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

Kraanen, F.L.

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The comparative effectiveness of a combined substance abuse - partner violence treatment to partner violence treatment alone among patients in forensic outpatient treatment: A pilot study

Abstract

Substance use disorders and intimate partner violence (IPV) perpetration often co-occur and there is evidence for a proximal effects model, i.e., it has been demonstrated that after successful treatment of alcohol dependence, IPV perpetration decreased as well. This pilot study investigated the effectiveness of an Integrated treatment for Substance abuse and Partner violence (I-StoP), a cognitive behavioral therapy (CBT) addressing substance use and IPV. Patients were randomly assigned to I-StoP or CBT addressing IPV (CBT-IPV). The results demonstrated that patients who received CBT-IPV committed significantly less physical IPV at posttreatment compared to pretreatment, but for patients who received I-StoP only a non-significant trend was found. Further, patients allocated to I-StoP decreased the amount of substance intake but were not more days abstinent at posttreatment. On all measures, however, there were no differences between conditions. Although both treatments were successful in decreasing IPV perpetration, this pilot does not support the proximal effects model because IPV perpetration decreased regardless of the fact that the number of days of abstinence did not. Further research with a larger sample is needed to draw more firm conclusions.
Introduction

Intimate partner violence (IPV) is a severe and prevalent societal problem. Estimates are that in the United States, for example, about 20% of the patients who were in an intimate relationship experienced physical IPV in the past year (Schafer, Caetano, & Clark, 1998). In the Netherlands, prevalence rates appear somewhat lower (Van der Veen & Bogaerts, 2010), but it is difficult to compare studies because of methodological differences. IPV may have serious consequences for victims, such as physical injuries, depression, posttraumatic stress disorder, suicidality, and substance use disorders (for reviews, see Campbell, 2002; Plichta, 2004). Further, IPV between parents may also have detrimental effects on their children, and may lead to anger, fear, posttraumatic stress disorder, depression, and conduct problems, to name a few (Holt, Buckley, & Whelan, 2008; Kitzmann, Gaylord, Holt, & Kenny, 2008; Wood & Sommers, 2011). In addition, children who witnessed IPV are at greater risk to become a perpetrator or victim of IPV as an adult (Holt et al., 2008).

In the majority of cases, IPV victims stay with the abusive partner (Jacobsen, Gottman, Gortner, Berns, & Shortt, 1996; Zlotnick, Johnson, & Kohn, 2006). It is therefore important to offer effective treatment to perpetrators in order to stop IPV. Generally, three types of treatment are offered, i.e., 1) Duluth-type psychoeducation, 2) cognitive behavioral therapy (CBT), and 3) behavioral couples therapy. However, two meta-analyses have demonstrated that Duluth treatment and CBT have mean effect sizes near zero and are thus not effective in reducing IPV perpetration (Babcock, Green, & Robie, 2004; Feder & Wilson, 2005). Behavioral couples treatment has proven promising in reducing IPV (Stith, Rosen, McCollum, & Thomsen, 2004; O’Leary, Heiman, & Neidig, 1999), but only two methodologically sound studies on the effectiveness of behavioral couples treatment have been conducted. Therefore it is too early to draw firm conclusion regarding its effectiveness. Also, these studies did not involve patients with concurrent substance use disorders, even though a large proportion of IPV perpetrators suffer from substance abuse or dependence (for meta-analyses, see: Foran & O’Leary, 2008; Moore et al., 2008).

One explanation for the fact that treatments until now did not consistently lead to a reduction of IPV may be that a ‘one-size-fits-all approach’ was used, i.e., no distinction was made between different types of IPV perpetrators even though research has demonstrated that IPV perpetrators comprise a heterogeneous group (Dixon & Browne, 2003; Dutch Association for Psychiatry, 2009; Kraanen, Emmelkamp, & Scholing, 2011). For example, Holtzworth-Munroe and Stuart (1994) found evidence for three subtypes of IPV perpetrators, i.e., 1) family-only perpetrators, 2) borderline-dysphoric perpetrators, and 3) antisocial perpetrators. Several studies replicated these findings (e.g., Chase, O’Leary, & Heyman, 2001;
Holtzworth-Munroe, Meehan, Herron, Rehman, & Stuart, 2000). Also, as mentioned above, a considerable number of IPV perpetrators suffer from substance use disorders, and thus there can be distinguished between IPV perpetrators who are and who are not diagnosed with substance use disorders. A large body of research documented a relationship between substance use (particularly alcohol, cannabis, and cocaine use) and IPV perpetration (for meta-analyses, see: Foran & O’Leary, 2008; Moore et al., 2008; Stith, Smith, Penn, Ward, & Tritt, 2004; Klostermann & Fals-Stewart, 2006). For example, research demonstrated that one third to half of the patients entering substance abuse treatment while having a stable intimate relationship committed at least one act of physical IPV in the past year (e.g., Maiden, 1997; Brown, Werk, Caplan, Shields, & Seraganian, 1998; Chermack, Walton, Fuller, & Blow, 2001; Kraanen, Vedel, Scholing, & Emmelkamp, submitted-a). These prevalence rates are much higher than the prevalence rates in the general population. In addition, about half of the IPV perpetrators in domestic violence treatment are diagnosed with substance abuse or dependence (e.g., Brown, Werk, Caplan, & Seraganian, 1999; Stuart, Moore, Ramsey, & Kahler, 2003; Kraanen, Scholing, & Emmelkamp, 2010; 2012).

Leonard and Quigley (1999) suggested three models to explain the relationship between alcohol use and IPV perpetration, i.e., 1) the proximal effects model (alcohol use, mediated through psychopharmacological effects of alcohol on cognitive processing, results in IPV perpetration), 2) the indirect effects model (alcohol use negatively influences the relationship and creates a conflictuous environment in the long term), and 3) the spurious model (a third variable, such as an antisocial personality, is responsible for both alcohol use and IPV perpetration). Research found most support in favor of the proximal effects model (Leonard, 2005). For example, several studies demonstrated that after successful treatment for alcohol dependence, alcohol dependent IPV perpetrators committed significantly less IPV (for reviews, see: Murphy & Ting, 2009; Stuart, O’Farrell, & Temple, 2009). In addition, patients who relapsed into alcohol use were more likely to relapse into IPV perpetration (O’Farrell, Van Hutton, & Murphy, 1999; Mignone, Klostermann, & Chen, 2009).

Further, Moore et al. (2008) reviewed the literature regarding the relationship between illicit drug use and IPV perpetration and found that cannabis and cocaine use were most strongly related to committing IPV. It was hypothesized that cocaine influences the serotonergic signaling system, which subsequently may provoke IPV perpetration (e.g., Patkar et al., 2006), an explanation that is similar to the proximal effects model described by Leonard & Quigley (1999). Hoaken and Stewart (2003), however, stated that personality factors might mediate this relationship. With regard to cannabis use, it was suggested that withdrawal from can-

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nabis leads to irritability, which may incite IPV perpetration (e.g., Moore et al. 2008, Moore & Stuart, 2005; Hoaken & Stewart, 2003).

Therefore, several researchers concluded that IPV perpetrators with alcohol use disorders might benefit from a combined treatment approach that addresses both alcohol dependence and IPV (e.g., Klostermann, Kelley, Mignone, Pusateri, & Fals-Stewart, 2010; Smith Stover, Meadows, & Kaufman, 2009; Stuart, 2005; Leonard, 2001). To date, two studies investigated the effectiveness of such a combined treatment among IPV perpetrators in substance abuse treatment. Easton et al. (2007) carried out a randomized controlled trial (RCT) that compared the effectiveness of combined substance abuse – partner violence group treatment to 12-step facilitation group treatment addressing only alcohol use. The results demonstrated a trend showing that the combined treatment was more effective in reducing IPV perpetration than the 12-step group. Kraanen, Vedel, Scholing, and Emmelkamp (submitted-b) conducted a second RCT. Since cocaine and cannabis use are also related to IPV perpetration, patients with cocaine or cannabis use disorders were included in the study as well. Kraanen et al. (submitted-b) compared an individual Integrated treatment for Substance abuse and Partner violence (I-StoP) to substance abuse treatment including one session addressing IPV (CBT-SUD+) and found that both treatments were effective in reducing IPV perpetration but did not find any differences between the two treatments. Although Easton et al.’s (2007) and Kraanen et al.’s (submitted-b) studies showed promising results, both RCT’s were conducted among IPV perpetrators in substance abuse treatment, and thus these results cannot be generalized to IPV perpetrators with substance use disorders in forensic settings. To date, studies investigating the effectiveness of combined partner violence – substance abuse treatment among patients in domestic violence treatment in forensic settings are lacking. Only one case study demonstrated that I-StoP was effective in reducing IPV perpetration in a patient in forensic psychiatry (Kraanen, Scholing, Hamedoune, & Emmelkamp, accepted). Therefore, the current pilot study aimed to investigate the effectiveness of I-StoP among patients in forensic outpatient treatment and compared CBT addressing substance use disorders and IPV (Integrated treatment for Substance abuse and Partner violence; I-STOP; Kraanen, Scholing, Vedel, & Emmelkamp, 2008a; 2008b) to CBT addressing IPV (CBT-IPV). The interventions addressing IPV were equal in both conditions; CBT-IPV contained the same topics as I-StoP regarding IPV but had more sessions to address these topics.

Specifically, the purpose of this pilot study was to compare the effectiveness of I-StoP and CBT-IPV on IPV perpetration and substance use. It was hypothesized that 1) patients who received I-StoP and CBT-IPV would engage in less frequent IPV perpetration at posttreatment compared to pretreatment, 2) patients who re-
ceived I-StoP would demonstrate lower levels of IPV perpetration than participants who received CBT-IPV at posttreatment, 3) substance use of patients who received I-StoP would be significantly reduced at posttreatment compared to pretreatment, and 4) patients who received I-StoP would demonstrate a larger decrease of substance use than patients who received CBT-IPV. Effects on secondary outcome measures (verbal IPV, inflicted injuries, general mental health, and relationship satisfaction) were studied exploratorily.

Method
Participants
Participants were recruited from patients who were referred to forensic outpatient clinic De Waag (locations Amsterdam and Rotterdam) for IPV perpetration and had an intake between September 1st 2010 and May 31st 2012. Patients were included if they 1) were currently diagnosed with alcohol, cannabis and / or cocaine related disorders, and 2) were still in an intimate relationship with the victim. Patients were excluded if 1) they were diagnosed with crack cocaine or heroin abuse or dependence, 2) they were in need of supervised detoxification, 3) they currently received treatment for other mental health problems, 4) they had insufficient knowledge of the Dutch language to complete questionnaires, 5) they experienced severe mental health problems (e.g., psychosis, suicidal ideation) or cognitive disorders (e.g., Korsakoff’s syndrome), or 6) other criminal behavior, such as child abuse, was prominent.

Treatments
For this study, two treatment protocols were developed, i.e., I-StoP and CBT-IPV. Both consisted of 16 sessions of 45 minutes and were preferably delivered weekly to the participants. Treatments were offered to patients individually, but the partner was invited to attend four sessions of both I-StoP and CBT-IPV in order to enhance safety as well as to obtain insight in the dynamics between the two partners. I-StoP and CBT-IPV were offered flexibly, meaning that the session could be adjusted according to the motivation or level of functioning of a patient. Furthermore, sessions could be modified in case of a crisis, such as relapse into IPV or (if patients were allocated to I-StoP) substance use, and topics could be treated in a different order if relevant.

I-STOP
I-STOP concurrently addresses problematic substance use as well as IPV perpetration. Interventions addressing substance use derived from evidence-based CBT treatment manuals targeting problematic substance use that were adapted for use in The Netherlands (De Wildt, 2002a; 2002b; Merkx & Van Broekhoven, 2003a; 2003b; for a description of interventions, see Emmelkamp & Vedel, 2006). Interventions targeting IPV perpetration are also cognitive behavioral and are
based on the work of Dutton (Dutton, 2007; Dutton & Golant, 2000). The use of motivational interviewing techniques (Miller & Rollnick, 2002) is emphasized throughout the treatment protocol to increase patients’ motivation to change. The primary focus of a session alternates between substance use and IPV. The treatment protocol is accompanied by a workbook that contains psycho-education, homework assignments and registration forms to record craving / substance use and anger / IPV on a daily basis. Both IPV and substance use are addressed in each session by emphasizing substance use homework registrations if the central theme of a session is related to IPV, and vice versa.

Each session of I-StoP follows the same structure: 1) discussing diary cards and homework, 2) discussing the main topic of the session, and 3) explaining new homework. I-StoP contains the following topics. First, the ‘Cycle of Violence’ (Walker, 1979) and the time-out procedure are discussed with both patient and partner and high-risk situations are assessed (for a detailed description of the negotiated time-out, see Rosen, Matheson, Stith, McCollum, & Locke, 2003). In addition, the following is addressed: explanation of the treatment rationale, assessment of types of IPV that take place in the relationship, assessment of pros and cons of IPV and substance abuse, formulating treatment goals regarding IPV (abstaining from IPV was the only acceptable treatment goal) and substance use (preferably abstinence, but controlled substance use was also accepted as treatment goal; see Emmelkamp & Vedel, 2006), identifying self-control measures to prevent substance use, making functional analyses of substances that were used, anger management, coping with craving and emotions that may lead to substance use, the association between thoughts, feelings, and behavior in relation to IPV and substance use, communication skills, and relapse prevention as regards IPV and substance use.

**CBT-IPV**

CBT-IPV is manualized CBT aiming to reduce partner violence. CBT-IPV sessions follow the same structure as I-StoP sessions; topics and interventions of CBT-IPV are the same as I-STOP interventions addressing IPV. However, since CBT-IPV treatment consists of 16 sessions as well, there is more time to discuss these topics.

**Therapists and treatment adherence**

Eight therapists (6 licensed psychologists and two social workers with additional education in forensic health care) were trained to conduct both treatment protocols. PE and FK supervised therapists for 60 minutes once every two weeks in two separate groups. During supervision, all patients were discussed extensively; the focus was on adherence to the treatment protocols and future sessions were prepared.
Ethics and randomization
The study was registered at the clinical trials registry (www.clinicaltrials.gov) (NCT00847548) and was approved by the Ethics Review Board of the University of Amsterdam (2008-KP-463). Participants were randomly assigned to either I-StoP or CBT-IPV using www.randomization.com. Outcome of randomization was written on cards and put into closed envelopes containing participant numbers. After completing pretreatment assessment, participants received envelopes containing the treatment they were randomly assigned to.

Measures
Outcome measures
IPV. The Revised Conflict Tactics Scales (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) was used to assess prevalence and frequency of IPV. Several studies demonstrated that the CTS2 is a valid and reliable instrument (e.g., Straus et al., 1996; Straus 2004; Newton, Connelly, & Landsverk, 2001; Vega & O’Leary, 2007; Tuomi Jones, Ji, Beck, & Beck, 2002). The CTS2 comprises 39 item pairs addressing perpetration as well as victimization of a specific act of IPV. An example is: ‘I kicked my partner’ and ‘My partner did this to me’. Answers were scored on a 7-point scale: 0 = never; 1 = once; 2 = twice; 3 = 3-5 times; 4 = 6-10 times; 5 = 11-20 times and 6 = more than 20 times. Incidence of IPV was calculated by taking the average of the frequency range (e.g., 3-5 times = 4), as recommended by Straus et al. (1996). The CTS2 comprises of 5 scales, measuring 1) physical violence, 2) verbal violence, 3) sexual violence, 4) negotiation, and 5) injuries resulting from IPV. The physical violence subscale was used as primary outcome measure; the verbal violence and injuries subscales were secondary outcome measures. The CTS2 was administered at pretreatment, halfway treatment (after session 8), and posttreatment; the partner was asked to complete the CTS2 at pretreatment and posttreatment. IPV was assessed with reference to the past 8 weeks on every occasion.

Substance use. The Timeline Follow Back Interview (TLFB; Sobell & Sobell, 1992) and the Quick Drinking Screen (QDS; Sobell et al., 2003) were used to assess substance use. The TLFB is a calendar-based method to measure frequency and quantity of substance use and days of abstinence (Sobell & Sobell, 1992). Psychometric properties of the TLFB were frequently studied and the TLFB was found to be a valid method to assess alcohol (e.g., Toll, Kooney, McKee, & O’Malley, 2006; Sobell, Brown, Leo, & Sobell, 1996) and drug use (for a review, see Hjorthøy, Hjorthøy, & Nordentoft, 2012). The TLFB was administered pre- and posttreatment to assess substance use in the past 8 weeks. Additionally, the QDS, a self-report questionnaire containing 5 aggregate summary questions about alcohol use, was administered. It has been demonstrated that QDS results were very similar to TLFB results (Sobell et al., 2003; Dum et al., 2009; Roy et al.,
2008). The QDS was adapted to assess drug use as well. As with the TLFB, the modified QDS assessed substance use in the past 8 weeks and was administered to participants at pretreatment, halfway treatment (after session 8), and post-treatment.

**General psychopathology.** General psychopathology was assessed with the Brief Symptom Inventory (BSI; Derogatis, 1975; Dutch translation: De Beurs, 2008). The overall BSI score provides a measure of severity of general psychopathology. Reliability and validity of the BSI were good (De Beurs & Zitman, 2006). The BSI assessed symptoms of psychopathology during the past week and was completed by participants at pre- and posttreatment.

**Relationship satisfaction.** Relationship satisfaction was assessed using the marital maladjustment-scale of the Dutch version of the Maudsley Marital Questionnaire (MMQ; Arrindell, Emmelkamp, & Bast, 1983). Psychometric properties were good (e.g., Arrindell et al., 1983; Orathinkal, Vansteenweegen, & Stroobants, 2007). Participants completed the MMQ at pre- and posttreatment.

**Risk assessment and clinical diagnoses**

**Risk assessment.** For risk assessment, the Forensic Outpatient Risk assessment Scale (FORS; Van Horn, Wilpert, Scholing, & Mulder, 2008) was used.

**Substance use disorders.** Substance use disorders were classified using Module E. (Substance related disorders) of the Structured Clinical Interview for DSM-IV Axis-I Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 2002; Dutch translation: Van Groenestijn, Akkerhuis, Kupka, Schneider, & Nolen, 1998).

**Procedure**

The first author assessed reports of all patients that had an intake at De Waag in Amsterdam and in Rotterdam during the aforementioned period to screen patients for eligibility. If, based on intake reports, a patient appeared eligible to participate in the study, he / she was marked as such. During the intake staff, the formal criteria were reviewed to decide whether or not the patient was eligible for participation. Then, the patient was assigned to one of the therapists who were trained to use I-StoP and CBT-IPV. First, three to five sessions were used for risk assessment during which the FORS was administered and to discuss the time-out procedure, preferably with the partner present to enhance safety. Then, the pretreatment assessment was carried out, which involved assessment of substance use disorders with Module E. of the SCID-I, administration of the TLFB, and completion of the BSI, CTS2, QDS, and MMQ. After pretreatment assessment, there was a possibility that patients could not participate for not fulfilling criteria for a current substance use disorder. After pretreatment assessment, the patients were
checked again for eligibility. Finally, an envelope was opened containing the treatment condition the patient was randomly assigned to. After that, treatment started. After session 8, the patient completed the CTS2 and QDS. An appointment for posttreatment assessment was scheduled after session 16, during which the TLFB, BSI, CTS2, QDS, and MMQ were administered. Patients were not compensated for participating in the study.

**Statistical analyses**

**Participant characteristics**

Demographics, clinical characteristics, and retention rates of patients allocated to I-StoP and CBT-IPV were compared using chi-square-tests for dichotomous variables, and independent samples t-tests and Mann-Whitney tests for normally and non-normally distributed continuous variables, respectively.

**Treatment effects**

Treatment effects were analyzed for patients who completed treatment (completers) and for patients who intended to start treatment (intention-to-treat; ITT). The last observation carried forward (LOCF) method was used to carry out ITT analyses. Patients were classified as completers if they attended at least 10 treatment sessions (62.5% of the total treatment); patients were categorized as ITT if they attended at least one treatment session. To assess changes in substance use, two measures were used, i.e., days of abstinence and, because controlled substance use was also an accepted treatment goal, the average quantity of substances that were used weekly during a period of 8 weeks. Since participants used different substances that are measured on different scales (standard units of alcohol, and grams of cannabis and cocaine) and participants in some cases used more than one substance, it was necessary to calculate standardized scores for substance use; in this case it was chosen to use Z-scores (mean = 0; standard deviation = 1). First, pretreatment and posttreatment quantities of 1) alcohol (mean standard units per week), 2) cannabis (mean grams per week), and 3) cocaine (mean grams per week) that were used in the preceding 8 weeks were displayed in three separate columns (one for alcohol, one for cannabis, and one for cocaine). Then, the data in the three columns were transformed to Z-scores, after which the Z-scores were split into pre- and posttreatment Z-scores for alcohol, cannabis, and cocaine use in the past 8 weeks. Finally, Z-scores for alcohol, cannabis, and cocaine use were added up (for pretreatment and posttreatment separately) to obtain a summary measure of the combined use of different substances at pretreatment and posttreatment. The QDS (instead of the TLFB) was used to calculate days of abstinence and Z-scores because the QDS scores that were obtained halfway treatment were of use for the LOCF procedure and the TLFB was administered only at pre- and posttreatment. TLFB outcomes were not used any further. IPV at pretreatment, halfway treatment, and posttreatment was
assessed by calculating frequency scores of physical IPV (primary outcome measure), verbal IPV, and injuries inflicted to the partner within the past 8 weeks.

Pre- and posttreatment measures of substance use, IPV, general psychopathology and relationship satisfaction (as measured with the BSI and MMQ, respectively) were compared within conditions using one-sided paired samples t-tests for normally distributed values and one-sided Wilcoxon signed rank tests for non-normally distributed variables. ANCOVA’s using pretreatment scores as covariate were carried out to assess between-treatment differences because pre- and posttreatment scores correlated. The assumption of normality was violated for some ANCOVA’s. However, it was assumed that, since sample sizes were equal, the F-statistic would be relatively robust against violations of normality (Field, 2009). Further, to assess homogeneity of variance, Levene’s test was used. Finally, for some analyses the assumption of homogeneity of regression slopes was violated, but since sample sizes were equal, this was not considered problematic (Wu, 1984; Hamilton, 1976; 1977). Based on the above, it was considered acceptable to use ANCOVA’s to analyse results from the present study.

Results

Participant characteristics
In Figure 1, the CONSORT 2010 flow diagram of participants from intake through treatment completion is displayed. In total, 23 patients were included; 12 patients were randomly assigned to I-StoP and 11 patients to CBT-IPV. In Table 1, the demographics and clinical characteristics of participants are presented. Participants who received I-StoP and CBT-IPV differed regarding ethnicity ($\chi^2 (2) = 8.57; p = .01$). Standardized residuals demonstrated that more participants allocated to I-StoP had a Surinam / Antillean background than patients allocated to CBT-IPV. There were no differences between conditions regarding other demographic or clinical variables.

Retention
In sum, 12 of 23 participants (52.2%) completed treatment (I-StoP: N = 6 (50.0%); CBT-IPV: N = 6 (54.5%)). Dropout rates did not differ between conditions. Four out of 27 participants that were initially included were excluded from further analyses (1 patient allocated to I-StoP and 3 patients allocated to CBT-IPV): 1 patient had to follow mandatory substance abuse treatment, 1 patient did not complete pretreatment assessment, and 2 patients were initially included but appeared not to fulfill criteria for a current substance use disorder at pretreatment assessment (see Figure 1). Table 2 displays reasons for dropout and additional information regarding treatment completion. There were no significant differences between conditions.
Figure 1. CONSORT flow chart

Intake domestic violence (n= 783)
- Met inclusion criteria (n= 131)
  - Excluded (n= 66)
    - Met exclusion criteria (n= 34)
    - Ethical reasons (n= 5)
    - Logistic reasons (n= 7)
    - Did not start risk assessment (n= 16)
    - Other (n= 4)
  - Initially selected and allocated to risk assessment (n= 65)
    - Excluded (n= 38)
      - Dropped out during risk assessment (n= 12)
      - Declined to participate (n= 8)
      - Ethical reasons (n= 9)
      - Wrongly included, met exclusion criteria after
  - Randomized (n= 27)

Allocated to I-StoP (n= 13)
- Received allocated intervention (n= 12)
- Did not receive allocated intervention (had to follow mandatory substance abuse treatment) (n= 1)

Allocated to CBT-IPV (n= 14)
- Received allocated intervention (n= 11)
- Did not receive allocated intervention (did not meet criteria for substance use disorder: n= 2; did

Lost to follow-up (n= 6)
Discontinued intervention (withdrew participation n=4; lost contact: n= 2) (n= 6)

Lost to follow-up (n= 5)
Discontinued intervention (withdrew participation: n= 1; lost contact: n= 3; refused further treatment: n= 1) (n= 16)

Analysis
- Compliers: n= 6; intention-to-treat: n= 12)
- Excluded from analysis: n= 0

- Compliers: n= 6; intention-to-treat: n= 11)
- Excluded from analysis: n= 0
Table 1. Demographics and clinical characteristics of patients at the intake

<table>
<thead>
<tr>
<th></th>
<th>I-StoP</th>
<th>CBT-IPV</th>
<th>Overall</th>
<th>Between group analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 12)</td>
<td>(N = 11)</td>
<td>(N = 23)</td>
<td></td>
</tr>
<tr>
<td>Age (M, SD)</td>
<td>36.00 (8.99)</td>
<td>41.36 (9.90)</td>
<td>38.75 (9.62)</td>
<td>F (1) = .01; p = .93</td>
</tr>
<tr>
<td>Cultural background</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dutch</td>
<td>6 (50.0)</td>
<td>0 (0.0)</td>
<td>9 (61.1)</td>
<td>15 (65.2)</td>
</tr>
<tr>
<td>Surinamese / Antillean</td>
<td>6 (50.0)</td>
<td>0 (0.0)</td>
<td>6 (26.1)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0 (0.0)</td>
<td>2 (18.2)</td>
<td>2 (8.7)</td>
<td></td>
</tr>
<tr>
<td>Children living at home</td>
<td>6 (50.0)</td>
<td>6 (54.5)</td>
<td>12 (52.2)</td>
<td>χ² (1) = 0.05; p = .83</td>
</tr>
<tr>
<td>Completed education¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>7 (58.3)</td>
<td>3 (30.0)</td>
<td>10 (45.5)</td>
<td></td>
</tr>
<tr>
<td>Secondary school - lower level²</td>
<td>0 (0.0)</td>
<td>4 (40.0)</td>
<td>4 (18.2)</td>
<td></td>
</tr>
<tr>
<td>Secondary school - higher level²</td>
<td>5 (41.7)</td>
<td>2 (20.0)</td>
<td>7 (31.8)</td>
<td></td>
</tr>
<tr>
<td>Post-secondary education</td>
<td>0 (0.0)</td>
<td>1 (10.0)</td>
<td>1 (4.5)</td>
<td></td>
</tr>
<tr>
<td>Source of income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work</td>
<td>7 (58.3)</td>
<td>8 (72.7)</td>
<td>15 (65.2)</td>
<td></td>
</tr>
<tr>
<td>No work</td>
<td>5 (41.7)</td>
<td>3 (27.3)</td>
<td>8 (34.8)</td>
<td></td>
</tr>
<tr>
<td>Official criminal record</td>
<td>6 (50.0)</td>
<td>7 (63.3)</td>
<td>13 (56.5)</td>
<td>χ² (1) = 0.43; p = .51</td>
</tr>
<tr>
<td>Current substance use disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current alcohol use disorder</td>
<td>8 (66.7)</td>
<td>10 (90.9)</td>
<td>18 (78.3)</td>
<td>χ² (1) = 1.98; p = .16</td>
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<tr>
<td>Current cannabis use disorder</td>
<td>6 (50.0)</td>
<td>2 (18.2)</td>
<td>8 (34.8)</td>
<td>χ² (1) = 2.56; p = .10</td>
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<tr>
<td>Current cocaine use disorder</td>
<td>2 (16.7)</td>
<td>1 (9.1)</td>
<td>3 (13.0)</td>
<td>χ² (1) = 0.29; p = .59</td>
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<tr>
<td>Other substance use disorders</td>
<td>1 (8.3)</td>
<td>0 (0.0)</td>
<td>1 (4.3)</td>
<td>χ² (1) = 0.96; p = .33</td>
</tr>
<tr>
<td>Number of SUDs (M, SD)</td>
<td>1.33 (0.49)</td>
<td>1.16 (0.41)</td>
<td>1.26 (0.45)</td>
<td>U = 56.00; p = .42</td>
</tr>
<tr>
<td>Treatment location</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amsterdam</td>
<td>8 (66.7)</td>
<td>4 (36.4)</td>
<td>12 (52.2)</td>
<td>χ² (1) = 2.11; p = .15</td>
</tr>
<tr>
<td>Rotterdam</td>
<td>4 (33.3)</td>
<td>7 (63.6)</td>
<td>11 (47.8)</td>
<td></td>
</tr>
</tbody>
</table>

One missing value (CBT-IPV); ² Level of education: secondary school, lower level = VBO, LBO, MAVO; secondary school, higher level = HAVO, VWO, MBO; post-secondary = HBO, University; p < .05.

Table 2. Reasons for dropout and completion rates per condition.

<table>
<thead>
<tr>
<th>Reasons for dropout</th>
<th>I-StoP</th>
<th>CBT-IPV</th>
<th>Overall</th>
<th>Between group analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 12)</td>
<td>(N = 11)</td>
<td>(N = 23)</td>
<td></td>
</tr>
<tr>
<td>Withdraw participation</td>
<td>4 (33.3)</td>
<td>1 (9.1)</td>
<td>5 (21.7)</td>
<td></td>
</tr>
<tr>
<td>Patients could not be contacted</td>
<td>2 (16.7)</td>
<td>3 (27.3)</td>
<td>5 (21.7)</td>
<td></td>
</tr>
<tr>
<td>Did not want treatment anymore</td>
<td>0 (0.0)</td>
<td>1 (9.1)</td>
<td>1 (4.3)</td>
<td></td>
</tr>
<tr>
<td>Sessions attended</td>
<td>10.58 (5.70)</td>
<td>10.18 (5.08)</td>
<td>10.36 (5.29)</td>
<td>U = 61.00; p = .76</td>
</tr>
<tr>
<td>IIT (m, s.d.)</td>
<td>15.67 (3.52)</td>
<td>13.17 (2.86)</td>
<td>14.42 (2.35)</td>
<td>U = 9.00; p = .12</td>
</tr>
<tr>
<td>Comp. (m, s.d.)</td>
<td>2.00 (1.80)</td>
<td>2.38 (1.75)</td>
<td>2.17 (1.64)</td>
<td>F (1) = .01; p = .95</td>
</tr>
<tr>
<td>Sessions attend by partners</td>
<td>2.50 (1.76)</td>
<td>2.50 (2.34)</td>
<td>2.50 (1.98)</td>
<td>U = 17.00; p = .87</td>
</tr>
<tr>
<td>Sessions risk assessment</td>
<td>4.33 (1.23)</td>
<td>3.73 (1.10)</td>
<td>4.04 (1.19)</td>
<td>U = 47.50; p = .23</td>
</tr>
<tr>
<td>IIT (m, s.d.)</td>
<td>4.33 (1.23)</td>
<td>3.55 (1.03)</td>
<td>3.83 (1.19)</td>
<td>F (1) = 1.54; p = .16</td>
</tr>
<tr>
<td>Comp. (m, s.d.)</td>
<td>6 (100.0)</td>
<td>6 (100.0)</td>
<td>12 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Relationship intact at posttreatment</td>
<td>12 (100.0)</td>
<td>11 (100.0)</td>
<td>23 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Completed posttreatment assessment (11)</td>
<td>8 (69.7)</td>
<td>6 (72.7)</td>
<td>16 (69.6)</td>
<td>χ² (1) = 0.10; p = .75</td>
</tr>
<tr>
<td>Completed posttreatment assessment (15)</td>
<td>6 (50.0)</td>
<td>6 (54.5)</td>
<td>12 (52.2)</td>
<td>χ² (1) = 0.05; p = .83</td>
</tr>
</tbody>
</table>

No. = number; I-StoP = Integrated treatment for Substance abuse and Partner violence; CBT-IPV = substance abuse treatment; comp. = completers.
Primary outcome measures

Physical IPV perpetration

In Figures 2 and 3, physical IPV at pretreatment and posttreatment is displayed for completers and ITT (for exact figures, see Appendix – Table A). Completers and ITT analyses demonstrated similar results. Patients in the CBT-IPV condition perpetrated significantly less IPV at posttreatment than at pretreatment (completers: Z (5) = -1.84; p = .03; ITT: Z (10) = -1.84; p = .03; both 1-sided) but not in the case of patients who received I-StoP. There were no significant differences between conditions regarding posttreatment physical IPV perpetration after controlling for pretreatment physical IPV perpetration.

Figure 2. Physical IPV perpetration in the 8 weeks before the start of treatment (pretreatment) and the 8 weeks before treatment completion (posttreatment) – completers

Substance use

Days of abstinence and substance use Z-scores at pretreatment and posttreatment of completers and ITT samples are displayed in Figures 4, 5, 6 and 7 (for exact figures, see Appendix – Table B). Again, completers and ITT analyses demonstrated similar results. There was no significant difference between pre- and posttreatment days of abstinence among patients who received I-StoP (completers and ITT). ITT analyses (but not completers analyses) demonstrated that participants allocated to I-StoP had significantly lower Z-scores at posttreatment than at pretreatment (ITT: t (1, 11) = 1.96; p = .04; 1-sided). There were no sig-
significant differences between conditions regarding days of abstinence and Z-scores at posttreatment after controlling for pretreatment values.

**Figure 3.** Physical IPV perpetration in the 8 weeks before the start of treatment (pretreatment) and the 8 weeks before treatment completion (posttreatment) – intention-to-treat

![Graph showing physical IPV perpetration](image)

I-StoP = Integrated treatment for Substance abuse and Partner violence; CBT-IPV = cognitive behavioral therapy addressing intimate partner violence.

**Figure 4.** Days of abstinence in 8 weeks before the start of treatment (pretreatment) and the 8 weeks before treatment completion (posttreatment) – completers

![Graph showing days of abstinence](image)

I-StoP = Integrated treatment for Substance abuse and Partner violence; CBT-IPV = cognitive behavioral therapy addressing intimate partner violence.
Figure 5. Days of abstinence in 8 weeks before the start of treatment (pretreatment) and the 8 weeks before treatment completion (posttreatment) – intention-to-treat.

Figure 6. Substance use Z-Scores based on substance use in the 8 weeks before the start of treatment (pretreatment) and the 8 weeks before treatment completion (posttreatment) – completers.
Figure 7. Substance use Z-Scores based on substance use in the 8 weeks before the start of treatment (pretreatment) and the 8 weeks before treatment completion (posttreatment) – intention-to-treat

I-StoP = Integrated treatment for Substance abuse and Partner violence; CBT-IPV = cognitive behavioral therapy addressing intimate partner violence.

Secondary outcome measures
Inflicted injuries and verbal IPV perpetration at pretreatment and posttreatment for completers and ITT in different conditions are displayed in Table 3.

Table 3. Inflicted injuries and verbal IPV perpetration in the 8 weeks before pretreatment assessment and the 8 weeks before posttreatment assessment of completers and ITT sample per condition.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Completers</th>
<th>Intention-to-treat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflicted injuries pretreatment</td>
<td>0.35 (0.82)</td>
<td>0.67 (1.03)</td>
</tr>
<tr>
<td>Inflicted injuries posttreatment</td>
<td>0.17 (0.41)</td>
<td>0.00 (0.00)</td>
</tr>
<tr>
<td>Acts of verbal IPV perp. pretreatment</td>
<td>6.50 (6.63)</td>
<td>15.00 (19.40)</td>
</tr>
<tr>
<td>Acts of verbal IPV perp. posttreatment</td>
<td>1.67 (2.73)</td>
<td>1.67 (2.58)</td>
</tr>
</tbody>
</table>

IPV = intimate partner violence; I-StoP = Integrated treatment for Substance abuse and Partner violence; CBT-IPV = cognitive behavioral therapy addressing intimate partner violence; perp. = perpetration.

Completers and ITT analyses demonstrated that there were no differences between pre- and posttreatment inflicted injuries among patients in both conditions. Also, there were no differences between conditions regarding posttreatment inflicted injuries after controlling for pretreatment inflicted injuries. Further, patients allocated to CBT-IPV perpetrated significantly less verbal IPV at posttreatment than at pretreatment (completers: $Z (5) = -2.02; p = .02$; ITT: $Z (10) = -2.02; p =$
.01; both 1-sided) but not in the case of patients who received I-StoP. For completers, there were no differences between conditions regarding posttreatment verbal IPV perpetration after controlling for pretreatment verbal IPV. However, ITT analyses demonstrated that patients allocated to CBT-IPV perpetrated significantly less verbal IPV at posttreatment compared with patients allocated to I-StoP after controlling for pretreatment verbal IPV perpetration (F (1, 20) = 3.55; p = .04; 1-sided).

Outcome measures regarding general psychopathology and relationship satisfaction of completers and ITT allocated to either I-StoP or CBT-IPV are displayed in Table 4.

Table 4. Secondary outcome measures of completers and ITT in both treatment conditions.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Completers I-StoP</th>
<th>CBT-IPV</th>
<th>Intention-to-treat I-StoP</th>
<th>CBT-IPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSI score – pretreatment</td>
<td>19.50 (12.77)</td>
<td>37.00 (27.76)</td>
<td>21.58 (11.41)</td>
<td>29.82 (22.57)</td>
</tr>
<tr>
<td>BSI score – posttreatment</td>
<td>17.86 (8.29)</td>
<td>30.83 (32.21)</td>
<td>20.67 (9.61)</td>
<td>26.45 (24.49)</td>
</tr>
<tr>
<td>MMQ score – pretreatment</td>
<td>31.00 (24.03)</td>
<td>30.00 (13.86)</td>
<td>26.17 (17.71)</td>
<td>20.63 (16.42)</td>
</tr>
<tr>
<td>MMQ score – posttreatment</td>
<td>8.00 (7.00)</td>
<td>16.00 (9.90)</td>
<td>21.00 (16.92)</td>
<td>28.36 (17.12)</td>
</tr>
</tbody>
</table>

1 = only 5 participants completed posttreatment MMQ; BSI = brief symptom inventory; MMQ = Maudsley marital questionnaire; I-StoP = Integrated treatment for Substance abuse and Partner violence; CBT-IPV = cognitive behavioral therapy addressing intimate partner violence.

BSI scores reflecting general psychopathology of participants in both conditions (completers and ITT) did not differ significantly at posttreatment compared to pretreatment and there were no differences between conditions. The same applied to MMQ scores reflecting relationship satisfaction.

Non-significant trends
Since the number of patients who participated in this pilot study was low (which resulted in low statistical power), we also looked at non-significant trends regarding differences between pre- and posttreatment measures as well as differences between conditions (see also Figures 2 to 7). In the first place, there were trends that completers who received I-StoP had lower substance use Z-scores and perpetrated less physical IPV at posttreatment than at pretreatment (Z-scores: t (5) = 1.86; p = .06; physical IPV: Z (5) = -1.60; p = .05; both 1-sided). Further, there was a trend that completers and ITT who received CBT-IPV inflicted less injuries to their partner at posttreatment than at pretreatment (Z (5) = -1.41; p = .08; Z (10) = -1.41; p = .08; both 1-sided). In addition, after controlling for pretreatment physical IPV perpetration there was a trend that patients allocated to CBT-IPV perpetrated less physical IPV than patients allocated to I-StoP (F (1, 20) = 1.90; p = .09; 1-sided). Finally, there was a trend that completers in the I-StoP condition perpe-
Discussion

This is the first (pilot) RCT that investigated the effectiveness of an Integrated treatment for Substance use and Partner violence (I-StoP) among patients referred to a forensic outpatient treatment facility because of IPV perpetration. Treatment effects of I-StoP were compared to treatment effects of CBT addressing IPV perpetration without addressing substance use (CBT-IPV); the primary aim was to reduce physical IPV perpetration. In accordance with the hypothesis, IPV perpetration had significantly decreased at posttreatment among patients who received CBT-IPV. However, this was not the case among patients who received I-StoP. Also, there were no differences between conditions, which was also not as expected. In addition, regarding substance use the hypotheses were only partially confirmed as well: patients who received I-StoP were not more days abstinent at posttreatment than at pretreatment, but decreased substance use Z-scores indicated that the amount of substances that were used had diminished at posttreatment. However, again there were no differences between conditions. Regarding secondary outcome measures it was found that verbal IPV perpetration had decreased significantly at posttreatment among patients who received CBT-IPV, but not among patients who received I-StoP. Finally, several non-significant trends could be detected but it is debatable whether they are meaningful because of the low number of participants. The most prominent trend was a decrease in physical IPV perpetration among patients allocated to I-StoP.

Unfortunately, most hypotheses were not confirmed by the present study. In the first place, as mentioned above, only a non-significant trend was found that physical IPV perpetration had decreased among patients allocated to I-StoP (p = .05). However, this decrease can be considered clinically significant whereas completers perpetrated almost no physical IPV anymore in the 8 weeks before treatment completion. Also, the decrease in verbal IPV perpetration among completers who received I-StoP was non-significant (p = .07) but clinically relevant as participants committed verbal IPV (such as screaming or yelling at their partner) less than two times in the 8 weeks before treatment completion. In addition, although substance use had been addressed in I-StoP, patients who received I-StoP were not more days abstinent at posttreatment than at pretreatment even though they had decreased the amount of substance intake. It appears that, although motivational interviewing was used, it was very difficult to motivate patients to change substance use. The fact that IPV decreased but not substance use (at least not on all measures) is also not in line with expectations whereas in accordance with the proximal effects model it was suggested that if substance use would decrease, IPV perpetration would decrease as well. However, IPV perpetration had de-
creased despite the fact that substance use had not or had only marginally decreased. This indicates that the proximal effects model is not sufficient to explain the relationship between substance use and IPV perpetration, at least not in all cases. Alternatively, the spurious model (a third variable is responsible for both alcohol and/or drug use and IPV perpetration) might be an explanation. Examples of such third variables are impulsivity or ineffective problem solving skills, as was hypothesized in a previous case study (Kraanen et al., submitted-c).

The present study holds several limitations. To begin with, the sample size was very small, which resulted in low statistical power. This might explain the fact that although on some variables a decrease in problematic behavior was visible (such as in physical IPV perpetration among patients who received I-StoP) but not statistically significant. Further, due to the low number of participants it was not possible to run mediation analyses to investigate whether substance use mediates the relationship between treatment and IPV perpetration. Besides, dropout rates were fairly high (about 45%). However, this is in accordance with other studies that investigated the effectiveness of IPV perpetrator programs (Akoensi, Koehler, Lösel, & Humphreys, in press). Nevertheless, it is important to focus on lowering attrition rates, particularly since it has been observed that dropouts are at increased risk to relapse into IPV perpetration (Daly & Pelowski, 2000). In addition, although IPV had almost decreased to zero at posttreatment among patients who completed the treatment, follow-up data are lacking and as a consequence no conclusions can be drawn as to whether participants also abstained from IPV perpetration over a longer period of time. On the basis of the proximal effects model, it is assumed that patients who are not abstinent from substances are at risk to relapse into IPV perpetration. However, it should not be overlooked that, as mentioned above, other models such as the spurious model, can explain the relationship between IPV perpetration and substance use.

Another shortcoming is that the results were based on self-report of the participants. As an alternative one could use partner reports and police records. On the other hand, partner reports are unreliable as well; some studies found that victims reported even lower rates of IPV than perpetrators (Heckert & Gondolf, 2000). Also, only a small proportion of all perpetrated IPV is reported to the police (e.g., Van der Veen & Bogaerts, 2010; Rosenfeld, 1992). However, since pretreatment and posttreatment assessments were based on self-report, we consider the decrease in IPV perpetration to be fairly reliable. Another limitation related to assessment is the fact that pretreatment assessment took place after an intake, several sessions that addressed risk assessment and a session with the partner in which the cycle of violence (that can be considered the primary intervention addressing partner violence) was discussed, had already taken place. If pretreatment IPV perpetration was assessed directly after the intake, IPV rates (and per-
haps also substance use rates) might have been higher and treatment effects may have been more evident.

From the above, several suggestions for future research can be deduced. Most importantly, research should focus on retention of patients in forensic outpatient treatment. It appears that even though motivational interviewing was advocated, this was not sufficient. Although research has identified predictors for dropout among IPV perpetrators, such as substance abuse and psychopathology (for a review, see Daly & Pelowski, 2000), to our knowledge, predictors of dropout among substance abusing IPV perpetrators have not been studied. We argue that it is particularly important to focus on dynamic risk factors for dropout, since addressing these risk factors possibly leads to higher rates of treatment retention. Further, it is obvious that the present study should be replicated with a larger sample to increase statistical power and to make it possible to run additional analyses. Further, pretreatment assessment should take place directly after intake in order to obtain a more reliable measure with regard to IPV perpetration and substance use before starting treatment. In addition, it is important to collect follow-up data. Also, future research should acquire reports from all partners on IPV and (perhaps) substance use. Finally, because it has been suggested that treatment should be based on individual characteristics of IPV perpetrators and not on a ‘one-size-fits-all approach’, it might be important to distinguish between types of substance abusing IPV perpetrators. For example, there could be perpetrators to whom the proximal effects model applies but for others the relationship between substance use and IPV perpetration might best be explained by the spurious model. It is worth investigating whether an individual treatment approach for substance abusing IPV perpetrators is more effective in reducing IPV perpetration than, for example, I-StoP or CBT-IPV.

Although the majority of hypotheses have not been confirmed, the present study led to various new insights and ideas for future research. Moreover, it was demonstrated that both treatments were effective in reducing IPV perpetration, which is also a valuable finding since there are still no evidence-based treatments for IPV perpetrators.