When things are getting out of hand: Prevalence, assessment, and treatment of substance use disorder(s) and violent behavior
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CHAPTER 1

Introduction
At a party, when you tell someone you are involved in scientific research this often brings a blank expression to your audience’s face. As soon as you explain, though, that your dissertation involves studying substance use in relation to criminality you have everybody’s attention because criminality is ‘hot’. Popular crime series on television such as Crime Scene Investigation, Law & Order, and Bones underscore this phenomenon. However, in real life, criminality is a serious problem involving physical injuries, mental health problems in individuals, and material damage. But criminality also harms society at large. In total, criminality costs Dutch taxpayers about 12,5 billion euros per year, the price tag of prosecuting criminals, preventing crimes, imprisonment of criminals, etcetera (Nauta, Moolenaar, & Van Tulder, 2011). There is no question that crime should be restricted as much as possible. Since a large proportion of convicts recidivate - Wartna et al. (2011) calculated that 27.5% of offenders who were sentenced in 2008 relapsed within 2 years - it is mandatory to focus on preventing recidivism in order to reduce criminality. Therefore it is important to identify risk factors associated with recidivism and to develop effective treatments for offenders. One of the risk factors that is often associated with criminal behavior is substance use. The focus of the first part of this thesis is prevalence of substance use disorders among perpetrators of specific offenses, i.e., intimate partner violence (IPV), general violence (GV), and sex offenses. Subsequently, the second part of the dissertation zooms in on substance abuse in relation to IPV and on the effectiveness of a combined treatment addressing both problematic substance use and IPV perpetration.

Part I
Consequences of criminal behavior
Various crimes lead to different detrimental consequences for victims. For example, IPV, GV, and sexual violence may lead to physical injuries, but may also result in chronic pain, depression, posttraumatic stress disorder, sleeping problems, suicidality, lowered self-esteem, miscarriages, and substance use disorders (for reviews, see Campbell, 2002; Plichta, 2004). Furthermore, witnessing IPV between parents may cause anger, fear, anxiety, shame, posttraumatic stress disorder, depression, conduct problems, academic problems, and fewer and lower quality of peer relationships in children (e.g., Carlson, 2000; Holt, Buckley, & Whelan, 2008; Kernic et al., 2002; Wood & Sommers, 2011; Kitzmann, Gaylord, Holt, & Kenny, 2008). Moreover, children who witness violence between parents are at greater risk at becoming a perpetrator or a victim of IPV as an adult (e.g., Ehrensaft et al., 2003; Holt et al., 2008; Orndoff, Kelsey, & O’Leary, 2001). In addition, criminal victimization leads to high health-related costs, poor productivity, and inferior quality of life (e.g., Miller, Cohen, & Rossman, 1993; Brand & Price, 2000).
Preventing recidivism

Considering the extensive consequences of crime for its victims and society, it is mandatory to prevent recidivism. In almost all societies, breaking the law is met with punishment and it is assumed that punitive measures will deter the individual from recidivating. However, results from several meta-analyses do not support this view: prisoners showed a somewhat higher recidivism rate than probationers and inmates who were released on parole (although it should be noted that offenders were not randomly assigned to either imprisonment or community-based interventions) (Nagin, Cullen, & Jonson, 2009; Andrews, Dowden, & Gendreau, 1999; Smith, Goggin, & Gendreau, 2002; Gendreau, Goggin, & Cullen, 1999; Gendreau, Goggin, Cullen, & Andrews, 2000). In contrast, Andrews et al.’s (1999) meta-analysis involving 374 studies reported a 12% reduced recidivism rate in offenders receiving treatment compared to offenders who received official punishment. In addition, Andrews and Bonta (2010) found that effective treatment for offenders should adhere to three core principles called RNR: 1) the Risk principle, 2) the Need principle, and 3) the general Responsivity principle. The Risk principle involves matching treatment intensity and/or duration with the characteristics of the offender; the Need principle involves that personal dynamic risk factors, such as antisocial cognitions or substance abuse, should be the focus of treatment, and the general Responsivity principle concerns employing cognitive behavioral oriented interventions and skill building strategies (Andrews & Bonta, 2010). Andrews et al.’s (1999) meta-analysis showed a 26% decrease in recidivism in offenders who received treatment according to the three core principles, compared to those without treatment. Treatment according to the Needs principle had the highest success rate: it decreased recidivism by 19%, whereas nonadherence to this principle led to a 1% increase in recidivism, compared to offenders punished in the conventional way (Andrews et al., 1999). Criminogenic needs are represented by the Central Eight and one of them involves problematic substance use (Andrews and Bonta, 2010). It follows that if offenders are diagnosed with substance use disorders, these disorders should be treated.

Definition of substance use disorders

Through the ages, the concept of addiction has been viewed from different angles, but currently, the biopsychosocial model is used to explain the complex interaction between the physical, mental, and social aspects that play a role in the development of substance use disorders (Van den Brink, 2005; 2009). Recently, the physical aspect of the biopsychosocial model received increased attention: physical vulnerability leads to repeated use of psychoactive substances, whereas the use of substances leads to irreversible changes in the brain (Leshner, 1997; Van den Brink, 2006). These changes are responsible for craving, which is a cause for uncontrolled substance use and relapse after a period of abstinence (Van den Brink, 2005; 2009). In this thesis, substance use disorders are classified according to the
Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (Text Revision) (DSM-IV-TR; American Psychiatric Association, 2000). The DSM-IV-TR focuses on detrimental consequences of maladaptive patterns of substance use instead of quantity and frequency of substance use (Emmelkamp & Vedel, 2006). The DSM-IV-TR (American Psychiatric Association, 2000) distinguishes between substance abuse and substance dependence. For a diagnosis of substance dependence, three or more of the following seven criteria have to be met: 1) tolerance, 2) symptoms of withdrawal, 3) the substance is often taken in larger amounts or over a longer period of time than was intended, 4) a persistent desire or unsuccessful efforts to cut down or control substance use, 5) a great deal of time is spent on activities necessary to obtain the substance, 6) important social, occupational, or recreational activities are given up or reduced because of substance use, and 7) continued substance use despite being aware of a persistent or recurrent physical or mental problem that is likely to have been caused by or exacerbated by the substance (American Psychiatric Association, 2000, p. 197). For a diagnosis of substance abuse, at least one of the following four criteria has to be met: 1) recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home, 2) recurrent substance use in situations in which it is physically hazardous, 3) recurrent substance-related legal problems and 4) continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (American Psychiatric Association, 2000, p. 199).

Recently, the DSM-5 (American Psychiatric Association, 2013) has been published. The DSM-5 does not distinguish between substance abuse and substance dependence. Instead, criteria for substance use disorder are provided, including nearly all abuse and dependence criteria with two exceptions: 1) “recurrent legal problems” has been substituted for “craving or a strong urge to use the substance”; 2) the threshold for a diagnosis of substance use disorder is set at two or more criteria instead of one or more criteria for substance abuse and three or more criteria for substance dependence.

Prevalence of substance use disorders: general vs. offender population
In the Netherlands two large epidemiological studies, i.e., the Netherlands Mental Health Survey and Incidence Study 1 (Bijl, Ravelli, & Van Zessen, 1998) and 2 (De Graaf, Ten Have, & Van Dorsselaa, 2010), examined the prevalence of substance use disorders in the general population. Between 5 and 10% of the normal population was diagnosed with substance abuse and / or dependence in the past 12 months (Bijl et al., 1997; De Graaf et al., 2010). These figures are more or less comparable to figures obtained from other large household surveys, for example, surveys conducted in the United States (e.g., Grant et al., 2004; Kessler, Chiu, Demler, & Walters, 2005; Substance Abuse and Mental Health Services Administra-
tion, 2010). However, prevalence rates of substance use disorders in offenders, for example inmates, range from 10-60% and are thus substantially higher than substance use disorder prevalence rates in the normal population (Fazel, Bains, & Doll, 2006). Findings from the Dutch incarcerated population are similar (e.g., Oliemelen, Van den Eijnden, Van Ooyen-Houben, & Van de Mheen, 2009; Bulten, Nijman, & Van der Staak, 2009). Moreover, a considerable proportion of offenders was intoxicated by substances at the time of the offense (e.g., McClelland & Teplin, 2001; Brochu, Cournoyer, Motiuk, & Pernanen, 1999). A connection between substance use and criminal behavior is evident.

**Explanations for the relationship between substance abuse and different offenses**

Substance use has been associated with committing different crimes. Research investigating these relationships focused mainly on the connection between different substances and 1) IPV, 2) physical assault outside the family (GV), and 3) sexual crimes. Various explanations have been proposed for these relationships.

**Substance abuse and IPV perpetration**

Regarding the relationship between alcohol use and IPV perpetration, Leonard and Quigley (1999) suggested three possible explanatory models: 1) the proximal effects model (alcohol use leads to IPV perpetration), 2) the indirect effects model (alcohol use harms the relationship and in the long term causes a hostile environment), and 3) the spurious model (both alcohol use and IPV perpetration are caused by a third variable). Most evidence is found in favor of the proximal effects model (Leonard, 2005). Specifically, alcohol use is very likely to be related to IPV through its direct pharmacological effects leading to losing control over one’s behavior, which may lead to IPV perpetration (Foran & O’Leary, 2008). This hypothesis is supported by the fact that successful substance abuse treatment for alcohol dependent IPV perpetrators decreased IPV significantly (for meta-analyses, see: Murphy & Ting, 2010; Stuart, O’Farrell, & Temple, 2009). Additionally, O’Farrell, Van Hutton, and Murphy (1999) demonstrated that 2 years post-treatment patients who had abstained from alcohol still showed decreased rates of IPV perpetration, whereas those who relapsed into drinking alcohol also had relapsed into IPV perpetration. As regards the relationship between IPV perpetration and cannabis use, presumably not intoxication but withdrawal from cannabis may cause irritability, which in turn may lead to IPV perpetration (e.g., Moore et al. 2008, Moore & Stuart, 2005; Hoaken & Stewart, 2003). Finally, as for the relationship between IPV perpetration and cocaine use, studies suggested that the pharmacological properties of cocaine affect the serotonergic signaling system that may cause aggressive behavior (e.g., Patkar et al., 2006), although personality factors may mediate this relationship (Hoaken & Stewart, 2003).
**Substance abuse and GV perpetration**

Similar to the relationship between alcohol use and IPV perpetration, studies suggested that alcohol use may be temporally or even causally related to GV perpetration (e.g., Chermack & Giancola, 1997; Boles & Miotto, 2003; Hoaken & Stewart, 2003; Murdoch, Pihl, & Ross, 1990). With regard to the relationship between GV and drug use, Goldstein (1985) described three different pathways that may explain the relationship between drug use and GV: 1) the psychopharmalogical pathway (substance use leads to excitation which may lead to violence), 2) the economically compulsive pathway (drug users engage in economically oriented crime to obtain money to buy drugs), and 3) the systemic pathway (interaction between drug abusers is traditionally aggressive). Various substances, such as cocaine, amphetamine, benzodiazepines, opiates, and phencyclidine (PCP), were positively related to violent behavior (Hoaken & Stewart, 2003). As for the relationship between cannabis use and GV, mixed results were found: cannabis intoxication led to a decrease in violent behavior, whereas withdrawal increased aggressive behavior (Boles & Miotto, 2003; Hoaken & Stewart, 2003).

**Substance abuse and sexual offending**

Seto and Barbaree (1995) proposed a disinhibition model to explain the relationship between alcohol use and sexual crimes. According to them, alcohol use leads to disinhibition in three ways. 1) The more strongly the perpetrator believes that alcohol leads to disinhibition (e.g., reduction of anxiety), the more likely alcohol is to act as a disinhibitor. This is in accordance with Testa’s (2002) review in which she described that modest evidence has been found for an alcohol expectancy effect. 2) Alcohol use leads to more liberal norms concerning socially inappropriate behavior, which may lead to disinhibition. 3) Pharmacological effects due to alcohol use interfere with processing inhibitory cues, such as a woman’s refusal to have sex. Additionally, experimental studies have demonstrated that alcohol intoxication leads directly to sexual offending (Testa, 2002). The relationship between illicit drug use and sexual offending was studied less often.

**Aim of the first part of the thesis**

The aforementioned studies demonstrated that there is a connection between the use of different substances and perpetration of various offenses. Several pathways have been proposed to explain these relationships. The focus of the first part of this thesis is on substance abuse and substance use disorders in different types of offenders.

**Part II**

The second part of this thesis focuses specifically on the relationship between IPV and substance abuse. As outlined above, substance abuse and IPV are strongly
and possibly even causally related. The two frequently co-occur: around 50% of patients in domestic violence treatment were diagnosed with substance use disorders (Brown, Werk, Caplan, & Seraganian, 1999; Stuart, Moore, Kahler, & Ramsey, 2003a; Stuart, Moore, Kahler, & Ramsey, 2003b), which compares to 10% in the general population. At the same time IPV perpetration is overrepresented in patients in substance abuse treatment. Between 40% and 60% of patients in a relationship who were treated for substance abuse committed physical IPV in the year before entering treatment year (e.g., Chermack et al., 2008; O’Farrell & Murphy, 1995; Vedel, 2007; Murphy & O’Farrell, 1994). Compared to the general Dutch population, ‘only’ 9% was a victim of any domestic violence (including IPV) in the past five years (Van der Veen & Bogaerts, 2010; Van Dijk, Flight, Oppenhuis, & Duesmann, 1997) whereas 20% of the couples in the US experienced past year IPV (Field & Caetano, 2005).

### Assessment of substance use disorders

Since the prevalence rates of substance use disorders in patients in domestic violence treatment are very high, it is critical to identify substance use disorders in patients in IPV treatment. For maximum validity and reliability of diagnoses, it is advised to use a (semi-)structured interview to diagnose substance related disorders (Kranzler, Kadden, Babor, Tennen, & Rounsaville, 1996), such as the Structured Clinical Interview for Axis-I Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 2002). To save time, one could first screen patients for substance use disorders and only use a (semi-)structured interview for patients who score above a certain cut-off in order to formally classify substance use disorders. Several screening instruments are available for this purpose, such as the Alcohol Use Disorder Identification Test (AUDIT; Saunders, Aasland, Babor, De la Fuente, & Grant, 1993), the Drug Use Disorder Identification Test (DUDIT; Berman, Bergman, Palmstierna, & Schlyter, 2005), the Michigan Alcoholism Screening Test (MAST; Selzer, 1971), and the Drug Abuse Screening Test (DAST; Skinner, 1982).

### Assessment of IPV perpetration

For the assessment of perpetration and victimization of IPV, the Conflict Tactics Scales (CTS; Straus, 1979) and the more extensive Revised Conflict Tactics Scales (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) are the most used instruments worldwide (Straus, 2007). The CTS assesses physical and psychological IPV as well as negotiation in case partners disagree; the CTS2 came to include scales measuring sexual violence and injuries resulting from IPV. Several studies have examined psychometric properties of both CTS and CTS2 and it has been found that reliability and validity are in the moderate to high range (e.g., Straus, 1990; Straus, 2004; Newton, Connelly, & Landsverk, 2001; Straus et al., 1996, Vega & O’Leary, 2004; Tuomi Jones, Ji, Beck, & Beck, 2002). However, the time to complete the questionnaires (that contain 39 and 78 items respectively) is consid-
erable (i.e., 12-15 minutes for the CTS2, according to Straus (2007)). Straus and Douglas (2004) developed a shorter version of the CTS2, the CTS2S, but this instrument still comprises of 20 items. According to Straus and Douglas (2004), the CTS2S takes 3 minutes to complete. However, clinical impressions are that it takes considerably longer to complete CTS2 and CTS2S than reported by Straus (2007) and Straus and Douglas (2004), particularly in case of IPV. Although several screening instruments are available to detect IPV victimization (e.g., the Hurt, Insult, Threaten, Scream (HITS); Shering, Sinacore, Li, Zitter, & Shakil, 1998; the Women Abuse Screening Tool (WAST); Brown, Lent, Brett, Sas, & Pederson, 2000; and the Partner Violence Screen (PVS); Feldhaus et al., 1997), to date, no screeners are available to detect IPV perpetration.

**Predicting IPV perpetration and victimization in patients in substance abuse treatment**

As described earlier in this chapter, IPV perpetration is prevalent in patients in substance abuse treatment. Also, a substantial proportion of patients in substance abuse treatment experienced past year IPV (Chermack et al., 2008; El-Bassel, Gilbert, Schilling, & Wada, 2000; El-Bassel et al., 2004; Chermack, Walton, Fuller, & Blow, 2001). These findings are consistent since IPV is often reciprocal (Archer 2000; 2002). Even though IPV is prevalent in patients in substance abuse treatment, only a small number of studies focused on predictors of IPV in this population. Factors like younger age, evidence of depression, being in a relationship, binge drinking as well as cocaine use in the past four weeks proved to be significantly related to past year physical IPV perpetration (Murphy & O’Farrell, 1994; Chermack et al., 2008, Taft et al., 2010, Kachadourian, Taft, O’Farrell, Doron-La Marca, & Murphy, 2012). In addition, evidence of depression and binge drinking in the past four weeks were to be found significantly related to past year physical IPV victimization (Murphy et al., 2008). Recently, Smith, Homish, Leonard, and Cornelius (2012) analyzed data from a large general population survey (NESARC) and learned that the relationship between substance use and IPV perpetration varied for different combinations of substances. Being diagnosed with both an alcohol and cannabis use disorder likely decreased IPV perpetration compared to being diagnosed with either an alcohol or cannabis use disorder alone. Being diagnosed with both an alcohol and cocaine use disorder increased the likelihood of IPV perpetration compared to being diagnosed with an alcohol use disorder alone but decreased the likelihood of IPV perpetration compared with being diagnosed with a cocaine use disorder alone. In conclusion, several risk factors increase the likelihood for IPV perpetration and victimization in substance abusers, but research on this subject is still scarce.
Treatment addressing IPV perpetration
As repeatedly stated in this chapter, exposure to IPV has serious detrimental consequences for its victims as well as for children witnessing IPV between parents. Since the majority of IPV victims stay with their abusive partner (e.g., Jacobsen, Gottman, Gortner, Berns, & Shortt, 1996; Zlotnick, Johnson, & Kohn, 2006), it is critical to treat IPV perpetrators in order to put an end to violent behavior. Several treatments address IPV perpetration (Babcock & LaTaillade, 2000), but the effectiveness of only three of these has been studied, i.e., 1) ‘treatment’ according to the Duluth model (feminist psychoeducation groups), 2) cognitive behavior therapy, and 3) behavioral couples therapy. Two meta-analyses summarized outcomes of these treatments and found effect sizes near zero (Babcock, Green, & Robie, 2004; Feder & Wilson, 2005), indicating that these treatments were not effective in reducing IPV.

An explanation for the ineffectiveness of treatments addressing IPV perpetration are that differences between IPV perpetrators are not sufficiently taken into account (Nederlandse Vereniging voor Psychiatrie, 2010). For example, Holtzworth-Munroe and Stuart (1994) found evidence for three types of IPV perpetrators: 1) family-only offenders, 2) borderline-dysphoric offenders, and 3) antisocial offenders. Additionally, IPV perpetrators may differ in the presence or absence of substance use disorders. As described above, substance abuse may be causally related to IPV perpetration (e.g., Leonard, 2005). Based on these facts, several researchers have requested to integrate treatment addressing IPV perpetration and substance abuse (e.g., Smith Stover, Meadows, & Kaufman, 2009; Klostermann & Fals-Stewart, 2006; Fals-Stewart & Kennedy, 2005; Stuart, 2005; Leonard, 2001; Klostermann, Kelley, Mignone, Pusateri, & Fals-Stewart, 2010; Easton et al., 2007).

Specific aims of the second part of the thesis
As mentioned above, the second part of this thesis concentrates on IPV perpetration in relation to substance abuse. The development and validation of a screener to detect IPV perpetration and victimization is discussed, and (combinations of) substance use disorder diagnoses in patients in substance abuse treatment are studied as risk factors for IPV perpetration and victimization. Primary aim of the second part of the thesis is to investigate the effectiveness of an integrated treatment for substance abuse and partner violence.

Outline of the thesis
This thesis addresses the following topics:
Part I

Chapter 2 describes the prevalence of substance use disorders among IPV perpetrators in domestic violence treatment in a forensic outpatient clinic. In addition, demographics of IPV perpetrators with and without substance use disorders are compared. In chapter 3, the prevalence of substance use disorders among perpetrators of different crimes (i.e., general violence, IPV, and sex offenses) who seek treatment in a forensic outpatient clinic (either voluntary or court-referred) is studied. Also, prevalence of substance use disorders and intoxication at the time of the offense are compared among different types of offenders. In chapter 4, the literature regarding the prevalence of alcohol and drug abuse among perpetrators of sex offenses is reviewed.

Part II

Chapter 5 describes the development and validation of the Jellinek Inventory for assessing Partner Violence (J-IPV), a screening instrument to assess IPV perpetration and victimization in patients in substance abuse treatment. Chapter 6 focuses on predictors of IPV perpetration and victimization in patients entering substance abuse treatment. Specifically, it was investigated whether (combinations of) specific substance use disorders increase the likelihood of IPV perpetration and / or victimization in substance abuse patients in addiction treatment. Chapter 7 presents a case study of a patient from a domestic violence treatment facility who received integrated treatment for substance use disorders and IPV perpetration. In chapter 8, the effectiveness of an integrated treatment addressing substance use disorders and IPV perpetration in IPV perpetrators in substance abuse treatment is compared to the effectiveness of substance abuse treatment with only one session addressing IPV. In chapter 9, the effectiveness of an integrated treatment for substance use disorders and IPV perpetration is compared to the effectiveness of batterers’ treatment alone in IPV perpetrators in domestic violence treatment who are diagnosed with substance use disorders. Finally, chapter 10 presents an overview of the main findings as well as an overall conclusion of this thesis.