Treatment of post-traumatic anger:

A feasibility and usability study of the Directed Anger Protocol

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Abstract

Research shows that Patients with PTSD-related anger problems are less responsive to available trauma-oriented treatments. The Directed Anger Protocol (DAP) is an EMDR-based treatment developed to target PTSD related anger problems. Although the treatment is widely used, no validation studies have been conducted yet. In preparation of a Randomized Controlled Trial (RCT) follow-up study, the present study sets out to assess the feasibility and usability of a research design of the DAP. In addition, pre- and posttest data were analyzed on PTSD and anger ratings. Post-treatment interviews with patients and DAP-therapist were conducted to assess the research design. Fifteen patients received DAP-treatment for a maximum of 5 sessions. Patients filled out the DIRAQ, PCL-5 an STAXI-2 pre- and post-treatment, as well as with every session. The research protocol could be performed in a practical way in terms of procedure and guidelines. Furthermore, the DAP was considered to have added value in the treatment of PTSD related anger. Preliminary analysis showed a reduction in mean PTSD and anger scores. Save for small improvements, the research protocol is considered feasible and usable. A follow-up study based on this design should include a control group and a larger sample size.

Post-Traumatic Stress Disorder (PTSD) is a mental health disorder that often occurs after experiencing a traumatic life event. Lifetime prevalence of PTSD varies between 1.3% and 19.5% in the general population (Atwoli et al., 2015). In forensic settings, PTSD diagnoses are found in 27% to 75% of patients (Henrichs & Bogaerts, 2012; Urbaniok, et al., 2007). PTSD symptoms include re-experiencing traumatic events, avoidance and hyper arousal, nightmares, and feelings of guilt. Irritability and outbursts of anger are also known symptoms and has been included as criteria since PTSD's introduction in the 3rd edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III, American Psychiatric Association, 1980). While PTSD-related anger symptoms initially received relatively little attention, (McHugh et al., 2012; Orth & Wieland, 2006), a growing number of studies have established the link between anger symptoms and PTSD (Winkel, 2007; Olatunji et al., 2010), although none of them have included a forensic outpatient sample. This study aims to assess the feasibility and usability of a research design that will be used in a Randomized Controlled Trial (RCT) follow-up study investigating the Directed Anger Protocol (DAP; Veerbeek & Ten Broeke, 2016), an intervention that targets PTSD-related anger symptoms in forensic outpatients.

Although most studies on PTSD-related anger symptoms have been conducted among samples of war veterans (e.g., Jakupchak et al., 2007; Kulkarni et al., 2012; Turgoose & Murphy, 2018), PTSD-related anger does not seem to be limited to a certain type of trauma (e.g., combat related, sexual or victims of crime) or population (McHugh et al. 2012). Little is known about the prevalence of patients suffering from PTSD-related anger. Turgoose and Murphy (2018) found anger prevalence rates among veterans suffering from PTSD to be 74%. Rates this high could suggest that a substantial number of PTSD-patients might suffer from PTSD-related anger. Various studies show that the severity of anger symptoms is negatively related to outcomes of a PTSD-treatment (Forbes et al., 2003; Galovski et al.,

2014; Kaczkurkin et al., 2016), suggesting that to effectively treat PTSD, these anger symptoms need to be addressed first (Birkley & Schumm, 2017). This seems especially relevant for forensic patients, as they report more feelings of anger compared to their non-forensic counterparts (Hornsveld et al., 2011; Moeller et al., 2016). At present, no PTSD-related anger treatment is available; in the PTSD-treatment guideline provided by the American Psychiatric Association (APA, 2017) PTSD-related anger symptoms is not even addressed as (an essential) part of treatment.

There are several validated treatments such as Eye Movement Desensitization and Reprocessing (EMDR), Cognitive Behavioral Therapy (CBT) with and without exposure, that have been proven to be effective in reducing PTSD-symptoms in general (Hurley, 2018; Slotema et al., 2019; Lewis et al., 2020; Maclean et al., 2022). However, little evidence has been reported on these interventions regarding their effectiveness in reducing PTSD-related anger symptoms. For EMDR, cognitive interweaves (ten Broeke, de Jongh & Oppenheim, 2008) and the 'emotions approach'(Van Pelt et al; 2022) are suggested strategies for treating these anger symptoms, though no study has yet proven the effectiveness of these approaches. In 2011, an intervention specifically developed for the treatment of PTSD-related anger symptoms, the DAP was introduced (Veerbeek & ten Broeke, 2016). This intervention, which is derived from EMDR- is applicable for a variety of subgroups, including forensic outpatients. Both EMDR and the DAP are based on the Adaptive Information Processing model (AIP) developed by Shapiro (2001). This model posits that a physiologically based information processing system assimilates new experiences into already existing memory networks. In this model, distressing events are sometimes dysfunctionally stored in memory, accompanied by the experienced emotions, physical sensations, and beliefs during the event, as if 'frozen in time'. Instead of connecting to existing memory networks, the events are stored in separate neural networks from those holding adaptive information (Bergman, 2012;

Leeds, 2016). Processing memories starts within the Limbic system, where cognitive components are processed in the Hippocampus and the emotional aspects in the Amygdala. Subsequently, the processed parts are integrated in the Cortical parts of the brain. In traumatized patients, the Amygdala and Hippocampus are unable to process events correctly, resulting in senso-motoric modalities, somatic sensations, and visual representations rather than complete memories with a cognitive and contextual framework. When the patient's memory of the traumatizing event is triggered, the distressing event is relived through the emotions, physical sensations and beliefs that were experienced at that time, According to the AIP-model, EMDR facilitates the integration of these dysfunctionally stored memory components into existing emotional, cognitive, somato-sensory and temporal memory systems (Bergman, 2012). As a result, the distressing event is then no longer stored (and therefore experienced) as if 'frozen in time' and though the memory will remain unpleasant, it is no longer emotionally and physically distressing.

Veerbeek and Ten Broeke (2016) state that the senso-motoric and emotional processes described in the AIP model also play an important role in trauma related anger, specifically because of their influence on bottom-up processing. During bottom-up processing, distressing experiences are stored in an implicit memory network, in which somatosensory and visual modalities dominate and cognitive control over the intrusive sensations is absent. This process differs from top-down memory processing, in which experiences are stored in an explicit memory network, dominated by verbal processing and cognitive control (van der Kolk, 2002).

As a result, of bottom-up processing, patients experience negative feelings, such as anger, linked to the distressing event repeatedly. Anger is assumed to play a role in these processes (Lazarus 1991) and Denson et al. (2011) and Pedersen et al (2011) specifically indicate that

arousal and anger rumination are factors that negatively impact self-control.

Also, research indicates that anger and aggression can result from dominating Limbic activity in combination with a lack of regulation from the prefrontal cortical area (Siep et al., 2019), again pointing towards the role of bottom-up processing in anger-related problems.

Next to anger, the DAP also focuses on reducing feelings of revenge. Research has shown a relationship between PTSD symptoms and feelings of revenge in patients suffering from PTSD- symptoms after war exposure as soldiers (Bayer, et al., 2007; Cardozo et al., 2003). Similar results were found in non-war related violent crime victims suffering from PTSD symptoms by Orth, Montada and Maercker (2006), indicating a relationship between feelings of revenge and trauma resulting from interpersonal violence. Targeting feelings of revenge may be important, as symptom severity for each PTSD symptom cluster (re-experiencing/intrusion, avoidance, and hyper arousal) correlates to feelings of revenge (Kunst, 2011).

Although EMDR and the DAP are closely related, there are clear differences between the interventions. EMDR is directed towards traumatic experiences responsible for causing these anger symptoms. Within this treatment, the focus is on the traumatic event itself- specifically on the image(s) the patient finds the most distressing. For the DAP however, it is assumed that anger is directed towards a specific person instead of an event and that the focus should therefore be on the perceived wrongdoer. Thus, instead of a focusing on a traumatic event and its most distressing image, the DAP is directed toward the person held responsible for causing the anger symptoms. This view is supported by findings by Orth & Maercker (2009), showing that posttraumatic anger consists predominantly of anger directed at the perpetrator and anger directed at the self, and also showing that the anger directed at these targets is strongly related to PTSD symptoms.

In the DAP, it is assumed that four symptoms underly PTSD related anger: 1) the intensity

of the provocation as experienced by the patient (perceived harm); 2) the level of arousal; 3) anger rumination intensity and; 4) the intensity of revenge urges and fantasies. For more information on the theoretical assumptions behind the DAP, see Veerbeek & Ten Broeke (2016).

So far, no studies have been performed on the DAP. As a first step toward an RCT, the present study aimed to assess the feasibility and usability of the research design to investigate the DAP in a sample of Dutch forensic outpatients. Additionally, preliminary analyses were performed to gain a first impression concerning whether the DAP can be utilized to reduce PTSD-related anger symptoms at pre- and post-treatment. It was expected that a trend towards lower post-treatment scores on anger and PTSD measures could be found compared to pre-treatment scores. Due to the small study sample and variation in the number of treatment sessions, no effects were expected at between-session measures. Preliminary analyses on the between-session measures were therefore not conducted.

Method

This study is a mixed-method pilot study, using semi-structured interviews and data from self-report questionnaires, conducted in a large Dutch forensic outpatient treatment facility in the period between September 2021 and November 2022.

Samples

Forensic patients were included when they met the following inclusion criteria: 1) older than 18 years; 2) referred for violent behavior; 3) presence of PTSD symptoms as clinically assessed by the therapist based on DSM-5 criteria; 4) presence of clinically assessed anger symptoms (i.e., anger rumination, revenge urges and fantasies); and 5) scores above the cut-off values on the PCL-5 and DIRAQ (see Measures for a detailed description). Exclusion criteria were: 1) a psychotic disorder or autism spectrum disorder; 2) a (clinically assessed)

IQ level below average- or lower; and 3) reporting stronger feelings of anxiety than anger symptoms.

To establish the feasibility and usability of the research protocol, forensic patients and their therapists were interviewed (interviewed samples). The patients who enrolled in the DAP-intervention were asked to complete a series of questionnaires (DAP-sample).

Interviewed Samples

To assess the feasibility and usability of the DAP, information from the semi-structured interview of ten patients was used. Interviews were conducted either face to face or by telephone directly after conclusion of the treatment phase. Eight patients were referred for treatment related to anger issues, one for domestic abuse and one for extortion. All interviewed patients were male, of whom four came from a non-Western background. The mean age of the patients was 38 years (*SD* = 9.04).

Therapists were interviewed to gain more insight in the feasibility and usability of the DAP. Nine therapists (previously trained and experienced in the DAP) were recruited for these interviews. Each therapist received additional training in the DAP and could consult the author of the DAP directly as supervisor. The interviews were conducted after completion of the treatment of their last patient for the study.

DAP-sample

Twenty-four patients were referred to the study, of which five did not meet the score threshold on the DIRAQ or PCL-5. Four patients dropped out during the intervention phase; two prematurely ended treatment, one patient expressed stronger feelings of fear over anger (see step 1 of the DAP protocol) and one patient dropped out because he reported an increase in anger feelings instead of a decrease. Eventually fifteen male patients (mean age 39; SD = 9.7) finished the DAP-intervention. In addition to PTSD, eight patients were diagnosed with comorbid disruptive impulse-control and conduct disorder; three with a personality disorder

and one with intermittent explosive disorder.

Directed Anger Protocol (DAP)

During the treatment sessions, therapists guided the patients through the DAP (Veerbeek, 2019), which comprises the following six steps:

1. Checking if anger problems dominate over fear.
2. Exercise the brake: an intervention within the DAP used to reduce physical arousal. Patients are asked to focus on the tensest body part while bilateral auditory or visual stimulation is applied, resulting in a reduction in physical arousal.
3. Inventory of a timeline of every person who will cause angry sensations when the patient makes imaginary eye contact. The anger feelings are assessed on a ten-point scale, with ten being the highest.
4. Selecting the person (target) generating the highest anger score
5. Let the patient enter an imaginary film, in which the target is confronted. In this film, the patient should feel safe and powerful and is permitted to act without constraint. The patient is repeatedly instructed to look into the eyes of the perpetrator, sense what the body wants to do or say and act upon those urges. While the patient imaginarily acts upon the urges, bilateral visual or auditory stimulation is applied until the patient no longer reports anger feelings towards the target.
6. After the imagery, safety issues are discussed with the patient.

All six phases can be addressed in one session. Although usually one session per target suffices, this is not always the case. Therefore, therapists will assess if the anger sentiments toward the target of the previous session have subsided during the next session. If this is not the case, another DAP-session will be addressed to the same target.

Measures

Semi-structured interviews with patients and therapists were held to assess the feasibility and usability of the research design. Table 1 shows the scheme of the interview topics and questions presented for each group (patients and DAP-therapists). The interviews were conducted by a research assistant and continued with follow-up questions until no new information emerged.

In this study, feasibility is defined as the degree to which the research protocol can be performed in a practical way in terms of procedure and guidelines (topic A 'Overall experiences in working with the study protocol and intervention'). The extent to which the study is feasible was determined by to which extend the patients regarded the protocol doable and to which extend improvements were suggested. Four scoring categories were used to determine the feasibility of the research protocol:

1. Not feasible: Cannot be carried out in its current form, multiple adjustments necessary.
2. A bit feasible: Can be partially carried out, needs adjustments.
3. Quite feasible: Can be carried out, small improvements are suggested;
4. Feasible: can be carried out, no improvements required.

Usability is defined as the degree to which both patients and therapist experienced an added value of the DAP in treating PTSD related anger symptoms (topic B 'Treatment effects'). The usability of the DAP-protocol was scored in terms of

1. Not usable: Not considered an added value, all patients dropped out, multiple adjustments necessary.
2. A bit usable: Some added value, needs adjustments.
3. Quite usable: Clear added value, small improvements suggested.
4. Usable: Clear added value, no improvements required.

In the last section of the interview, patients and DAP-therapists were asked whether they had any suggestions to improve the study protocol.

Questionnaires (preliminary analyses)

STAXI-2

The State Anger Inventory (STAXI-2), Dutch version (Hovens et al 2014) is a 57-item self-report questionnaire, that can be used to assess both the intensity of anger at a particular time and the frequency with which anger is experienced, expressed, and controlled. The items are divided in three sections: 1) The intensity of anger as an emotional state at a particular time (State-scale, 15 items); 2) How often angry feelings are experienced over time (Trait-scale, ten items) and 3); Anger expression (in/out subscale) and Anger control (in/out subscale) (each subscale comprises eight items). Items are scored on a four-point scale ranging from 1) not at all, 2) somewhat, 3) moderately so, and 4) very much so. Research into the reliability and validity of the scales measured an internal consistency of α >.90; and test-retest correlations between r = .22 and .59 were found (Lievaart, Franken & Hovens, 2016). In this study, the Cronbach's alpha coefficients were in the poor to good range for the STAXI-2 subscales at pre- and posttest (.52≤ α ≤.98).

DIRAQ

The Dutch 'Directed Anger Questionnaire (DIRAQ) (Veerbeek; 2020) is a 16-item self-report questionnaire that assesses four constructs regarding directed anger: perceived harm (four items), arousal (four items), anger rumination (five items and revenge urges and fantasies (four items). The DIRAQ was administered each session, with items are scored on a five point scale ranging from 1 (not at all) to 5 (very much). According to Veerbeek (2020), the internal consistency value for the test is α = .92; for the subscales between α = .84 and α = .91; total score test-retest correlation was r = .85; and for the subscale's values between r = .68 and .89 were found. In this study, the Cronbach's alpha coefficients were in the poor to good range for the DIRAQ subscales at pre- and post-test (.56 ≤ α ≤.98).

A cut-off score of 60 or above on the DIRAQ is used to include patients for the DAP is recommended by the author. For the preliminary analyses the DIRAQ subscale scores are used.

PCL-5

The Post Traumatic Stress Disorder Checklist for DSM-5 (PCL-5) (Weathers et al., 2013; Dutch version: Boeschoten et al., 2014) is a 20-item self-report questionnaire to assess DSM-5 PTSD symptoms that can be used to monitor symptom change during and after treatment. The 20 items refer to 20 symptoms of PTSD according to the DSM-5, divided in four subscales, corresponding with PTSD symptom clusters B (intrusion, five items), C (avoidance, two items), D (negative alterations of cognitions in mood and behavior, seven items) and E (alterations in arousal and negativity, six items). Each item is rated on a four-point scale (not at all, a little bit, moderately, quite a bit, extremely). A total severity score (range 0- 80) can be obtained, as well as subscale severity scores. A cut-off score of 31 or higher is found to be predicative of PTSD and will be used for inclusion purposes. Internal consistency of the PCL-5 is $\alpha = .94$; and the test-retest correlation value $r = .82$. (Bovin, et al. 2016). In this study, the Cronbach's alpha coefficients were in the moderate to good range for the PCL5 subscales at pre- and post-test ($.68 \leq \alpha \leq .93$). The subscale scores will be used for preliminary analyses.

Procedure

During the intake, risk assessment and treatment phase, therapists screened patients for inclusion and exclusion criteria. Upon assessing PTSD- and anger symptoms, therapists referred patients to the study. After signing an informed consent, a pre-study assessment was administered, consisting of the PCL-5, DIRAQ and STAXI-2. Admittance to the study was based upon meeting PCL-5 and DIRAQ cut-off scores. Patients were then referred to a DAP-trained therapist involved with the study at the treatment location. Duration of the treatment

phase was determined by the number of targets (i.e., harm doers to be addressed) and the severity of the anger- and PTSD symptoms, with a maximum of 5 sessions. Patients filled out the PCL-5 and DIRAQ each session. After the treatment sessions, progress was evaluated, and post-trial questionnaires (same as pre-trial) were administered. Each patient and therapist were interviewed (semi-structural) after the trial phase for evaluation purposes.

Strategy of Analysis

Interviews were conducted and transcribed verbatim by the same research assistant for further processing using the thematic analysis approach for analyzing quantitative data (Braun & Clarke, 2006). The process of analysis consisted of four steps. For the first step the responses to each question were sorted by topic and placed within subcategories (five subcategories topic A, two subcategories topic B and topic C each) by the first author (shown in Table 1). In the second step, each response was independently analyzed by two researchers (first and second author), focusing on new and recurring topics addressed by the interviewees. In the following step, main themes and sub-themes were created in a consensus meeting between the first and second author (see Table 2).

The patients' and therapists' responses were placed within the corresponding sub-theme (also done by the authors independently), thereby creating two theme-based response sets. For the fourth step, both response sets were compared- and differences were discussed in another consensus meeting. The combined results patients' and therapists' data) were then used to describe the information for the results section regarding the feasibility and usability of the research protocol. In a final consensus meeting, the design was subsequently rated as quite feasible and quite usable.

Explorative statistical analyses were performed using IBM SPSS version 27. At the pre-test measurements, three Staxi-2 questionnaires contained a missing value (.4%); and one

PCL-5 questionnaire contained a missing value post-treatment (.3%). These missing values were replaced by item means.

Cronbach's alpha coefficients and Spearman's Rho coefficients were calculated for the questionnaires. Cronbach's alpha coefficients >.70 can be considered as acceptable and >.80 as good (Nunnaly & Bernstein, 1994). Following the guidelines provided by Cohen (1988), the strength of the correlation coefficients is interpreted as follows: $r \geq .10$= weak, $r \geq .30$= moderate and $r \geq .50$ strong. Although there is no clear threshold above which it can be concluded that subscales are likely to measure the same underlying dimension, in the present study the threshold was set at .80, which corresponds to 64% of shared variance (Field, 2013).

Paired samples t-tests were performed to compare the pre- and post-test mean scores on the PCL5, DIRAQ and STAXI subscales. To correct for multiple testing, the p-value was set at $p < .0042$ (after Bonferroni correction).

Cohen's *d* effect sizes were calculated for dependent samples t-tests using the online calculator provided by Lenhard and Lenhard (2016). Cohen's d effect sizes of $d \leq 0.2$ can be interpreted as small, between >.02 and ≤ 0.5 as medium, between >0.5 and ≤ 0.8 as large, and > 0.8 as very large (Cohen, 1988).

Results

Results are described in two sections. In the first section, results from interviews with ten patients and nine therapists are presented first. Specific information from the interviews is outlined following the topics listed in Table 1. In the second section the preliminary results are described for fifteen patients.

Research protocol

Patients' interviews

Information about the study. Prior to study participation, the research assistant informed patients on the study. Most patients indicated that the information provided on the proceedings during the study was sufficient. For some, it was unclear how their treatment would continue after participating in the study- and whether additional DAP-sessions (outside the study) could be offered.

Time investment. When asked about the extra time needed for participating, none regarded this burdensome.

Questionnaires. Patients filled out questionnaires prior to each treatment session and at pre- and post-measurement. The questionnaires were described as short, clear, and to-the point. However, some patients, questioned their purpose, thought there were too many questions or found it strange that the questionnaires were administered repeatedly (i.e., each session).

Research assistant. Next to informing patients on the study, the research assistant would administer the pre- and post-measurement questionnaires. Overall, patients regarded working with the assistant as positive.

Process. For most patients, participating meant switching therapists for the duration of the study. Some individuals found this challenging because they had grown to trust their current therapist and it felt like starting anew.

Therapists' interviews

Information about the study. Not all therapists knew who was responsible for informing patients on the study, so most would check whether patients were informed adequately on the study prior to starting the treatment. In general, the patients seemed well informed well enough, though sometimes, repeating information was needed. As for the therapists' instructions, all was considered clear and straightforward.

Time investment. For therapists, the sessions demanded a little more time next to the treatment sessions, which was considered acceptable. Therapists indicated that the instructions in the manual were clear, but carefully reading the instructions before participation was strongly advised.

Questionnaires. Administering the questionnaires cost no more than 15 minutes and required little of the therapist. Some noted that it was unclear whether this should take place at start or finish of the session. Additionally, it was noted that patients were unsure if the DIRAQ was to be completed based on a single target or on all indicated targets together.

Research assistant. The research assistant would provide the questionnaires, administer the pre-trial measurements, and conduct the interviews. Further, the assistant also was the contact for most questions. Therapists were mostly positive about working with the assistant. However, some did caution that with more distrusting patients, adding another person to the treatment could lead to more defensiveness.

Process. Participating in the study was added onto the therapists' regular work and caseload, which was considered taxing by some. Initially, the DAP was planned early on in the course of treatment. It soon became clear that this was not the best timing, as a therapeutic alliance with the regular therapist was not established yet. Next, therapists indicated that at times, the study protocol was regarded as too strict. Changes in patients' personal circumstances might necessitate a different intervention than a DAP-session, though the study protocol made no allowance for such deviation.

Based on the results, the treatment protocol is considered quite feasible (Can be carried out, small improvements are suggested). Positive feedback was received on study participation from patients and therapists; the time-investment, filling out the questionnaires, switching therapist and working with the research assistant were regarded as positive by almost all interviewees.

Mixed feedback was received on an number of subjects: For some patients, it was unclear why the questionnaires were administered each session. Also, patients indicated that they did not know what to expect regarding continuation of their treatment after study participation. During the study, the regular therapist is generally not informed on DAP-treatment progress. However, some DAP-therapists did inform the regular therapist after each session and regarded this as very useful. Furthermore, it was indicated that the DAP treatment was more challenging when patient and therapist had not established a therapeutic alliance yet.

DAP-protocol

Patients' interview

General experiences. Except for one instance, a single target was addressed each session. Patients received three sessions on average. This is fewer than the average of four targets identified in each treatment. For one client, an additional treatment session was needed after evaluation.

Patients' response to undergoing a series of DAP-treatment sessions varied, ranging from 'a positive, almost real experience' to 'not helpful, having doubts about the DAP as a suitable intervention'. An important note was made on the session frequency: One patient noted that planning two DAP-sessions on a single day proved to be overly taxing.

The DAP treatment. Patients' experiences with the DAP were mixed; some reported positive experiences, whereas others indicated that it took some time to get adjusted to the technique. It was sometimes noted that creating a film-scenario was difficult, and the fictional character of the intervention felt forced, even fake. Some patients felt like the DAP was not the right treatment for them, as they were unable to truly experience fierce emotions during the treatment.

The DAP effects. The varying experiences with the DAP are also reflected in its reported effects: some patients note a decrease in anger feelings and PTSD symptoms as nightmares,

re-experiencing memories and guilt. For some, the DAP resulted in being able to reflect more on their anger sentiments and thereby no longer accepting them as a normal part of their life. Other patients reported no effect at all, or even made them feel angrier. Reported side effects were headaches and tiredness. Two patients claimed to have irrational guilt about what they had done imaginary. One patient reported he felt compelled to enact upon the scenario in real life.

Evaluation. After treatment, the DAP-therapist and patient evaluated the sessions together with the regular therapist, after which the treatment would continue with the latter. The after-treatment evaluation was regarded as a positive experience overall.

Improvement suggestions Patients indicated that they would like to get acquainted with the DAP-therapist prior to starting the treatment. Next, more information on what happens after participation in the study was requested: would treatment continue? And was it possible to receive additional DAP-sessions?

Therapists' interviews

General experiences. Therapists offered differing opinions on whether the DAP-treatment should be conducted by a patient's 'regular therapist. Unlike with a dedicated DAP-therapist, the regular therapist's focus is on more aspects of the patients' life than the anger problems alone. Because of this, deviating from the protocol is more likely when the patients' circumstances change. On the other side, not having established a therapeutic alliance was considered an impeding factor in potential treatment success.

Expectations. During the treatment sessions, therapists made observations about the patients' expectations of the results of the DAP. Some patients assumed their anger problems would be over, or even that they could not get angry at all anymore. Others had more realistic ideas about the effects, or no expectations at all.

The DAP-treatment. Working with the DAP, therapists noted that it was unclear including whether or not several targets may be treated in a single session (or over the course of several sessions), and the degree to which deviation from the protocol was permissible (i.e., skip steps in the protocol; using different bilateral stimulation techniques). The DAP did not appear to work for patients who repressed their rage, who were unable to fully access their emotions, or who were more distrusting in towards the therapist. Additionally, therapists also noticed that the DAP was ineffective when the addressed target was still (an important) part of the patient's life.

DAP-Effects. Not all therapists noticed effects of the treatment during the sessions. When an effect was observed, it corresponded with the patients' experiences: a decrease and increase in PTSD- and anger symptoms, as well as more insight in one's own anger. The ability of the person to vent anger or resolve conflicts was not significantly impacted by the DAP, according to some therapists. Regarding side effects, patients reported more anger issues and feelings of guilt to the therapists.

involvement of the regular therapist . Some therapists experienced that evaluating between sessions with the regular therapist (as well as after the treatment sessions) was considered useful, as it helped continuing the treatment after the DAP.

Improvement suggestions. Therapists suggested improvements corresponded with those provided by the patients. In addition, a method to monitor arousal, like the Subjective Units of Distress (SUD) used in EMDR (Shapiro, 2001), was suggested. Next, recommendations were made to provide possible after-care for DAP-therapists, as the film-scripts created by patients could be confronting.

Both therapists and patients report mixed experiences regarding the DAP effectiveness in the treatment of PTSD-related anger. Patient related factors, such as repressing feelings of rage, being unable to fully access emotions, or being distrusting towards the therapist seem to

have played an important role. It was also indicated that the intervention did not work if the target was still present in the patients' life, or when the imaginary part of the technique was experienced as too fictional.

With patients who reported a more positive experience with the DAP, an decrease in Anger and PTSD related symptoms was reported. As no improvements to the protocol itself were suggested, the DAP was considered usable in the treatment of PTSD-related anger symptoms.

Preliminary Results

As can be seen from table 3, except for the STAXI-2 Anger expression scale, reliability coefficients ranged from poor to excellent reliability at pre-test and from good to excellent at post- test. The reliability coefficients for the STAXI-2 Anger expression scale were unacceptable low.

Due to the relatively small post-test sample size, pre-test correlation coefficients are presented for the subscales in table 4. Moderate correlations were found between the DIRAQ subscales, but also between the DIRAQ and PCL-5- as well as between the DIRAQ and STAXI-2- subscales. Strong correlations are found between the PCL-5 subscales and between the DIRAQ subscales. Strong correlations were also found between the PCL-5 and DIRAQ subscales, as well as between PCL-5 and STAXI-2 subscales.

The results from the paired samples t-tests showed that – after adjusting for multiple comparisons - significant differences were found between pre- and post-test measures on the PCL5, DIRAQ and STAXI-2 subscales. More specifically, significant reductions (large effects) were shown in perceived harm, arousal, anger rumination, and revenge urges. Except for the PCL5 Cluster C (avoidance), PTSD symptoms were significantly lower at post-test (medium effect). For the STAXI-2, only State anger was found significantly lower at post-measurement (medium effect).

Discussion

This study examined the usability and feasibility of a research protocol investigating the Directed Anger Protocol (DAP) in forensic outpatients and their DAP-therapists. In addition, preliminary analyses were performed. It was expected that the design can be used to assess the effectiveness of the DAP in a larger scale-multisite RCT. As for the quantitative analyses, a slight trend was expected toward lower anger and PTSD ratings.

Feasibility of the Study

Feasibility of the study was defined as the degree in which the research protocol can be performed in a practical way in terms of procedure and guidelines. Based on the interview results, the feasibility of the study can be considered as quite feasible, but some adjustments are needed..

Firstly, the information on the study should include an overview of the course of the study, including details on the continuation of treatment after study participation. Adding an explanation regarding the reason for having to fill out questionnaires each sessions is also advised.

. Secondly, session evaluations should be incorporated in the study protocol to keep the regular therapist informed about further continuation of treatment after the trial.

The interviews showed that DAP-treatment offered by the patients' regular therapist was sometimes favored if a therapeutic alliance already had been established. Having established a therapeutic relationship is a key element of successful PTSD treatment therapy (Howard, Berry & Haddock, 2021). DAP-therapists reported that the lack of a therapeutic alliance made it more difficult to deal with distrusting patients, and it also made it difficult to coach patients in dealing with increasing levels of arousal and feelings of anger triggered by the DAP. Within the research-protocol, there is no preferred option whether patients should be treated with the DAP by their regular therapists. It does seem advisable to invest in

establishing a therapeutic alliance by adding sessions prior to the DAP-treatment phase, in particular with distrusting patients. Although studies show that a therapeutic alliance can be established relatively quickly (Held et al., 2022), the timeframe of the study design (eight weeks) seems too limited to achieve this.

Usability of the Study

Usability of the study was determined by the degree in which both patients and therapists experienced an added value of the DAP in treating PTSD related anger symptom. Carried out in its current form, the protocol has an added value with a substantial part of the patients demonstrating positive treatment effects. The research protocol was therefore considered usable.Suggested improvements did not concern the treatment protocol itself but could be considered useful additions.

Clarifying the instructions regarding therapists' freedom to deviate from the protocol, and whether it was permissible to skip steps in the protocol or address more targets in one session (or one target in multiple sessions) was suggested.

It is recommended to evaluate treatment progress between sessions to avoid using the DAP longer than necessary and to detect unwanted side effects early.

Some patients reported feelings of guilt and even an urge to act upon the imagined film scenario. Clear instructions regarding the monitoring and acting upon these side effects are needed, because of their adverse effects for the patient or others.

For some patients, the DAP-treatment was successful and led to a reduction of PTSD-related anger symptoms. Others, however, indicated that the therapy felt too fictional and therefore did not suit them. Patients sometimes reported being unable to access, or experience fierce emotions, or even suppressed their feelings of rage. In these cases, the DAP did not have positive effects on PTSD-related anger symptoms. Furthermore, therapists reported that more distrusting patients were also unable to benefit from the DAP treatment. For patients

who can open up to the technique (i.e., genuinely feel and fully experience emotions), the DAP does seem to have an added value in the treatment of these symptoms.

Therapists also suggested adding SUD as a means of monitoring arousal. While this may help to keep track of treatment progress, it may also impede said progress. The focus of the DAP is on fully experiencing (and imaginarily acting upon) ones feelings, whereas monitoring SUD in oneself requires a shift to a more cognitive process. This shift may impede the patients' ability to fully experience emotions and therefore have a negative impact on the DAP effectiveness.

Preliminary Results

As for the preliminary results, the internal consistency of most subscales was acceptable, except for the PCL-5 cluster E (alterations in arousal and negativity) and DIRAQ subscales Perceived harm, Anger rumination (pre-test) and Arousal (post-test). These results are inconsistent with those found in validation studies of all three questionnaires (Boeschoten et al.2014; Hovens et al, 2014; Veerbeek, 2020). These studies all used a larger sample size, which may have affected the reliability. The STAXI-2 subscale anger expression was found to be poor (pre- and post-test) and was therefore excluded from further analysis.

Strong correlation coefficients between the PCL-5 and DIRAQ subscales may indicate that the subscales measure the same concept (PTSD for the PCL-5 and directed anger for the DIRAQ). Correlations between subscales of different questionnaires are less straightforward to explain. For example, the STAXI-2 Subscale Trait anger measures anger as a trait, while the PCL-5 subscales measure a state, which are nearly opposite concepts. Furthermore, the moderate and strong correlations between the DIRAQ subscale perceived harm and PCL-5 subscales stand out because the PCL-5 measures PTSD symptom clusters which are very different from perceived harm on a conceptual level. A clear explanation for the found

correlations cannot be provided; subsequent larger research is needed to determine whether the sample size of the current study is responsible for these findings.

The paired samples t-test showed that patients had fewer PTSD and anger symptoms after treatment than before treatment. More specifically, the avoidance (PCL-5) and state anger (STAXI-2) subscales showed lower mean scores after the test compared with pre-test measurements, although, these effects were not statistically significant.

The results suggest that the DAP may play a role in bringing about changes in the expected direction.

Large to very large effect sizes were found on all questionnaires, except for the avoidance (PCL-5) and state anger (STAXI-2) subscales. Although these results also point towards expected changes, it is important to realize that sample size and effect size are negatively correlated (Kuhlberger et al., 2014)

Limitations and Suggestions for Further Research

Save for a few improvements, the research protocol is considered quite feasible and usable. As for the effectiveness of the DAP however, no firm conclusions can be drawn. Despite the first findings regarding lower PTSD and anger ratings, a study with a control group, preferably an RCT, needs to be conducted. Incorporating a follow-up measurement to assess whether the treatment effect persists over time is recommended.

Measuring treatment effectiveness by clinical significance next to statistical analysis might strengthen the study as this can lead to more solid conclusions. Also, adding a Reliable Change Index (RCI), might strengthen the study further as this measure takes both statistical as well as clinical significance into account in treatment effectiveness research (Zahra & Hedge.,2010).

No comparative research into the treatment of PTSD-related anger is available, though large to very large effect sizes have been found in studies comparing EMDR to control

studies (Cuijpers et al., 2020). Due to its close relation to EMDR, similar effect sizes may be expected in a subsequent study into the effectiveness of the DAP

Therapeutic alliance and patient characteristics (such as distrustfulness, being unable to access or experience fierce emotions, and suppressing feelings of rage) have emerged as variables possibly affecting treatment outcome. It is unclear however, to what extent the DAP-effectiveness is influenced by these variables and therefore should be addressed in follow-up research into the DAP.

An important limitation was the small sample size. In future studies the inclusion of a larger sample permits to study the psychometric properties of the questionnaires in more detail and to analyse whether the number of sessions affects the treatment outcome. Next, analysis of the treatment session measures was therefore not possible. As such, it is unclear if the number of sessions affects treatment outcome in terms of a reduction of PTSD related anger. A subsequent study should include a larger sample size to address these limitations.

Additionally, because the study's primary focus was on the research design, the treatment adherence control was given insufficient attention. Treatment integrity is an important factor in empirically testing treatment efficacy (Perepletchikova, 2011); in further research a treatment integrity form or recording sessions for quality assessment should be added.

Clinical Implications

Although the study was aimed at investigating the feasibility and usability of the research protocol, the findings of the pre- and post- measurements and reports of patients and therapists indicate changes in the right direction. Conducting a RCT is needed however, to draw conclusions regarding the effectiveness of the DAP.

Clarifying what patient groups may and may not benefit from the DAP-treatment is needed to make sure the right group of patients is addressed with this intervention. The initial findings indicate that the protocol is not suitable for patients unable or unwilling to allow

themselves to experience intense emotions during therapy, and those more on guard towards the therapist.

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Table 1

Patient and Therapist questions from the semi-structured post-study interview

Patients' questions	Therapists' questions
Part A general experiences with the study and intervention	
Please describe your experiences in participating in this study	Please describe your experiences in participating in this study
Did you feel adequately informed on the goal and procedures of the study? To what extent did your experiences with the study match your expectations?	To what extent did the patient feel adequately informed about the goal and procedures of the study?
Please describe your experiences with filling out the questionnaires?	Please describe your experiences with administering the questionnaires?
Please describe your experiences with undergoing the intervention	Please describe your experiences in working with the intervention
What do you think about the conclusion of the intervention phase and referral back to your therapist?	What do you think about the intervention phase and referral of the patient to his therapist?
Part B treatment effects	
How have the treatment sessions affected you?	How have the treatment sessions affected the patient?
Are there subjects related to the treatment that haven't been mentioned yet that you regard as positive?	Are there subjects related to the treatment that haven't been mentioned yet that you regard as positive?
Part C suggested changes	
Are there changes to the study protocol that you would suggest?	Are there changes to the study protocol that you would suggest?
In conclusion the patient is asked whether he would like to add something	In conclusion the therapist is asked whether he/she would like to add something

Table 2

Main themes and sub-themes after interview analysis

Main theme	Sub theme	Information on
Participation in the study	Information on the study	The way patients are informed on the study
	Time investment	Time investment for the study
	Questionnaires	Experiences with filling out the questionnaires
	Research assistant	Experiences in co-operating with the research assistant
	Process	switching therapists, number of sessions, timing of participation in the study, burden for therapists
The DAP protocol	General experiences	The DAP in general. Topics not matching the other sub-themes
	Expectations	Expectations of the patients of the DAP
	Information on the DAP	The way patients are informed on the DAP
	Time investment	Extra time investment for the DAP
	The DAP	Experiences in working with the DAP
	DAP-effects	How the DAP affected patients
	Transfer	The transfer back to the original therapist
Comments afterwards	Improvement suggestions	Suggested improvements

Table 3

Pre- and Post-test subscale reliability

	Number of items	Pretest (N=25) α	Posttest (N=15) α
PCL-5			
Intrusions	5	.784	.894
Avoidance	2	.931	.894
Negative alterations in mood, behavior	7	.778	.898
Alterations in arousal, negativity	6	.653	.884
DIRAQ			
Perceived harm	4	,515	.918
Arousal	4	.691	.691
Anger rumination	5	.697	.927
Revenge urges	4	.769	.926
STAXI-2			
State anger	15	.953	.981
Trait anger	10	.915	.874
Anger expression	32	.520	.586

Table 4

Spearman Correlation Coefficients between Pretest Subscales

		PCL-5 Scales					DIRAQ Scales			STAXI-2 Scales	
		1	2	3	4	5	6	7	8	9	10
1	Intrusions	-									
2	Avoidance	.584**	-								
3	Negative alterations in mood, behavior	.559**	.488*	-							
4	Alterations in arousal, negativity	.295	.174	.503*	-						
5	Perceived Harm	.529**	.336	.376	.185	-					
6	Physical Arousal	.439*	.220	.113	.182	.349	-				
7	Anger Rumination	.464*	.297	.363	.250	.449*	.518**	-			
8	Revenge Fantasies	-.165	.230	-.144	-.024	.203	-.009	.150	-		
9	State Anger	.057	.079	.354	.268	.434	.119	.121	.272	-	
10	Trait Anger	-.057	.128	.246	.500*	.164	.173	.287	.410*	.410*	-

* p≤.05; **p≤.01; p≤.001

Table 5

Pre- and Posttest Means (M) and Standard Deviations (SD), and Results from Paired Samples T-test (N=15)

	Pretest		Posttest				
	M	SD	M	SD	*t*(10)=	*p*	*Cohen's d*
PCL-5							
Intrusions	14.67	3.09	8.87	5.11	3.51	.003	1.33
Avoidance	4.93	2.68	4.00	2.59	1.24	.235	0.32
Negative alterations in mood, behavior	18.67	5.39	12.74	7.51	3.80	.002	0.96
Alterations in arousal, negativity	16.80	4.41	11.80	6.30	3.55	.003	0.83
DIRAQ							
Perceived harm	18.40	1.40	13.80	5.56	3.69	.002	0.78
Arousal	12.40	2.53	7.80	4.31	4.70	<.001	1.22
Anger rumination	21.27	3.13	12.33	6.44	6.87	<.001	1.59
Revenge urges	16.27	3.35	10.13	6.25	4.68	<.001	1.07
STAXI-2							
State anger	24.99	10.87	23.80	13.22	.448	.661	0.11
Trait anger	26.93	6.67	22.93	6.99	2.30	.004	0.53