any combination of these issues may influence the participant's responses to the questionnaires, which in turn may explain the apparent lack of relationship between the present participants' experiences of childhood trauma, and current psychological and posttraumatic symptoms. However, more research is needed to disentangle the complexity of the relationship between substance user's childhood traumas (if any) and their current psychopathology.

Main Findings Related to Findings of Other Studies

Both childhood trauma and substance abuse are widely studied fields, and numerous studies focus on the relationship between them. As seen above, several studies have found a relationship between some forms of childhood trauma and earlier onset of substance use. However, the widely varying methodology makes it hard to compare results. This is a field that is riddled with unclear definitions and terminology, where no two studies seem to define what constitutes childhood trauma or substance abuse the same way. Similarly, the measurement of both childhood trauma and substance use vary from standardised questionnaires and interviews, to single items on questionnaires made for other purposes, or questions made especially for the study in hand. In addition, the previously cited studies have all studied different samples, namely substance using youth or women, or the general population, and are therefore not directly comparable to each other or the present study. However, there seems to be a general trend in the findings that earlier debut of substances is related to histories of sexual abuse. The fact that this relationship is found in studies with various samples and

measurements might be used as an argument in favour of it being a robust relationship. The present study however, finds no such relationship. One reason for this may be the lack of variability in age and drug debut age in the sample. Seventy percent of the sample debuted with substances between the ages of 13 and 17 years of age. Also the sample is relatively small, stressing the need for more statistical power in this research field. It is possible that a relationship may have been found if older substance users had been included, thus increasing the variation in age. However, it is worth noting that in one of very few prospective studies on childhood trauma and substance abuse, published online in November 2010, Wilson and Widom, found that childhood trauma, specifically physical neglect, was related to *late* debut of substances.

This study uses standardised instruments with good psychometric properties to study childhood trauma in a sample of substances users. In order to facilitate finding a relationship between childhood trauma and drug debut age, only those who have experienced moderate to severe levels of childhood trauma are classified as exposed. Still a relationship is not found, not for sexual abuse, and not for any of the other forms of childhood trauma.

There may be many different reasons for the difference between the results found in this study and those of other studies. One explanation might be that most previous research has focused on sexual abuse to the exclusion of most or all other forms of maltreatment. In most cases, the participants have not been asked about their experiences with other forms of childhood trauma. However, it is known that individuals with trauma histories are likely to have experienced several forms of traumatic exposure (Kessler, 2000, in Cloitre et al., 2009). This is particularly common among those exposed to childhood trauma, where the different forms often happen

simultaneously and repeatedly (van der Kolk, 2005). In the present study, only 10% of the participants have been exposed to sexual abuse alone, and of those who had been exposed to trauma, half had experienced more than one type. Moreover, emotional neglect and abuse and physical abuse were all more prevalent than sexual abuse in the present sample. Other studies that also measure all five types of childhood trauma, such as Sullivan et al. (2006), find similar patterns to ours: emotional abuse and physical and emotional neglect are far more prevalent than sexual abuse. It is therefore likely that the participants in studies which only concentrate on childhood sexual abuse, also have been exposed to other forms of childhood trauma. It is therefore possible that the relationship between sexual abuse and drug debut age might be better accounted for by childhood trauma in general, or by the more commonly occurring emotional abuse.

Sexual abuse is not related to drug debut age in this sample, nor is it related to any current symptom levels. Moreover, when examining the relationship between childhood trauma and symptom levels, it is emotional abuse and physical neglect that emerges as the contributing factors for general psychological distress and hyperarousal respectively. This finding is surprising as numerous studies find relationships between sexual abuse and a number of psychiatric disorders including PTSD (for a review and meta-analysis, see Chen et al., 2010). However, the present study's result is in line with that of Sullivan et al. (2006), where emotional abuse was the only significant predictor of overall PTSD and each symptom cluster. In their study, sexual abuse was a significant predictor of intrusion only. Again there is a discrepancy between studies of sexual abuse and studies of all types of childhood trauma. In Chen et al.'s review, only half the studies included (18 of 37) assessed multiple abuse categories, and if they did, they focused mainly on physical abuse. This is somewhat surprising, as there is a

growing amount of research literature that indicates that the severity of an individual's symptoms can be predicted by the number of different lifetime traumas he or she has experienced (Briere, Kaltman & Green, 2008). As the different forms of childhood trauma commonly co-occur, but are rarely co-assessed, there is no way of knowing whether the observed relationship between childhood sexual abuse and psychiatric disorders might not be better accounted for by the more frequently experienced emotional abuse. Sullivan et al. (2006) find the relationship between emotional abuse and PTSD both surprising and troubling, given that research on the effects of emotional abuse is only in its infancy.

So why this single-minded focus on sexual abuse, where extensions of the field are mostly limited to include physical abuse? Clancy (2006) refers to the feministic movement when she seeks to explain how attention on childhood sexual abuse (CSA) exploded in the 1970's, and how pervasive the view of how the child "must" experience the sexual abuse as traumatic became. In her 2006 book, Clancy directs a scathing criticism towards the childhood sexual abuse field, saying it has created a "trauma myth", in which CSA is pictured as a horrifying experience characterised by threats and violence, a description the victims Clancy studied did not recognise. Clancy criticises the trauma focus for not reflecting the real experience of the victims, and so defying the purpose of research; to yield information on the precise mechanisms behind the problems. The childhood trauma literature has overwhelmingly studied CSA alone, and Clancy's criticism may be equally fitting here: the single-minded focus on CSA and to a certain degree physical abuse, does not reflect the victims' experiences. As seen in this paper, many of those who are exposed to childhood trauma experience several types, and other types are more prevalent than sexual abuse. Failing to appreciate this when

studying childhood trauma means that the mechanisms behind the problems associated with childhood trauma may remain undiscovered or not fully understood. A broader perspective is also requested by participants, as seen in Mossige and Stefansen's (2007) study of sexual and physical violence. Some participants commented that while studies of violence are needed, they felt that violence and maltreatment were broader concepts and that studies should also include neglect and emotional abuse (p. 44).

One reason for this widespread, yet narrow, focus may be that it is relatively easier to define and study the effects of sexual and physical abuse. One can operationalize them into specific behaviours, something that is harder to do for emotional abuse, and both forms of neglect. Also, it may be another result of what Clancy (2006) refers to as the "adultcentric bias" (p. 63-64). Using an adult framework to understand childhood trauma, we imagine that sexual and physical abuse must be the worst experiences any child can experience. However, as Clancy points out, CSA is not usually experienced as traumatic when it happens, and in Raghavan and Kingston (2006), the participants who had experienced CSA did not in fact rank it as the most traumatic experience. So although it may suit the scientific temperament to neatly isolate effects, the impact of childhood trauma may not be so easily categorised. It may change throughout the child's development, and it is possible that the effects are not specific to the type of trauma. For instance, a 4 year old who is hit by his mother will likely cry from the pain, and may get bruises. The experience and its impact fit the definition of physical abuse. An adolescent however, might, rather than crying, think "she doesn't love me", or "I'm not worthy of love". And so while the act may be physical abuse, its impact may be more that of emotional abuse or neglect.

Of course, it is more complicated to study all the forms of childhood trauma. But real life is complicated, and things do not happen in isolation. In childhood trauma, things will be interrelated. Sexual abuse is a worthy field of study, it has damaging effects on its victims and should of course never be tolerated. But this is also true of emotional and physical abuse and neglect. After countless studies on CSA, perhaps the time has come to also focus on the other forms of maltreatment, and most importantly, how they are interrelated. The effects of multiple trauma exposure, for instance on substance abuse, must also be studied.

Research consistently finds associations between experiencing potentially traumatic events and the development of psychopathology such as PTSD and substance abuse, and it is recognised that childhood trauma is a risk factor for the latter, though causal relationships have not been determined. While determining the factors which contribute to early substance use is important, as early substance use has been associated with both greater involvement with other substances, and several developmental problems (Anthony & Petronis, 1995), childhood trauma might not be the most important contributing factor. For instance, in the present study, all five forms of childhood trauma, general and posttraumatic symptoms levels, as well as gender and age, could together only account for 9% of the variation in drug debut age in the sample. This indicates that an individual's drug debut age is determined by other factors, many of which are likely to be contextual rather than individual. For instance, factors such as access to substances and substance using peers might have more influence on the timing of an individual's debut age than childhood trauma.

This study did not find a relationship between childhood trauma and drug debut age, but this is only one of many ways childhood trauma and substance use may be

linked, and it is perhaps not the most clinically relevant, as the differences in age are relatively small. In Kilpatrick et al.'s study (2000) those exposed to childhood trauma debuted between 0.7 and 1.4 years earlier than those not exposed, depending on the substance. Similarly, the mean drug debut in the present study was 14 years, which is only one year younger than the average age at which teenagers in the Norwegian general population first drink a whole bottle of beer (SIRUS, 2009). These small differences may be statistically significant, but their clinical relevance is debatable; how much does this short time difference matter when it comes to prophylactic- and treatment interventions?

Childhood trauma and substance use are likely related in many other ways. For instance, Kang, Magura, Laudet and Witney (1999) found that childhood trauma was associated with more severe drug use in women (as cited by Wekerle & Wolfe, 2003). Rather than contributing to early drug debut, perhaps childhood trauma is an important factor in how severe a person's substance use is. Not all substance abusers have experienced childhood trauma, but perhaps childhood trauma may be one contributing factor to why some people cross the line from a potentially unproblematic substance use to abuse and dependency. Where some people may start using substances for the "high" and its associated pleasures, those who have experienced childhood trauma may come to depend more on the affect-regulation properties of the substances. Problems with affect-regulation have been proposed as a possible explanation as to why a high proportion of the substance users in this sample debuted with multiple substances. However, more research is needed to explore whether or not this pattern of multiple debut substances is common among substance users. It is also important to keep in mind that there are behavioural and neurobiological mechanisms at work in substance

dependency. Both substances and other, natural rewards such as food, activate the dopaminergic pathways in the brain. Substance abuse produces positive affective states that are similar to those of naturally occurring positive emotions, indicating that the same neural mechanisms are involved. Thus, substance use may be influenced by positive reinforcement as well as the negative reinforcement discussed above (de Wit & Pahn, 2010).

Implications for Clinical Practice and Further Research

The implications of this explorative study suggest that it may be necessary to employ a broader perspective when assessing childhood trauma and its impact on development, psychopathology and aspects of substance abuse. That the different forms of childhood trauma predict symptoms differently argues for using a higher level of specificity in research. Emotional abuse has the highest prevalence in this sample, as well as being the only significant contributor to general psychological distress. Physical neglect emerges as a significant contributor to hyperarousal symptoms. Our results underline the negative impact of, and the need for routine clinical assessment of all forms of child maltreatment, a field in which sexual and physical abuse dominate. Treatment directed toward helping people to deal with their experiences of childhood sexual and/or physical abuse should also assess for other forms of maltreatment. In addition the high co-occurrence of childhood trauma and substance abuse suggest that clinicians should always assess childhood trauma when treating substance users, and vice versa.

There is a need for a greater consensus in the field on how to operationalize childhood trauma and substance abuse and how they should be measured. A greater use of standardised instruments and cut-off points would make it easier to compare results.

Limitations

This study's methodological limitations must be considered when interpreting the results. As a correlation study, it does not allow for the determination of causality, and it cannot be concluded that exposure to childhood trauma causes psychological symptoms, or that the psychological symptoms lead to earlier debut of substance use. The relationship between childhood trauma and psychological symptoms may be indirect as there may be several factors that co-vary with childhood trauma. It is possible that those who have experienced childhood trauma come from more severely dysfunctional families, that they experience more adult victimization, or that they have a family history of psychological problems, all of which would increase the risk of psychological problems compared to those who have not experienced childhood trauma.

There is an inherent limitation in the use of self-report measures, as it is impossible to verify the validity of the reported events. Another limitation is the retrospective, cross-sectional nature of the data. It is possible that the participants' reports are biased by memory distortions. This may be especially true for this sample, as many of the participants are active substance users; it is well documented that cognitive deficits are associated with alcohol and marijuana use. Heavy alcohol use and the use of marijuana have been especially associated with impairments in cognitive domains such as memory and executive functions (Mahmood, Jacobus, Bava, Scarlett, & Tapert, 2010). Also, some researchers (Briere, 1989, as cited in Duncan et al., 1996) suggest that victims may deny or repress memories of childhood trauma as a way to cope with them. Repression may be particularly relevant pertaining to CSA, and it has been suggested that there is something special about the trauma of sexual abuse that makes the victims prone to repress the memories. However, as Clancy (2009) points out, a

large body of research shows that one of the problems of traumatic experiences is that they are remembered too well.

Conclusion

This study confirms that childhood trauma is prevalent among young adult substance users with dual diagnoses. However, there were few direct relationships between the participant's experiences of childhood trauma and their substance use, and current psychological distress. Neither number of current drugs, number of debut drugs, nor drug debut age were significantly correlated to childhood trauma, or to probable PTSD. This is different from findings in other samples of substance users and the other risk groups in this project, and the difference may be related to factors associated with the participants' current substance use. However, childhood trauma was related to current psychological distress, which in turn was associated with earlier drug debut age. This indicates that there is an indirect relationship between childhood trauma and drug debut age in this sample. Different subtypes of childhood trauma had different relationships with general and posttraumatic symptoms, indicating that a greater level of specificity is needed in future research. In addition, emotional abuse, and both forms of neglect are understudied compared to sexual and physical abuse. As most trauma exposed children experience multiple forms of trauma there is a need to broaden the trauma research perspective to include all forms of childhood trauma.

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Table and Figure Legends

Table 1.

The Demographic data of the Participants.

		Frequency (n)	%
Gender	Male	45	59.2
	Female	31	40.8
Age	≤ 17yrs	1	1.3
	18-29 yrs	74	97.4
	30 -39 yrs	1	1.3
Marital status	Married/Cohabiting	57	75.0
	Unmarried	18	23.7
Education	No compulsory school	2	2.6
	Compulsory school	33	43.4
	High school	36	47.3
	Higher education	4	5.3
Employment	Full time job	35	46.1
	Part time job/studying	16	21.0
	No job	24	31.6
Main income	Salary	21	27.6
	Student loan	6	7.9
	Government support	45	59.2
	Sickness benefit	15	19.7
	Social security	11	14.4
	Rehabilitation	19	25.0
	Other	3	3.9
Residence	At parents	20	26.3
	Self-owned/rented	45	59.2
	Other	10	13.1

Note: One person only provided data for gender and age.

Table 2.

Frequencies of Childhood Trauma (CTQ).

N = 76	Severity level (n (% of N))				Dichotomized severity level	
	None	Low	Moderate	Severe	None-low	Moderate-severe
Emotional abuse	27 (35.5%)	25 (32.9%)	15 (19.7%)	9 (11.9%)	52 (68.4%)	24(31.6%)
Physical abuse	58 (76.3%)	8 (10.5%)	6 (7.9%)	4 (7.9%)	66 (86.8%)	10(13.2%)
Sexual abuse	49 (64.5%)	7 (9.2%)	12 (15.8%)	8 (10.5%)	56 (73.7%)	20(26.3%)
Emotional neglect	22 (29.0%)	28 (36.8%)	10 (13.2%)	16 (21.1%)	50 (65.8%)	26(34.2%)
Physical neglect	37 (48.7%)	15 (19.7%)	17 (22.4%)	7 (9.2%)	52 (68.4%)	24(31.6%)

Table 3.

Drug Debut age for Substance use for the Different CTQ Childhood Trauma.

	Childhood trauma level						
	Moderate- severe		None-low				
Type of childhood trauma	Mean age	SD	Mean age	SD	t	df	p
			All (N = 76)				
Sexual abuse	13.50	2.62	14.13	1.66	-0.96	21.85	.35
Emotional abuse	13.63	2.16	14.15	1.83	-1.02	40.19	.32
Physical abuse	14.00	2.18	13.97	1.93	0.04	9.91	.97
Emotional neglect	13.83	1.99	14.04	1.94	-0.42	45.43	.68
Physical neglect	14.45	1.82	13.76	1.98	1.46	43.96	.15
Any trauma*	13.94	2.11	14.04	1.63	-0.23	58.03	.82
			Females (n = 31)				
Sexual abuse	14.30	2.11	14.11	1.37	0.25	13.30	.80
Emotional abuse	14.08	1.98	14.25	1.39	-0.25	18.79	.81
Physical abuse	13.00	1.22	14.43	1.62	-2.23	7.42	.06
Emotional neglect	14.56	2.19	14.00	1.33	0.70	10.92	.50
Physical neglect	14.40	1.17	14.06	1.86	0.60	25.44	.55
Any trauma	14.20	1.80	14.13	1.25	0.13	18.69	.90
			Males (n = 45)				
Sexual abuse	12.50	2.98	14.14	1.82	-1.50	8.23	.17
Emotional abuse	13.17	2.33	14.10	2.04	-1.21	17.92	.24
Physical abuse	15.25	2.63	13.69	2.07	1.15	3.39	.33
Emotional neglect	13.40	1.80	14.07	2.29	-1.06	35.07	.30
Physical neglect	14.50	2.28	13.58	2.06	1.22	18.42	.24
Any trauma	13.74	2.33	14.00	1.83	-0.41	37.68	.69

Note: * "Any trauma" compares those who have experienced any of the types of childhood trauma with those who have experienced none.

Table 4.

Means, standard deviations and correlations between study variables

Variables	n	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 SumCTQ	76	45.31	13.40	—													
2 Emotional Abuse	76	10.74	4.39	.75*	—												
3 Physical Abuse	76	6.57	2.79	.63*	.41*	—											
4 Sexual Abuse	76	7.24	4.31	.50*	.09	.24*	—										
5 Emotional Neglect	76	12.73	5.04	.84*	.53*	.35*	.25*	—									
6 Physical Neglect	76	8.03	2.79	.72*	.54*	.40*	.02	.66*	—								
7 Intrusion	72	1.44	1.03	.19	.14	.20	.06	.08	.22	—							
8 Avoidance	72	1.67	1.06	.23	.23	.20	.08	.10	.23*	.72*	—						
9 Hyperarousal	72	1.35	1.05	.29*	.26*	.25*	.01	.19	.36*	.80*	.71*	—					
10 IES-Rgsi	72	1.50	0.95	.25*	.22	.24*	.06	.13	.29*	.92*	.90*	.90*	—				
11 SCL-90-Rgsi	76	1.17	0.76	.38*	.40*	.07	.09	.33*	.38*	.42*	.57*	.59*	.57*	—			
12 No.of Debut drugs	71	1.37	0.76	-.10	-.18	.00	-.11	-.05	.08	.08	.05	.02	.06	-.04	—		
13 No.of Current drugs	75	2.72	1.35	.04	.00	-.04	.04	.11	-.06	-.11	-.02	.14	-.01	.26*	.14	—	
14 Drug debut age	71	13.97	1.95	-.12	-.14	-.04	-.11	-.10	.04	-.13	-.14	-.31*	-.20	-.24*	.18	-.35*	—

Note: * = $p < .05$

Table 5.

Simultaneous Regression Analysis.

	Drug debut age			SCL-90-R GSI			IES-R GSI			Hyperarousal		
Variables	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Emotional abuse	-0.06	0.07	-.13	0.05	0.02	.31*	0.03	0.03	.12	0.03	0.03	.12
Physical abuse	-0.01	0.10	-.02	-0.06	0.03	-.22	0.04	0.05	.13	0.05	0.05	.12
Sexual abuse	-0.04	0.07	-.08	0.03	0.02	.16	0.02	0.03	.10	0.02	0.03	.08
Emotional neglect	-0.05	0.07	-.13	0.00	0.02	-.02	-0.04	0.03	-.22	-0.04	0.03	-.20
Physical neglect	0.25	0.13	.35	0.08	0.04	.29	0.11	0.06	.32	0.14	0.06	.38*
Hyperarousal	-1.15	0.44	- .61*									
Intrusion	0.46	0.43	.24									
Avoidance	0.33	0.40	.18									
SCL-90 gsi	-0.39	0.45	-.15									
Gender	0.03	0.52	.01	-0.31	0.17	-.20	-0.24	0.24	-.13	-0.52	0.26	-.24*
Age				-0.04	0.03	-.17	0.00	0.04	-.01	-0.03	0.04	-.08
Adjusted R^2	.09			.22			.04			.12		
p	.12			.00			.21			.03		
F	1.65			3.96			1.43			2.42		

Note: * = p < .05

Table 6.

Crosstabulations Between Dichotomized Levels of Childhood Trauma (moderate-severe; CTQ) and PTSD (yes/no; IES-R).

		PTSD category (n(% of abused))				
		PTSD	no PTSD	χ^2	df	p
Emotional Abuse:	Yes	17 (73.9%)	6 (26.1%)	1,47	1	.23
	No	29 (59.2%)	20 (40.8%)			
Physical Abuse:	Yes	8 (80.0%)	2 (20.0%)	1,31	1	.25
	No	38 (61.3%)	24 (38.7%)			
Sexual Abuse:	Yes	14 (70.0%)	6 (30.0%)	0,45	1	.50
	No	32 (61.5%)	20 (38.5%)			
Emotional Neglect:	Yes	20 (76.9%)	6 (23.1%)	3,00	1	.08
	No	26 (56.5%)	20 (43.5%)			
Physical Neglect:	Yes	17 (70.8%)	7 (29.2%)	0,75	1	.39
	No	29 (60.4%)	19 (39.6%)			

Note: % show percentage of row

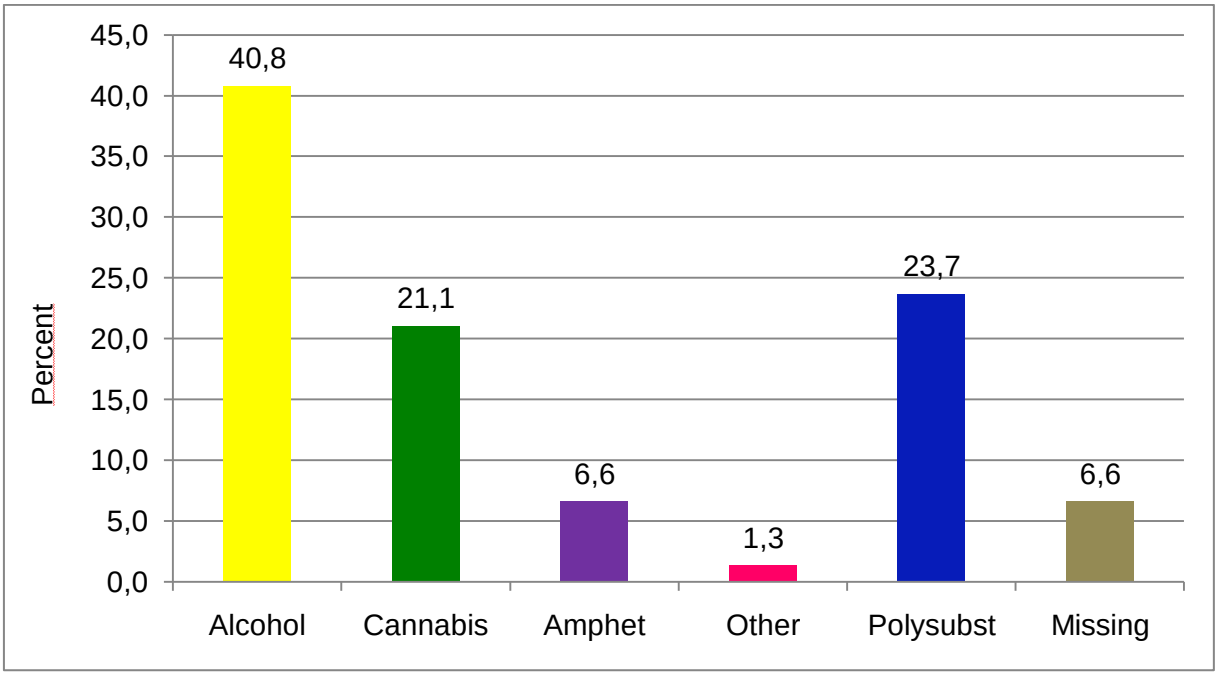

Figure 1. Substance Used at Debut.

Note: "Amphet": amphetamine; Polysubst: polysubstances.

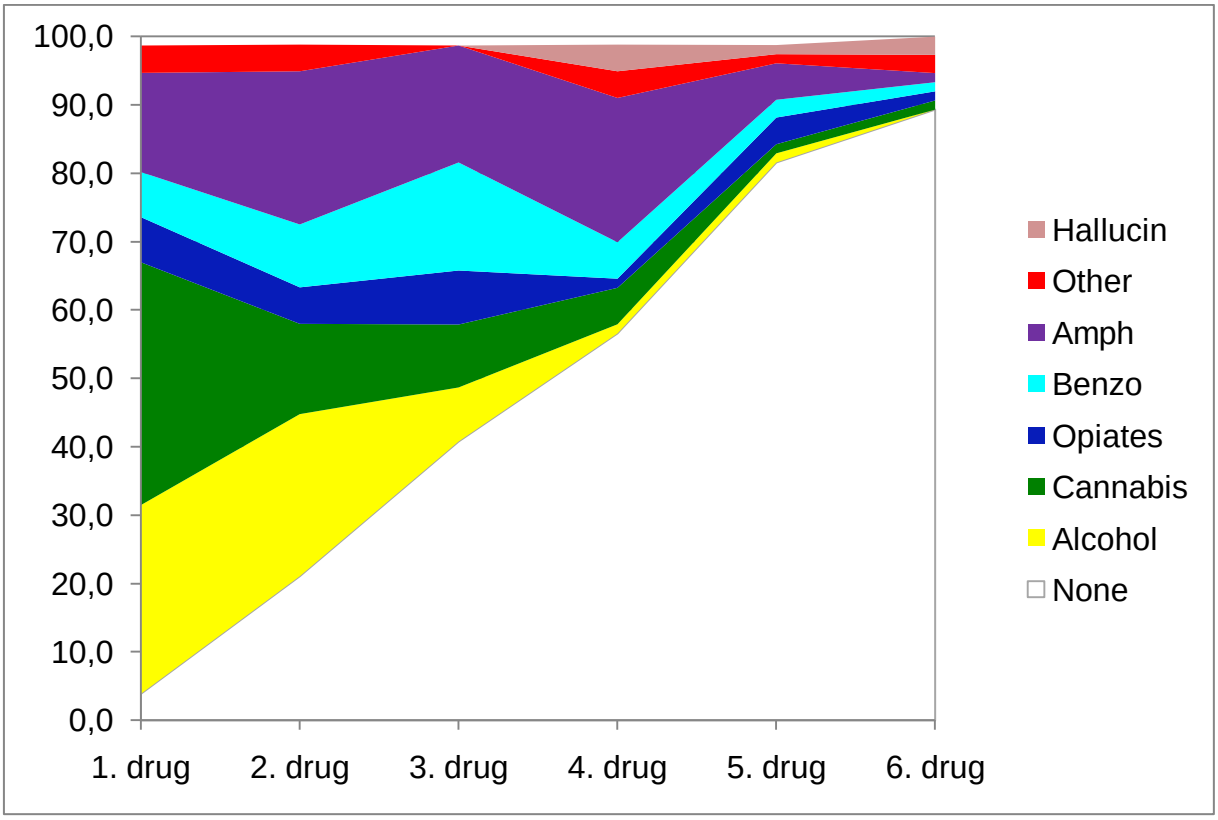

Figure 2. Percentage of current drug use preferences according to substance category and priority. Note: "Hallucin": hallucinogens; "Amph": amphetamine; "Benzo": benzodiazepines

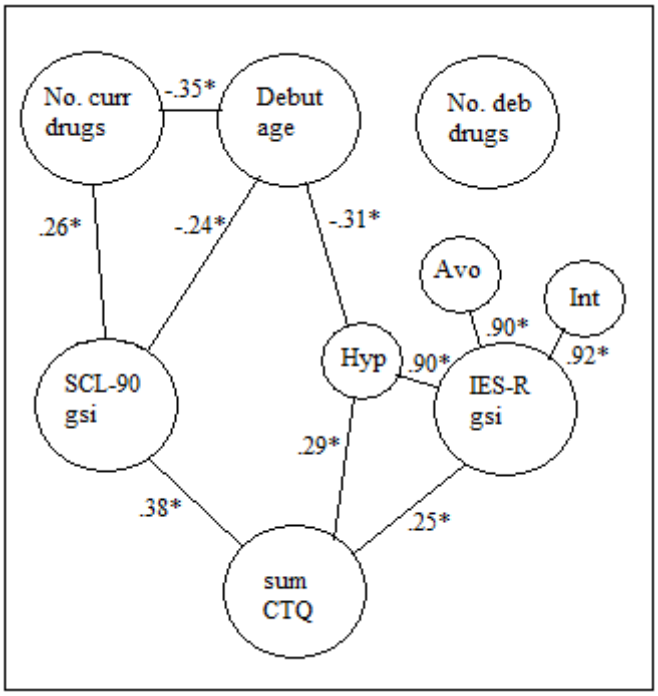

Figure 3. Significant correlations between study variables. Note: * = $p < 0.05$.

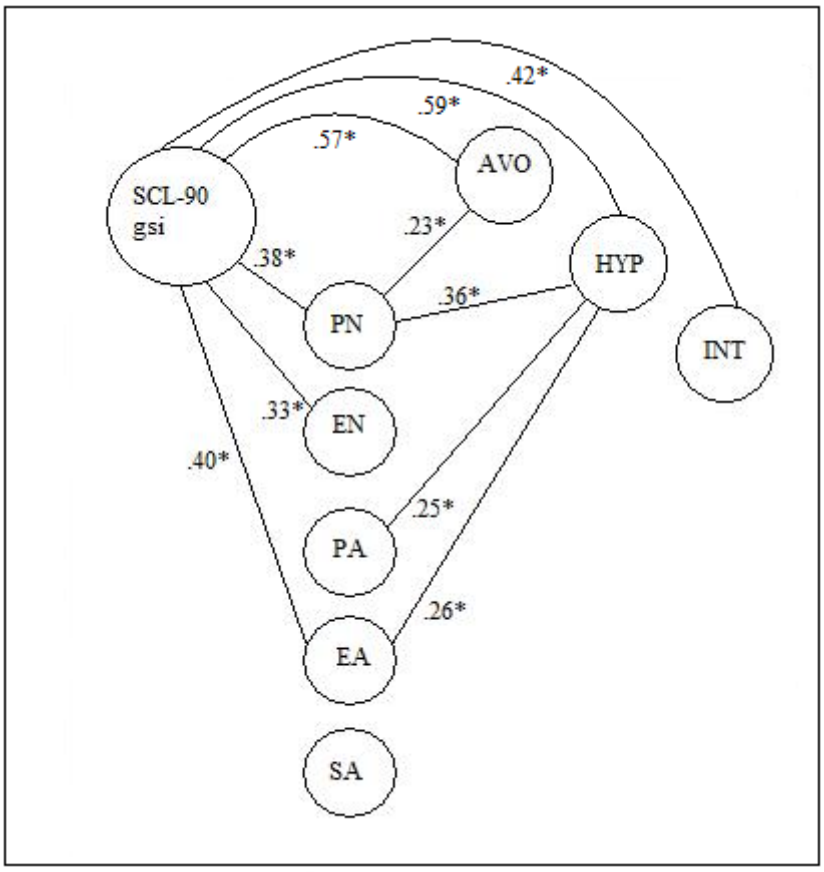

Figure 4. Significant correlations between the subscales of the CTQ and the IES-R and the SCL-90 Global Symptom Index. Note: * = $p < 0.05$