Complex trauma disorders

- Understanding and treatment

A clinical trial of stabilizing group treatment for patients with PTSD and Dissociative Disorders

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Acknowledgments

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Abstract

Victims of childhood trauma and abuse predominantly experience many forms of trauma and multiple traumatic incidents throughout the life-span often termed *complex trauma.* Victims of complex trauma are at risk of developing a range of mental health difficulties, including posttraumatic stress symptoms, interpersonal difficulties, problems with emotional regulation, and dissociative reactions. However, our understanding of these aforementioned mental health difficulties and how best to treat them is unclear and debated. Thus, this thesis has three main aims; 1) Broaden our understanding of trauma-related difficulties by testing a new theoretical model of dissociation, 2) Investigate the efficacy of stabilizing group treatment for patients with PTSD related to childhood abuse, and 3) Investigate the efficacy of stabilizing group treatment for patients with dissociative disorders.

A clinical research project was conducted at Modum Bad's Trauma Clinic. In paper I, the predictions of the 4-D model of dissociation were tested in a sample of 142 patients with PTSD, either with (n=46) or without (n=96) comorbid dissociative disorders. In paper II the efficacy of stabilizing group treatment for patients with PTSD related to childhood abuse (N= 89) was investigated in a delayed-treatment design. In paper III, the efficacy of group treatment for patients with complex dissociative disorders (N = 59) was investigated in a similar design, the first randomized trial ever conducted with this patient group.

Paper I showed general support for the 4-D model as a promising theoretical framework for understanding trauma-related reactions. Paper II and paper III both showed significant treatment gains However, we did not find significantly better outcomes related to group participation in either sample, although some indications of positive long-term effects were found in paper III. Based on these results, stabilizing-group treatment should not be the first choice for treatment of PTSD related to childhood abuse. Further clinical research is needed to establish evidence-based treatment for dissociative disorders.

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List of papers

Paper I

Bækkelund, H., Frewen, P., Lanius, R., Ottesen Berg, A., & Arnevik, E. A. (2018). Trauma-related altered states of consciousness in post-traumatic stress disorder patients with or without comorbid dissociative disorders. *European Journal of Psychotraumatology*, *9*(1), 1544025. https://doi.org/10.1080/20008198.2018.1544025

Paper II

Bækkelund, H., Karlsrud, I., Hoffart, A., & Arnevik, E. A. (2021). Stabilizing group treatment for childhood-abuse related PTSD: a randomized controlled trial. *European Journal of Psychotraumatology*, accepted. https://doi.org/10.1080/20008198.2020.1859079

Paper III

Bækkelund, H., Ulvenes, P., Boon, S., & Arnevik, E. A. Group treatment for Complex Dissociative Disorders: A randomized controlled trial. Manuscript in preparation for submission. Preprint available at: https://osf.io/9gw57/

Abbreviations

AIC: Akaike Information Criteria

ANOVA: Analysis of variance

CDD: Complex Dissociative Disorder

CPTSD: Complex Posttraumatic Stress Disorder

CTQ-SF: Childhood Trauma Questionnaire – Short form

DES: Dissociative Experiences Scale

DID: Dissociative Identity Disorder

DSM: Diagnostic and Statistical Manual of Mental Disorders

GAF-S: Global Assessment of Functioning – Split version

ICD: International Classification of Diseases

IIP: Inventory of Interpersonal Problems

ISSTD: International Society for the Study of Trauma and Dissociation

ITQ: The International Trauma Questionaire

LMM: Linear Mixed Models

MID: The Multidimensional Inventory of Dissociation

MINI: Mini-International Neuropsychiatric Interview

ML: Maximum likelihood

NWC: Normal Waking Consciousness

OSDD: Other Specified Dissociative Disorder

PSS-I: The Post-traumatic Symptom Scale – Interview

PSS-SR: PTSD Symptom Scale - Self-Report

PTSD: Posttraumatic Stress Disorder

SCID-D: Structured Clinical Interview for DSM-IV Dissociative Disorders

SCID-II: Structured Clinical Interview for DSM-IV Axis II Personality Disorders

SCL-90: Symptom Checklist 90 Revised

SCM: Sociocognitive model

TF-PT: Trauma-Focused Psychotherapy

TM: Trauma model

TRASC: Trauma-Related Altered States of Consciousness

WHO: World Health Organization

1. Background

1.1 Childhood trauma and abuse

"Life is so damned hard, so damned hard... It just hurts people and hurts people, until finally it hurts them so that they can't be hurt ever any more. That's the last and worst thing it does."

F. Scott Fitzgerald, "The Beautiful and Damned"

For most people childhood is a period of life predominantly associated with feelings of safety, belongingness, and innocence. Although most of us have also experienced some hardship and stress during our childhood years, we commonly label these events as formative and valuable lessons later in life; what does not kill you makes you stronger.

Unfortunately, for many adults, the memories of their childhood are dominated by feelings of horror, despair, and deep shame. Rather than sources of strength, childhood abuse and trauma often haunt the survivor years later, leading to profound suffering and difficulties coping with everyday life. For many, these experiences disrupt the very essence of their identity: who they are, where they belong, and how they can relate to other people.

1.1.1. Definitions of childhood trauma and abuse

Arriving at a clear definition of what constitutes childhood trauma and abuse is difficult, as the concept is shaped by historical, cultural, legal, and other contextual factors (Miller-Perrin & Perrin, 2012). The protection of children's rights and identification of acts that can damage children's development are of relatively recent origin, and not universally accepted across countries and cultures. Physical punishment for instance, is considered abusive and forbidden by law in many countries, but perceived as normal and even good parenting practice in others (Gershoff & Durrant, 2020). Sexual abuse of children is more universally prohibited and condemned, but many exceptions have been documented both historically and in subgroups (Miller-Perrin & Perrin, 2012). Moreover, different terms such as "childhood abuse", "child maltreatment", "violence against children" and "childhood trauma" are used interchangeably, often without a clear definition or delineation of the terms.

The World Health Organization (WHO) offers the following definition of childhood abuse and maltreatment:

"Child abuse or maltreatment constitutes all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation,

resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power."(Krug, 2002)

This definition includes both acts of *commission* and *omission*, meaning that a child can be harmed both by active acts (e.g. violence, bullying, abuse, etc.) and by a deliberate failure to provide necessary nurturing, support, and protection for a child's development (i.e. neglect). Furthermore, the actual or potential harm of the abuse is emphasized. Although acts of abuse can occur across different contexts in children's life, childhood abuse is mostly studied as perpetrated by parents or other caregivers. Childhood abuse and maltreatment can take many forms, but is usually categorized into different subtypes (Bernstein et al., 1994; Krug, 2002; Miller-Perrin & Perrin, 2012):

- *Physical abuse* are acts that cause or have the potential to cause physical harm to the child, such as hitting, slapping, kicking, caning, choking, etc.
- *Sexual abuse* are acts where a person uses the child for sexual gratification, such as groping, fondling, oral rape, vaginal rape, anal rape, and production of sexual material.
- *Emotional abuse* refers to non-physical acts that are harmful to the child's emotional and mental well-being, such as degradation, bullying, threats, ridicule, and rejection.
- *Neglect* represents a failure to provide the necessary physical and emotional conditions to meet the child's needs for normal development, without this being caused by poverty or other circumstances outside of the caregivers' control. Neglect can be further divided into *emotional neglect* (failure to give the child a feeling of security, support, and love) and *physical neglect* (failure to provide necessary nutrition, healthcare, and safety (Bernstein et al., 1994; Dovran et al., 2013).

This perspective on harmful childhood experiences can be both widened and narrowed in scope. Childhood abuse very often occurs in the context of other detrimental circumstances that cause severe stress and hinders development, such as poverty, discrimination, parental alcohol/substance abuse, crime, etc. Much research includes all such risk-factors in wider categories such as *Adverse Childhood Experiences* (Anda et al., 2006; Felitti et al., 1998) or *Childhood adversities* (Green et al., 2010; Kessler et al., 2010; Varese et al., 2012), often investigating the independent and cumulative effects on somatic and mental health problems.

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Psychological trauma usually has a more narrow meaning, based on the definitions provided by psychiatric diagnostic frameworks. The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association., 2013, p. 5) defines a traumatic incident as "*Exposure to actual or threatened death, serious injury, or sexual violence*". This exposure can occur by either being victimized directly, witnessing the exposure of others, learning about traumatic events that have affected close family members or other loved ones, or being exposed to aversive details of traumatic incidents. The 11th revision of the International Classification of Diseases (ICD) offers a less comprehensive description of traumatic incidents as "(…) *extremely threatening or horrific event or series of events.*" By these definitions, not all events classified as childhood abuse and maltreatment qualify as traumatic exposure, as the definitions do not necessarily include acts of omission such as physical or emotional neglect.

Consequently, it will be disagreements and grey-areas regarding which acts and experiences can be regarded as *childhood trauma* or *childhood traumatization* (Saunders & Adams, 2014). There will be a consensus that horrific events such as rape, severe physical violence, torture, or acts of war are traumatic, but less agreement about more common experiences such as bullying, emotional abuse, or sudden death of a loved one.

1.1.2 Prevalence of childhood trauma

How common is it to experience such traumatizing events during childhood? This question is surprisingly difficult to answer as methodological variations and obstacles make comparisons across studies challenging.

The previously discussed variations in how childhood trauma is defined and understood also complicates the estimation of how prevalent such experiences are. Studies using a wide definition will naturally reveal larger estimates than inquires with a more narrow focus (Saunders & Adams, 2014). Differences in the populations being studied and the type of respondents also cause variation.

The most common method used is to have individuals themselves report childhood traumatic experiences through questionnaires or interviews. For example, a recent Norwegian study (Thoresen et al., 2015; Thoresen & Hjemdal, 2014) surveyed a representative of 2,435 women and 2,092 men aged between 18 and 75 years about their experiences of different types of violence and victimization through phone-interviews. Responses about childhood sexual abuse show that 10.2 % of women and 3.5% of men report being sexually abused before the age of 13, and almost 5 % of women and 1 % of men report that they were forcibly raped before they were 18 years old. About 5 % of all respondents, irrespective of gender, were exposed to

physical abuse from their caretakers in childhood. Psychological or emotional abuse was reported by 15 % of women and 11 % of men. About 10 % of the respondents had experiences of emotional neglect in childhood and about 5 % reported physical neglect. These numbers show that, despite Norway being a generally peaceful and socioeconomically rich country, experiences of childhood trauma and abuse are frighteningly common. These estimates are in the lower range compared to many international surveys though. A meta-analytic review of published studies on self-reported childhood abuse across the globe (Stoltenborgh et al., 2015) estimated even higher numbers, with 18% of women and 7% of men confirming experiences of childhood sexual abuse. Physical abuse was reported by 23 % of respondents and 36 % reported emotional abuse. Physical neglect was experienced by 16% of the combined samples and 18% reported emotional neglect. Investigations in clinical populations generally reveal even higher estimates, as the clinical problems that characterize these respondents are commonly associated with childhood traumatization (Mauritz et al., 2013; Saunders & Adams, 2014).

What these studies have in common is that they rely on individuals' retrospective reporting of their experiences. Researchers ask the respondents to recall if some events have occurred, often several years after these events might have occurred. This introduces several sources of potential bias that can lead to both overreporting and underreporting (Baldwin et al., 2019; Danese, 2020; Saunders & Adams, 2014). Some respondents can be reluctant to reveal their traumatic experiences because of shame, guilt, or avoidance. Others do not remember the abusive experiences from their childhood because of ordinary forgetting, or lack of encoding due to neuropsychological dysfunctions or young age at the time of the event (Danese, 2020). On the other hand, it has been proposed that a substantial number of respondent over-report traumatic events due to confabulations, outside influence on their memories, or the impact of what mood-state they are in at the time of answering (Baldwin et al., 2019; Hardt & Rutter, 2004).

These biases can be amended by conducting studies based on reviewing case-records from child-protection services, police- and healthcare-records, and other archival sources. Such prospective studies will often underestimate prevalence though since cases that are not recorded or revealed to authorities are not identified through these methods (Saunders & Adams, 2014; Stoltenborgh et al., 2015). Meta-analyses of such prospective studies have estimated combined prevalence rates of childhood abuse at less than 0.5 % (Stoltenborgh et al., 2015). Most researchers agree that this substantial discrepancy in estimates is mostly due to the vast number of cases that are never revealed or identified. However, recent research also indicates that

prospective and retrospective studies do not necessarily identify the same cases or research the same populations (Baldwin et al., 2019; Danese, 2020). By analyzing data from studies that combined retrospective and prospective reporting, (Baldwin et al., 2019) found very low rates of agreement between these measures. This was both due to prospective cases not being identified by later retrospective surveys, and retrospective reports of trauma without earlier reports.

1.1.3. Consequences for mental health

The exact consequences of childhood trauma and abuse are difficult to assess, due to the methodological limitations on such research from ethical concerns. To make robust causal inferences researchers would normally randomly assign participants to different conditions, something obviously impossible when studying child maltreatment. Natural longitudinal observations are rarely possible since researchers in most circumstances will have an ethical obligation to intervene if children are exposed to trauma and abuse. However, based on different lines of research, we can with a high degree of certainty infer that childhood trauma and abuse has a negative impact on mental health.

As previously noted, people diagnosed with mental disorders are generally more likely to report being exposed to traumatic and abusive experiences in their childhood than the population in general (Saunders & Adams, 2014). This is also true for mental disorders that generally are not classified as trauma-related (Varese et al., 2012). One systematic review found that almost one in two patients with severe mental disorders, such as schizophrenia-spectrum disorders and bipolar disorders, reported being exposed to physical abuse in childhood, and over a third reported sexual abuse (Mauritz et al., 2013). Additionally, respondents from the general population that retrospectively report childhood trauma and abuse are more likely to also report psychiatric difficulties. Epidemiological data from WHO, with over fifty thousand respondents from 21 countries (Kessler et al., 2010), reveal significantly increased risks across most mental disorders associated with childhood adversities such as family violence, physical abuse, sexual abuse, and neglect. Based on these data, the authors estimate that the eradication of childhood maltreatment would lead to an almost 30% reduction in psychiatric disorders. Similar associations between childhood trauma and psychiatric difficulties are found in Norwegian samples (Thoresen et al., 2015)

A limitation of these studies is that they rely on retrospective reporting of childhood trauma. However, a few studies have managed to longitudinally follow children exposed to maltreatment and assess the long-term risk of mental disorders. These studies show that children

exposed to maltreatment have a higher risk of developing psychopathology across their lifespan, further supporting a causal pathway from childhood maltreatment to poor mental health (Clark et al., 2010; Scott et al., 2010). This causality is also supported by an increased understanding of *how* childhood maltreatment may lead to poor mental health, through neurobiological effects (Teicher & Samson, 2016). A wealth of studies from the last decades have revealed that victims of childhood trauma show differences in neurobiological development. These include structural and functional changes in brain development, such as reduced hippocampal volume and increased volume and sensitivity of the amygdala. These changes have been hypothesized to be adaptive responses to a dangerous environment, similar to soldiers adapting to war, although the adaptation may lead to psychosocial difficulties later (Teicher & Samson, 2016).

1.1.4 What is "complex traumatization"?

Two further points should be made about the effects of childhood trauma and abuse on mental health, which have implications on how these difficulties are classified and treated by mental health professionals. Firstly, traumatized children are rarely exposed to only one traumatic event or one specific type of maltreatment. If a girl is sexually victimized by a caregiver, for instance, it is very likely that she is also exposed to domestic violence, emotional abuse, and unsupportive parenting. It is also more likely that she must endure other adverse experiences, such as bullying at school, parental mental illness, or socioeconomic deprivation. Furthermore, when this girl grows up she will have an increased risk of being traumatized into adulthood, for example by being raped or having an abusive relationship (Frugaard Stroem et al., 2019). Such *revictimization* or *repeated traumatization* has a profound effect on the mental health consequences of childhood trauma. Throughout the literature, researchers note a cumulative effect of traumatization, where victims of multiple types and repeated incidents of childhood trauma have an increased risk of poor mental health and psychological disorders (Kessler et al., 2010; Steine et al., 2017)

Secondly, childhood trauma and abuse are not specifically related to one type of disturbance or disorder. Rather, maltreatment seems to be related to an increased vulnerability across the spectrum of psychiatric disorders and symptoms, victims often suffering from many different psychosocial difficulties throughout the lifespan. An adult survivor of childhood trauma may experience difficulties directly related to memories of traumatic events, such as nightmares, strong emotional reactions to being reminded of the events, or avoidance of stimuli that can act as such a reminder. However, many also experience other difficulties, such as recurrent

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depressions, a profound sense of shame, difficulties in relating to others, lack of self-worth, psychosomatic complaints, substance abuse or hallucinations, and delusions.

These added complexities of both traumatic experiences and the difficulties that arise from them are often labeled as *complex psychological traumatization* or *complex trauma.* Courtois and Ford (p.13, 2009) define *Complex psychological trauma* as exposure to traumatic stressors that are (1) repetitive and prolonged, (2) involve harm or abandonment by caregivers or other ostensibly responsible adults, and (3) occur at developmentally vulnerable times in the victim's life. *Complex traumatization* is a term often used to describe the wide-ranging, long-term effects of such exposure (Herman, 1992b; van der Kolk et al., 2005)

However, there are longstanding disagreements and confusion among researchers and clinicians about how complex trauma should be defined and understood, and what experiences and difficulties should be included in this construct. Some question if indeed difficulties associated with complex trauma really are trauma-related, suggesting that other etiological factors play a more important role. Also, how clinicians best can aid the recovery of survivors is disputed. In this thesis, I will explore some elements of this broader discussion. I will first describe the diagnostic categories of *posttraumatic stress disorder* and *complex posttraumatic stress disorder*, and current knowledge about the treatment of these disorders. I then turn to the related phenomenon of *dissociation* and associated symptoms and disorders. I will describe the difficulties in defining and understanding dissociation, controversies surrounding how and if it is related to trauma, and the following disputes over treatment.

1.2   Posttraumatic Stress Disorder (PTSD)

From the moment Pierre had witnessed those terrible murders committed
by men who did not wish to commit them, it was as if the mainspring of his
life, on which everything he depended and which made everything appear
alive, had suddenly been wrenched out and everything had collapsed into a
heap of meaningless rubbish. Though he did not acknowledge it to himself,
his faith in the right ordering of the universe, in humanity, in his own soul,
and in God, had been destroyed. (...) now he felt that the universe had
crumbled before his eyes and only meaningless ruins remained, and this not
by any fault of his own. He felt it was not in his power to regain faith in the
meaning of life

(Tolstoy, «War and Peace»)

1.2.1 The diagnosis of PTSD

Our understanding of psychological trauma and its consequences has to a large degree been shaped by war. Descriptions of psychological reactions in soldiers returning from war, such as flashbacks, difficulties sleeping, and depression, can be found as early in recordings from ancient Mesopotamia 3000 years ago (Abdul-Hamid & Hughes, 2014). Knowledge about trauma and recovery for trauma-victims has been generated during periods of war, but unfortunately, these insights have largely been forgotten in more peaceful times (Weisaeth, 2014). Meanwhile, the consequences of childhood trauma and abuse received much attention in the early years of modern psychiatry and psychology, and dominating pioneers such as Pierre Janet and Sigmund Freud recognized childhood sexual abuse as a cause for neurosis. However, psychoanalytic theories at the time later turned to inner fantasies and forbidden impulses as the dominating explanation of psychopathology. This condemned the field of childhood trauma and abuse to decades of almost uniform ignorance, with almost no studies on the effects of childhood trauma being conducted (van der Kolk, 2007).

In the 1970s appeared an increased focus on the role of trauma in psychopathology. In the United States, thousands of veterans from the Vietnam War had difficulties adjusting to civilian life and increasingly appealed for treatments and support. Meanwhile, the feminist movement contributed to renewed interest in the detrimental effects of family violence, including violence

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and abuse of children. It became apparent that many of the difficulties experienced by both war veterans and survivors of interpersonal violence were very similar (Weisaeth, 2014). They all struggled with intrusive memories of traumatic experiences, nightmares and sleep difficulties, a heightened sense of being in danger even when objectively in safety, a need to avoid anything reminding them of their painful experiences, etc. These converging findings led to the formation of the new diagnosis of *Posttraumatic Stress Disorder (PTSD)* in the third edition of DSM, published in 1980, and was later also included in ICD-10 in 1992.

This development was imperative for future research and treatment of trauma-related difficulties. The PTSD – diagnosis highlighted how traumatic exposure can lead to disturbances in how a person acts, feels, functions, and interacts with the world. It also underlined the commonalities between different types of traumatic experiences, and how they cause similar difficulties for those affected. The diagnosis brought the field forward and led to massive investments in research and treatments in the decades to come (Friedman et al., 2014).

Lifetime-prevalence of PTSD varies significantly between different countries and contexts. Cross-national prevalence has been estimated at 3.9 % (Koenen et al., 2017). A study in Norway found a lifetime prevalence of 4.3% in women and 1.3% in men (Lassemo et al., 2017). As expected these rates sharply increase in contexts of disaster and war. The highest incidents of PTSD in terms of different types of traumatic exposure are found in survivors of sexual abuse and rape, where up to 50% report clinical levels of symptoms related to these experiences (Kessler et al., 2014). Unfortunately, the clinical course of the disorder is long and PTSD symptoms can persist decades after the traumatic experience (Kessler et al., 2005; Lassemo et al., 2017). The distress from the disorder is further compounded by very high comorbidity rates, meaning that most people with PTSD also suffer from symptoms of other disorders, such as depression, substance abuse, anxiety disorders, or psychosis (Kessler et al., 2005).

1.2.2 The diagnosis of Complex PTSD

Since conception, the diagnostic criteria of PTSD have been focused on three clusters of symptoms: re-experiences, avoidance, and hyperarousal (see table 1). There have been concerns though, that even if these are common in many victims of trauma, they do not capture the full range of trauma-related difficulties or even the most prevalent and debilitating disturbances for some groups. Herman (1992a) asserted that the PTSD criteria most accurately described symptoms in victims of confined and discrete traumatic experiences, such as combat, accidents, disasters, and rape. Meanwhile, as previously described, victims of prolonged and

repeated trauma, such as childhood abuse, often develop a more heterogeneous and *complex* set of disturbances, in addition to the PTSD criteria. Herman (1992b) therefore suggested the diagnostic category of *Complex PTSD (CPTSD)* characterized by pathological changes in interpersonal function, emotional regulation, identity and self-perception, and consciousness. Persons with CPTSD also often suffer from somatization (i.e. somatic complaints without a somatic or medical cause) and they often experience repeated harm and trauma. They generally also present with more numerous and diverse psychological difficulties.

Table 1. Diagnostic criteria for Posttraumatic Stress Disorder (PTSD) and Complex PTSD

DSM-5	ICD - 11	
PTSD	PTSD	Complex PTSD
A. Exposure to actual or threatened death, serious injury, or sexual violence	Exposure to an extremely threatening or horrific event or series of events	
B. Persistent re-experiencing of the traumatic event(s)	Re-experiencing the traumatic event or events in the present in the form of vivid intrusive memories, flashbacks or nightmares	
C. Avoidance of trauma-related stimuli	Avoidance of thoughts and memories of the event or events, or avoidance of activities, situations, or people reminiscent of the event(s)	
D. Negative thoughts and feelings that began or worsened after the trauma		Affective dysregulation
		Negative self-conscept
		Distrubances in relationships
E. Trauma-related arousal and reactivity that began or worsened after the trauma	Persistent perceptions of heightened current threat	
F. Symptom - duration > 1 month	Symptom- duration > several weeks	
G. Symptoms cause distress or impairment	Symptoms cause significant functional impairment	

Notes. DSM-5: Fifth edition of Diagnostic and Statistical Manual of Mental Disorders; ICD-11: 11th edition of International Classification of Diseases.

In the following decades, a fierce debate raged about the utility of this construct. Much research seemed to indicate that CPTSD should be viewed as a discrete diagnostic category, specifically related to repeated and prolonged trauma (Cloitre et al., 2012; Roth et al., 1997; van der Kolk et al., 2005). Others have argued that CPTSD is poorly defined and not separable from neither PTSD nor other types of psychopathology, such as depression or personality disorders (Resick, Bovin, et al., 2012; Resick, Wolf, et al., 2012). In both the fourth and fifth editions of DSM, the

committees chose not to include CPTSD as a separate diagnosis (Friedman et al., 2011), based on these disagreements.

In 2013 however, the committee responsible for revising the chapter on *mental disorders specifically associated with stress* in the upcoming 11th edition of ICD concluded otherwise (Maercker et al., 2013). They proposed PTSD and CPTSD as two sibling disorders, both requiring exposure to a traumatic event, but with PTSD defined by symptoms of re-experiencing, avoidance, and sense of threat, while CPTSD additionally requires symptoms of affect dysregulation, negative self-concept, and difficulties in relationships (see table 1). Although less comprehensive than the original proposal of Herman (1992a), this CPTSD diagnosis aims to capture the additional difficulties experienced by survivors of repeated and prolonged trauma, such as childhood trauma and abuse. This proposal has sparked an increase in scientific investigations in recent years. Research so far seems to indicate that these two diagnoses identify different populations of trauma – survivors, with CPTSD being marked by more repeated and prolonged traumatic experiences, as well as more functional impairment, compared to PTSD (Brewin et al., 2017).

1.2.3 Treatment of PTSD and Complex PTSD

Clinical trials and meta-analyses have established that PTSD can be effectively treated (Bisson et al., 2013; Cusack et al., 2016). Individual trauma-focused psychotherapy (TF-PT), such as trauma-focused cognitive therapy or Eye Movement Desensitization and Reprocessing have been studied the most and have shown the strongest effects compared to wait-list or other treatments. These treatments are therefore recommended as first-choice treatments by guidelines (National Institute for Health and Care Excellence, 2018). Nonetheless, according to meta-analyses a substantial number of patients still fulfill PTSD criteria after treatment, and a majority of those with good treatment effects still experience residual symptoms (Bradley et al., 2005). In one recent clinical trial for instance, 60% of participants still suffered from PTSD at follow-up (Foa et al., 2018).

Although the rationale and proposed mechanisms differ, trauma-focused treatments have in common an explicit focus on trauma-memories and require the patient to actively bring these memories into consciousness and verbally describe experiences related to these memories. As a key feature of PTSD is avoidance of trauma-related stimuli, this trauma-focus will inevitably be distressing for the patient and elicit painful emotions and sensations. Concerns have been raised that many patients, especially those with complex trauma, can struggle to tolerate TF-PT due to difficulties in regulating strong affect, raising the risk of symptom-exacerbation, drop-

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out, or destructive behavior (Cloitre et al., 2010; Herman, 1992b). Also, many clinical studies of TF-PT have excluded large groups of patients with comorbid disorders, making it difficult to generalize to more complex cases. Together with the high drop-out rates in TF-PT, often higher than in usual care, this has compounded concerns over the tolerability of these treatments (Bisson et al., 2013).

To avoid such negative effects clinicians and researchers have recommended preparatory treatment, often referred to as *stabilizing treatment*, especially recommended for patients with childhood trauma and/or CPTSD (Cloitre et al., 2011; Ford et al., 2012; Herman, 1992b; Mcfetridge et al., 2017). Instead of a direct focus on processing of trauma-memories, stabilization treatment involves psychoeducation, skills- training, and help to improve emotion-regulation and stress management. The aim is to improve the patient's daily-life functioning, ability to self-regulate, and social skills, while reducing interpersonal difficulties, self-destructive behavior, and avoidance. According to guidelines and expert opinions (Cloitre et al., 2011; Ford et al., 2012; Mcfetridge et al., 2017) on the treatment of complex trauma, stabilization is the first of three phases of treatment, followed by a *trauma-processing phase* for treatment focused on traumatic memories. Last, a *reintegration – phase* is focused on enabling the patient to reconnect socially and functionally to a normal life. To my knowledge, only one study has directly tested if phase-based treatment is beneficial compared to TF-PT. In a randomized controlled trial with 104 female participants with PTSD related to childhood abuse, Cloitre and colleagues (2010) compared a phased-based treatment, consisting of first stabilization and then trauma-focused treatment, with trauma-focused treatment preceded by supportive therapy or supportive therapy alone. They found the phased-based treatment to have favorable outcomes and less drop-out compared to the control conditions. They also found that patients who had received preparatory stabilization – treatment, experienced less PTSD symptoms during the later exposure-phase. Stabilization treatment has also been suggested as a stand-alone intervention though since many patients can recover sufficiently from this treatment (Courtois et al., 2009), and some evidence suggests that treatments focused without an explicit trauma-focus, can produce similar outcomes as TF-PT (Benish et al., 2008).

In clinics, stabilizing treatment can also be offered in a group-format, either as an adjunct to individual treatment or alone (Sloan et al., 2017). Group – treatment is thought to reduce patients' sense of isolation and offer opportunities to form new interpersonal experiences (Schwartze et al., 2019). This may be especially beneficial for patients with complex traumatization since interpersonal difficulties are so severe in this group. Stabilization groups are widely implemented in Norwegian mental – health services as a treatment for patients with

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trauma-related disorders (Michalopoulos, 2012; Stige, 2011). To our knowledge however, the efficacy of stabilizing group-treatment for PTSD has only been investigated in two randomized controlled trials. In a study with 48 women with sexual abuse histories, Zlotnick and colleagues (1997) found that patients who received stabilizing group treatment together with individual treatment had a significantly larger reduction in PTSD – symptoms compared to those who only receive individual treatment. In a larger multicenter study in the Netherlands however, with 71 patients diagnosed with CPTSD and histories of childhood abuse, adding stabilizing group treatment did not produce superior patient outcomes (Dorrepaal et al., 2012). It is therefore uncertain if stabilization – groups are beneficial for patients and should be offered by services. Also, since none of the previous studies reported follow-up data, little is known about the long-term effects of stabilizing group treatment.

1.3 Dissociation and dissociative disorders

"I am nothing. I'm like someone who's been thrown into the ocean at night, floating all alone. I reach out, but no one is there. I call out, but no one answers. I have no connection to anything." (Haruki Murakami, "1Q84")

1.3.1 Dissociation

Since the beginning of the scientific studies of psychological traumatization, researchers have noticed complaints and disturbances in survivors that are currently not described in neither PTSD nor CPTSD diagnoses. People exposed to trauma could act profoundly confused and detached, unable to communicate with others, or apparently unaware of their surroundings. Some would show signs of neurological or physical illness, such as cramps, strong pain, loss of control over legs and arms, or sudden blindness, that would suddenly disappear without explanation. And others would be unable to remember their own actions or could suddenly act as if they were somebody else completely. These phenomena have been classified under the term *dissociation*. Etymologically opposite of *association*, dissociation is defined as "a disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behavior" in DSM-5 (American Psychiatric Association, 2013). The definition and typical descriptions of dissociation, includes a broad range of symptoms and phenomena with different degree of severity, from everyday experiences, such as "*driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip*", to typical psychiatric symptoms, such as "*hearing voices inside their head that tell them to do things or comment on things that they are doing*"

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(Carlson & Putnam, 1993). The commonalities between such experiences may not be apparent from a layperson's perspective and the uniformity of dissociation as a construct has been debated (Briere et al., 2005; Holmes et al., 2005).

The influential *theory of structural dissociation* maintains that all dissociative phenomena are caused by a division of the self (Hart et al., 2006b; Nijenhuis & van der Hart, 2011). Drawing heavily on earlier works of the French psychologist Pierre Janet, they make a distinction between *positive* and *negative* dissociative symptoms, that can manifest both mentally (*psychoform*) or bodily (*somatoform*). Positive symptoms involve intrusions, such as flashbacks, voice-hearing, or dissociative cramps, while negative symptoms involve functional loss, such as amnesia, analgesia, or paralysis. According to this theory, the difference between symptoms is only phenomenological though, as they all are manifestations of a structural division of the personality into different unintegrated "*parts*". Positive symptoms are caused by the intrusion of one part into the consciousness of another part, while negative symptoms occur when functions or information are kept in one part and are unavailable to another part (Hart et al., 2006b; Nijenhuis & van der Hart, 2011). Paul Dell (2006) similarly describes several different dimensions of dissociative symptoms, but maintain that they are all caused by a single latent phenomenon: "…recurrent, jarring intrusions into executive functioning and sense of self by self-states or alter personalities".

In contrast, empirical factor-analytical investigations indicate that dissociation is a multi-faceted construct (Briere et al., 2005; Holmes et al., 2005). A common distinction is made between *Detachment* and *Compartmentalization* (Brown, 2006; Holmes et al., 2005). Detachment is characterized by an altered state of consciousness where the subject experiences a sense of separation from their body, sense of self, or their external surroundings. Clinical descriptions can be the feeling of being numb or separated from one's body, feelings of being unreal or nonexistent or feeling like in a dream or as a stranger to one's surroundings. Compartmentalization on the other hand involves an inability to deliberately control actions or processes that are normally available for such control, including failure to retrieve information. These processes continue to operate normally and the compartmentalization can be reversed, although not by an act of will alone. Examples of phenomena related to compartmentalization are dissociative amnesia and "unexplained" neurological symptoms such as psychoform seizures, sensory loss, paralysis and identity disturbances (Brown, 2006).

In light of these differing perspectives on how dissociation best is defined and understood, researchers and clinicians must be careful in specifying what specific phenomenon they are referring to when studying, assessing or treating dissociation (Brand & Frewen, 2017). There

have also been calls for transdiagnostic research on dissociation that builds on established knowledge of cognition and consciousness (Huntjens & Dorahy, 2015).

The *four-dimensional* (4-D) model of dissociation proposed by Paul Frewen and Ruth Lanius (2014; 2015) builds on knowledge from neurophenomology and first-person descriptions of conscious experience (Thompson & Zahavi, 2007; Vaitl et al., 2005), to better understand how such experiences are affected by trauma. They distinguish between trauma-related reactions that represent distress that is within normal waking consciousness (NWC) and reactions that involve labeled trauma-related altered states of consciousness (TRASC). According to the model, only the latter is considered *intrinsically dissociative* (Frewen & Lanius, 2015). What characterizes TRASCs and make them distinctive to other trauma-reactions is a non-self-referential form of processing (i.e., "this isn't me", "this is happening to somebody else"). This second- or third-person perspective on their own experiences allows the person to reduce emotional arousal and distress associated with the trauma and abuse.

The model further specifies four phenomenological dimensions of a person's awareness that trauma-reactions can occur within: (1) time, (2) thought, (3) body and (4) emotion. Experiences of NWC and TRASC will occur within these dimensions (see table 2)

Table 2. Examples of trauma-reactions within the 4-D framework (Frewen & Lanius, 2015)

Dimension	TRASC	NWC
Time	Traumatic flashbacks that involve a profound sense of reliving. "Reliving a past trauma so vividly that you see it, hear it, feel it, smell it, etc."	Upsetting and intrusive memories. "Bad memories coming into your mind that you can't get rid of."
Thought	Negative voice-hearing "Hearing a voice in your head that tells you that you are worthless."	Self-referential cognitions occurring in first-person perspective "Thinking that I am such an idiot".
Body	Disembodied experiences "Standing outside of your body, watching yourself as if you were another person."	Embodied forms of distress "Re-experiencing *body sensations* from a past traumatic event."
Emotion	Severe emotional numbing and disowned/compartmentalized emotions. "Very strong feelings (for example, fear, or anger, or emotional pain and hurt) that *suddenly go away.*	Generally negative affects Your mood changes rapidly without any reason.

TRASC = trauma-related altered states of consciousness; NWC = normal waking consciousness.

Frewen and Lanius (2015) have also proposed four testable predictions to enable empirical validation of the NWC – TRASC distinction. First, they predict that experiences of NWC should be more common than experiences of TRASC. Second, experiences of TRASC should be less intercorrelated across the four dimensions of consciousness, since these TRASCs

constitute more fragmented and compartmentalized conscious experiences. Third, the 4-D model predicts that experiences of TRASC are more frequently reported by persons who score higher on other measures of dissociation. Last, they predict that experiences of TRASC will be more specifically related to having a traumatic history, especially childhood trauma and abuse. These predictions have been investigated and largely supported in studies across different populations (Brown & Frewen, 2017; Frewen et al., 2014; Frewen & Lanius, 2014; Tzannidakis & Frewen, 2015). However, prior to this Ph.D. project, the predictions of the 4-D model had not been investigated in a sample of trauma-affected persons with dissociative disorders. Since the model aims to describe dissociation transdiagnostically across the spectrum of trauma-related disorders, it is important to investigate if the predictions are also supported if investigated in this population.

1.3.3 Dissociation in PTSD and Dissociative disorders

Clinically, dissociative symptoms are often divided into five categories (Steinberg et al., 1993). *Depersonalization* refers to a sense of being detached from oneself and one's own body. Clinical descriptions can include feeling numb, feeling separated from oneself, or feeling like an outside observer of own body or mind. *Derealization* involves feeling detached from others and the outside world, such as feeling as being in a dream or movie or being unable to recognize otherwise familiar people or places. *Amnesia* is characterized by difficulties recalling autobiographical memories, from gaps in memories of traumatic events to total memory loss for daily events. *Identity confusion* involves a profound sense of confusion or inner conflict regarding own preferences and sense of self. Finally, *identity shifts* are full or partially distinct changes of identity or personality states, often involving distinct patterns of behavior, preferences, and self-presentation (Spiegel et al., 2011; Steinberg et al., 1993).

Dissociative symptoms are most prevalent in dissociative disorders and PTSD, but are common across a wide range of psychiatric conditions (Lyssenko et al., 2018). In some disorders, for instance panic disorder or borderline personality disorder, dissociative symptoms are described in the diagnostic criteria. Patients in other diagnostic groups, such as schizophrenia or eating disorders, also show highly elevated scores on dissociative measures compared to healthy controls (Longden et al., 2020; Lyssenko et al., 2018).

Persons with PTSD and CPTSD often report a range of disruptive dissociative symptoms, but typically less severe and pervasive than those experienced in dissociative disorders (Carlson et al., 2012). Persons with PTSD can for instance experience strong distortions in sense of self and surroundings during a severe dissociative flashback, but not

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sustained identity shifts. Symptoms of depersonalization and derealization are especially common, particularly in persons with PTSD after childhood trauma and abuse (Lanius et al., 2012). In DSM – 5 a dissociative subtype of PTSD was included, characterized by these two symptoms, based on research showing differences in neurobiological activity related to emotional processing (Friedman et al., 2011; Lanius et al., 2010). Persons belonging to the dissociative subtype of PTSD typically show a pattern of *emotional overmodulation* in response to traumatic reminders, associated with distinct neurobiological activity and subjective experiences of detachment and numbing. It has been proposed that this dissociative response will disrupt the effect of trauma-focused treatments for PTSD, although the evidence for this is ambiguous (Bae et al., 2016; Halvorsen et al., 2014).

DSM – 5 (American Psychiatric Association., 2013) specifies three discrete dissociative disorders: *Dissociative Identity Disorder (DID)*, *Depersonalization/derealization disorder,* and *Dissociative amnesia*. Described as the "flagship dissociative disorder" (Spiegel et al., 2013), DID is diagnostically defined by symptoms of identity confusion/alterations and amnesia (see table 3), but DID patients typically exhibit serious symptoms across the dissociative spectrum (S. Boon & Draijer, 1993; Dorahy et al., 2014; Lyssenko et al., 2018).

Table 2. DSM -5 Diagnostic criteria for Complex Dissociative Disorders (CDD)

Dissociative Identity Disorder (DID)
A. Disruption of identity characterized by two or more distinct personality states, which may be described in some cultures as an experience of possession. The disruption in identity involves marked discontinuity in sense of self and sense of agency, accompanied by related alterations in affect, behavior, consciousness, memory, perception, cognition, and/or sensory-motor functioning.   B. Recurrent gaps in the recall of everyday events, important personal information, and/ or traumatic events that are inconsistent with ordinary forgetting.   C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning   D. The disturbance is not a normal part of a broadly accepted cultural or religious practice.   E. The symptoms are not attributable to the physiological effects of a substance or another medical condition
Other Specified Dissociative Disorders, type 1 (OSDD)
Chronic and recurrent syndromes of mixed dissociative symptoms, including: - identity disturbance associated with less-than-marked discontinuities in sense of self and agency   **OR**   - alterations of identity or episodes of possession in an individual who reports no dissociative amnesia

Notes. DSM-5: Fifth edition of Diagnostic and Statistical Manual of Mental Disorders

In addition, patients with DID almost invariably suffer from other psychiatric disorders such as PTSD/CPTSD, depression, substance abuse, personality disorders, and psychotic disorders (Boon & Draijer, 1993; Brand et al., 2009; Langeland & Jepsen, 2020; Rodewald et al., 2011). They also often struggle with self-destructive behavior and suicidality (Foote et al., 2008), all contributing to the high level of impairment and economic burden associated with this disorder (Langeland & Jepsen, 2020; Spiegel et al., 2011). The prevalence of DID in clinical populations is estimated between 0.4% and 7.5%, depending on country, methodology, and study population (Sar, 2011). DSM – 5 also includes a category of *Other Specified Dissociative Disorder* (OSDD), reserved for patients that show dissociative symptoms that cause clinically significant distress or impairment, but without meeting full criteria for the other dissociative disorders (American Psychiatric Association., 2013). The first specified example of this category is sometimes referred to as *partial DID* (Dell, 2009)*, since these patients either have less distinct identity alterations than seen in DID or exhibit less clear memory-loss than described in the DID amnesia criterion (see table 3). In the literature, DID and partial DID are often understood as variants of the same disorder, sometimes referred to as *Complex Dissociative Disorder* (CDD; Brand et al., 2009; Brand et al., 2013, 2019; Dell, 2009). Studies show that 50 - 100% of patients with CDD report experiences of childhood physical and sexual abuse (C. J. Dalenberg et al., 2012).

1.3.2 Dissociation and Trauma

Dissociative phenomena are usually understood as related to psychological traumatization, and dissociative disorders are described immediately following trauma-related disorders in the DMM-5 "to indicate the close relationship between them" (American Psychiatric Association., 2013; Spiegel et al., 2013). The exact nature of this relationship is unclear though. Studies indicate that between 88% and 97% of patients with CDD predominantly also suffer from PTSD (Foote et al., 2008; Rodewald et al., 2011), and as mentioned dissociative symptoms are common in PTSD patients, with about a third qualifying for a dissociative subtype (Lanius et al., 2010). In addition, most patients with CDD report severe traumatic exposure, a diagnostic requirement for PTSD. Several theroretical models for the relationships between trauma, PTSD and dissociation can be imagined (Dalenberg & Carlson, 2012). For instance, dissociative disorders and PTSD can be viewed as separate comorbid disorders both caused by trauma, dissociation can be seen as a mediator between trauma and PTSD, or dissociaton and PTSD can be seen as an intergated component of a broader construct of posttraumatic reactions. However,

the etiology of dissociative symptoms and disorders, and especially the causal relationship with trauma, has been heatedly debated for decades.

As previously described, several different theories and perspectives try to define and explain dissociation (Dell, 2006a; Frewen & Lanius, 2015; Holmes et al., 2005; Nijenhuis & van der Hart, 2011). Nonetheless, all these theories can be embedded in a meta-theory of dissociation and dissociative disorders, sometimes referred to as the Trauma-model (TM; Dalenberg et al., 2012). According to this model, dissociation is primarily a response to severe trauma. Dissociative responses are viewed as normal responses during and immediately after traumatic events, that may help the victim to cope with and tolerate pain and distress (C. J. Dalenberg et al., 2012; Schauer & Elbert, 2010). In severe and prolonged trauma, such as sexual and physical maltreatment, this response can become sustained and develop into pervasive symptoms and disorders. This is especially likely if the maltreatment occurs during childhood and involves elements of secrecy, shame, or betrayal by caregivers (C. J. Dalenberg et al., 2012). The TM is supported by the very high rates of childhood abuse and maltreatment reported by persons with dissociative disorders, the high comorbidity with PTSD, and the close temporal association between acute traumatization and dissociative experiences.

The competing Sociocognitive model (SCM), also referred to as the Fantasy Model (C. J. Dalenberg et al., 2012), does not deny that dissociation and dissociative disorders are associated with reports of trauma and abuse. However, SCM describes other factors as more important in the development of dissociation and casts doubts over the validity of the self-reported trauma histories(Lynn et al., 2012; Lynn et al., 2019; Merckelbach et al., 2002). According to SCM fantasy-proneness, suggestibility, and cultural expressions (such as films, books, internet fora, etc.) causes people to believe that they have dissociative parts or personalities. Persons who experience psychological symptoms and distress are vulnerable to such influences as they seek explanations for their problems. Especially influential according to SCM are suggestive therapeutic practices, where therapists present and encourage dissociation and childhood abuse as the explanation of their patients' problems. The association between trauma reports and dissociation is therefore caused by *false memories* of abuse that the patient comes to believe as true, rather than actual abuse. In this perspective, pathological dissociation and dissociative disorders are a result of *iatrogenic* therapeutic practices (Lilienfeld, 2007; Lynn et al., 2012; Paris, 2012). SCM is supported by cognitive studies questioning central tenets of the TM, research suggesting heightened suggestibility in dissociative persons, supposedly higher prevalence of DID related to media portrayals, and

difficulties in distinguishing between DID-patients and actors mimicking the condition (Giesbrecht et al., 2008; Lynn et al., 2012; Lynn et al., 2019).

It is beyond the scope of this thesis to fully describe the history and intricacies of this decades-long heated debate between TM and SCM researchers. It should be noted though that the positions have moved somewhat toward synthesis in recent years, with researchers pointing to both trauma and other psychological factors as part of the etiology of dissociative disorders (Dalenberg et al., 2020; Lynn et al., 2019). However, the disagreements still cast doubt over our understanding of dissociative disorders and especially how persons with CDD can best be treated.

1.3.3 Treatment of dissociative disorders

Despite the debate about possible iatrogenic harm from the psychological treatment of complex dissociative disorders (Lilienfeld, 2007; Lynn et al., 2012; Paris, 2012), surprisingly little is actually known about the effects of such treatment. Brand and colleagues (2009) reviewed the literature and found eight eligible studies on treatment of dissociative disorders. These showed treatment to be associated with reductions in dissociation and other symptoms, with medium to large effect sizes. However, none of the included studies described standardized treatments or use of a control group. In Norway, Jepsen and colleagues (2014) reported on the inpatient treatment of patients with sexual abuse histories, including 24 patients with CDD. They found that treatment was associated with moderate effects on PTSD symptoms and general symptomatology, but little change in dissociative symptoms. Also, CDD was associated with lower treatment effects than in patients without CDD.

The largest clinical study to date was the naturalistic "Top DD Study" (Brand et al., 2009; Brand et al., 2013; Myrick, Webermann, Loewenstein, et al., 2017) that included a sample of 280 patients with CDD. Patients were recruited through an international network of therapists working with dissociative disorders, who each recruited one patient. The treatment was followed through 30 months, with four measurement points. Treatment was associated with significant decreases in dissociation, PTSD symptoms, general psychopathology, and self-destructive behavior. Improvements in psychosocial functioning were also observed, and gains were maintained at six-year follow up (Myrick et al., 2017). In a follow-up study from the same group, the safety and effect of a web-based education program was investigated (Brand et al., 2019). The "TOP DD Network Program" consists of 45 psychoeducational videos with exercises. Similar to the previous study, 111 patients with CDD were recruited through their therapists and completed the program while in regular treatment. Again, treatment was

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associated with improvements in dissociation, PTSD symptoms, self-destructive behavior, emotion regulation, and adaptive capacities.

The results from these studies are a sharp contrast to the negative and iatrogenic effects of psychotherapy for dissociative disorders proclaimed by some scholars (Lilienfeld, 2007; Lynn et al., 2012; Paris, 2012). It should be noted, however, that there are several limitations to the current knowledge base. First, no study to date has employed a control-group or randomized allocation to different conditions. This limitation makes it difficult to ensure if the observed effects are the result of treatment or natural recovery. Participating patients in the "Top DD Study" for instance had been in treatment for an average of five years at the beginning of the study, and a substantial number were still in treatment six years later (Brand et al., 2009; Myrick et al., 2017). Some natural recovery should be expected even for severe conditions like CDD, and this confounds treatment gains. Proponents of the iatrogenic position might even argue that a lack of control group opens the possibility that treatment hampers natural recovery that might otherwise be more pronounced. Second, of the studies to date only the "TOP DD Network Program" use a protocolled intervention. It is therefore difficult to know what kind of treatment patients are receiving. Third, few studies are based on ordinary clinical practice or have clear criteria for inclusion or exclusion. Studies based on therapist recruitment for instance may be biased since it is not transparent how therapists choose what patients to recruit or not recruit. This might limit generalizability to clinical practice.

In light of this dearth of clinical research, therapists must rely on practice-based guidelines for treating patients with CDD. The International Society for the Study of Trauma and Dissociation (ISSTD, 2011) recommends a phased-based approach, similar to the recommendations for treatment of CPTSD previously described (Cloitre et al., 2011; Ford et al., 2012; Mcfetridge et al., 2017). The guideline recommends that the initial phase focuses on *stabilization* to establish personal safety, increase control over symptoms, and improve psychosocial functioning and stress-tolerance. Sufficiently stabilized patients may progress to more trauma-focused interventions, but premature trauma-processing is thought to increase the risk of symptom exacerbation and deterioration in functioning (Brand et al., 2014). The final phase of treatment addresses the rehabilitation and reintegration of personality states. According to the guideline, treatment should explicitly address dissociation, including identifying and addressing different self-states or parts of the personality, with integrated functioning being the main goal. The therapist should be "*Helping the identities to be aware of one another as legitimate parts of the self and to negotiate and resolve their conflicts*" (ISSTD, 2011). In doing so, therapist most often will communicate or interact with alternate identities

or parts of the personality, either directly or indirectly by encouraging the patient to "listen inside". By doing so, the patient is assisted in adopting a more accepting relationship between parts and a establishing a trusting therapeutic alliance with the therapist. This is an important prerequisite for subsequent working through and integrating of traumatic memories that will allow the patient to "realize that the traumatic experiences belong to the past, to understand their impact in his or her life, and to develop a more complete and coherent personal history and sense of self". The guidelines does not prescribe specific therapeutic models or interventions, nor indicate the length of treatment that is required to achive integrated functioning or remission of the disorder (ISSTD, 2011).

1.4 Summary of background

Victims of childhood trauma and abuse are at risk of experiencing muliple incidents of trauma and further traumatization throughout the life-span. They also have a heightened risk of developing a range of mental health problems. These risk-factors and following psychological problems are often called *complex traumatization* or *complex trauma*. Our scientific understanding of complex trauma is still uncertain and debated though. Many victims develop symptoms of PTSD, but researchers and clinicians disagree if this diagnosis is sufficient in capturing problems related to complex trauma, so the category of Complex PTSD has been suggested. In addidtion, victims of complex trauma often have dissociative experiences and symptoms, and for some these symptoms are disruptive enough to their concious experience and sense of self to be categorized as complex dissociative disorders. However, substantial disagreement exist about how dissociative phenomena and disorders should be understood. A proposed new theroretical framework for the understanding of dissocaiton, called the 4-D model, has received empirical support, but is still untested in patients with dissocative disorders. For treatment of complex trauma, expert guidelines recommend a phase-based approach that starts with *stabilizing treatment*. The efficacy of such treatment is uncertain though. Especially for patients with complex dissociative disorders very little is known about treatment, with no randomized controlled trials publsihed to date, and some suggesting that treatment may actually be harmful for these patients.

2. Objectives

Important questions remain unanswered about our understanding of the consequences of complex trauma and how best to treat adult survivors of childhood trauma and abuse. Dissociative phenomena are common in trauma-survivors, but the definition and theoretical understanding of dissociation are debated. Stabilization treatment is recommended by guidelines for both PTSD and CDD, but the efficacy of this treatment is uncertain, especially when delivered in a much-used group – format. For CDD in particular, treatment studies are scarce, with no randomized controlled trials conducted to date. Some scholars even suggest that treatment might be harmful to patients. The overall aim of this thesis was to address some of these knowledge gaps.

Specifically, we wanted to:

I)   Inform understanding of trauma-related dissociation by testing the predictions of the 4-D model (P. Frewen & Lanius, 2015) in a sample of patients with diagnostic presentations including PTSD and complex dissociative disorders.

II)   Investigate the efficacy of stabilizing group treatment for patients with PTSD related to childhood abuse.

III)   Investigate the efficacy of stabilizing group treatment for patients with complex dissociative disorders.

2.1. Paper I: Testing predictions of the 4-D model

So far, the predictions of the 4-D model have not been investigated in clinical samples of patients diagnosed with dissociative disorders. As a theoretical model of dissociative phenomena, it is important to establish the models' generalizability to pathological dissociative experiences and disorders. The aim of this paper was therefore to test the predictions of the 4-D model in patients with histories of childhood abuse and diagnostic presentations including PTSD and dissociative disorders. Specifically, we predicted that:

I.   Experiences of trauma-related altered states of consciousness (TRASC) would be specifically related to self-reported history of childhood abuse.

II.   Comorbid dissociative disorder would be specifically associated with higher endorsement of experiences of TRASC, not normal waking consciousness (NWC) distress

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III. Experiences of TRASC would be less frequently endorsed than distress associated with NWC in both PTSD - patients with and without a comorbid dissociative disorder.

IV. Experiences of TRASC would be less intercorrelated than experiences of NWC.

V. Experiences of TRASC would be more strongly related to other measures of dissociation than experiences of NWC.

2.2. Paper II: Investigating the efficacy of stabilizing group treatment for patients with PTSD related to childhood abuse

Stabilizing group treatment is a widely used treatment format for patients with PTSD and CPTSD related to childhood abuse. However, previous empirical investigations of the efficacy of this treatment have been inconclusive (Dorrepaal et al., 2012; Zlotnick et al., 1997). The aim of this paper was therefore to investigate the efficacy of stabilizing group – treatment, delivered adjunct with conventional individual treatment, compared to individual-treatment alone.

We specifically predicted that the combined treatment would be more effective in increasing psychosocial functioning and reducing PTSD symptoms than individual treatment alone.

2.3 Paper III: Investigating the efficacy of stabilizing group treatment for patients with complex dissociative disorders

To date, clinical studies of treatment of patients with complex dissociative disorders with randomized allocation, control condition, and protocolled treatment have been conducted. In addition, some scholars suggest that the psychological treatment of complex dissociative disorders might be harmful. In this paper, we wanted to investigate the efficacy of stabilizing group treatment based on the manual *Coping with Trauma-Related Dissociation* (Boon, Steele, & Hart, 2011). As in paper II, the treatment was delivered adjunct with conventional individual treatment and compared to individual-treatment alone. We predicted that treatment would lead to overall improvements in psychosocial functioning and a reduction in psychiatric symptoms. We also predicted that participation in group-treatment combined with individual treatment would lead to greater improvements compared to individual treatment alone.

3. Methods

3.1. Research setting

Modum Bad is a psychiatric hospital, primarily offering in-patient treatment located in a rural area outside of Oslo. Since 1998 the hospital has offered a specialized treatment-program for survivors of childhood sexual abuse, accepting referrals from all over Norway, and focusing on complex trauma and dissociation (Jepsen et al., 2014). In 2008, Modum Bad also established an outpatient clinic in Oslo for the treatment of adult survivors of childhood abuse, responding to a lack of specialized treatment options for this patient group. This clinic is the site of the current research project. To act as a supplement to ordinary mental health services, and to serve as many referred patients as possible, the clinic established a group-treatment program focusing on stabilization treatments. Referred patients had to have individual treatment or support from other services or private practices. This secures continuous treatment and enables the patients to discuss experiences and explore therapeutic themes from the group with their individual therapists. Previous research from the in-patient unit showed the importance of identifying patients with severe dissociative symptoms and addressing these problems in treatment (Jepsen et al., 2013, 2014). Two group-programs were therefore established: a program for patients with PTSD and a program for patients with dissociative disorders. These programs form the basis for the current research project.

3.2. Research Design

To address the research questions we wanted to recruit a sample of patients with histories of childhood trauma and assess their symptoms of dissociation, as well as other clinical symptoms. In addition, we needed a research design to longitudinally follow the clinical course of patients through group treatment, but at the same time employing a control group to enable robust inferences about the causal effect of the treatment.

In 2015, we designed a research project named "*Stabilizing group treatment of complex trauma: A randomized controlled trial*". The project consists of two independent randomized clinical trials, one with patients with PTSD and one with patients with dissociative disorders, but with joint recruitment and assessment of participants. Data from the assessment form the basis for article I, while the clinical trials are described in article II and III.

In each clinical trial, we employed a delayed treatment randomized design, whereby all participants are offered the experimental treatment, but at different times (figure 1). Since all participants were recruited based on being referred to the group-treatment, it would have been difficult and unethical to withhold the treatment for the control group.

Figure 1. Illustration of study-design combining a randomized trial with delayed treatment control group and multiple time series with switching replication
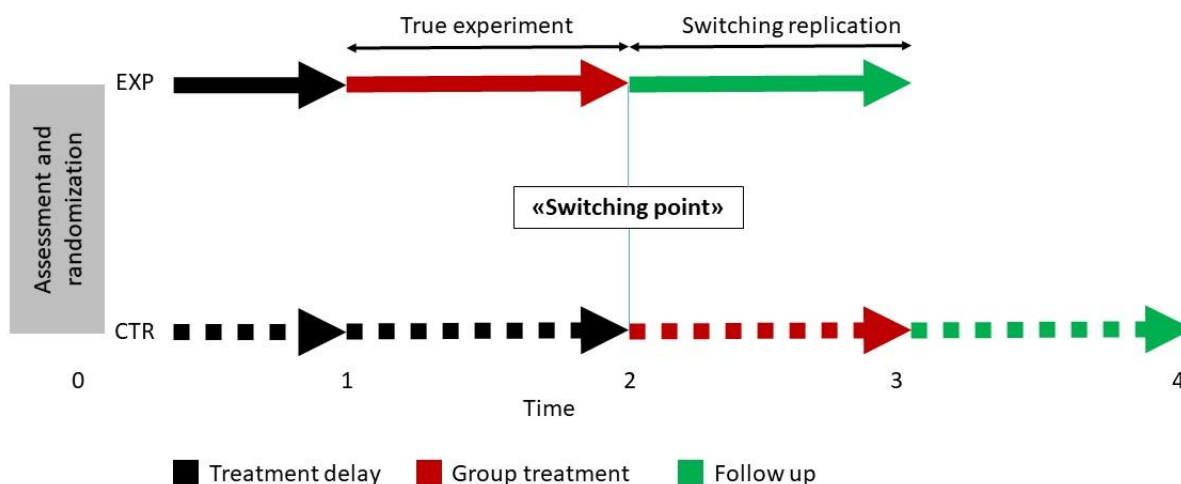
Note: EXP (Filled lines) = Experimental treatment; CTR (stapled lines) = Control treatment

Included patients were randomly assigned to either receive stabilizing group treatment immediately or after a waiting period. After their corresponding cohort had finished group-treatment, all patients in the control condition were offered group treatment (Switching point). This multimethodological design allows for a "true experiment" before the switching point, comparing patients receiving group treatment with those that are waiting (Heath et al., 1982). The period after the switching point can be viewed as a quasi-experimental "switching replication", where a corresponding effect in the control group when they received the experimental treatment would further strengthen the inference of treatment effect. The design also includes a six months follow-up period to infer long-term effects.

An independent administrative assistant was responsible for the randomization of included participants, using random sequences generated from software at www.graphpad.com. The design and group-treatment required nine participants in each group, so blocked randomization sequences of 18 slots were used. Information on randomization allocation was conveyed directly to participants and therapists and kept hidden for interviewers and researchers throughout data collection.

3.3. Participants

Patient-flow in the research project "Stabilizing group treatment of complex trauma: A randomized controlled trial" can be seen in Figure 2.

Figure 2. Patient flow in the project "Stabilizing group treatment of complex trauma: A randomized controlled trial"
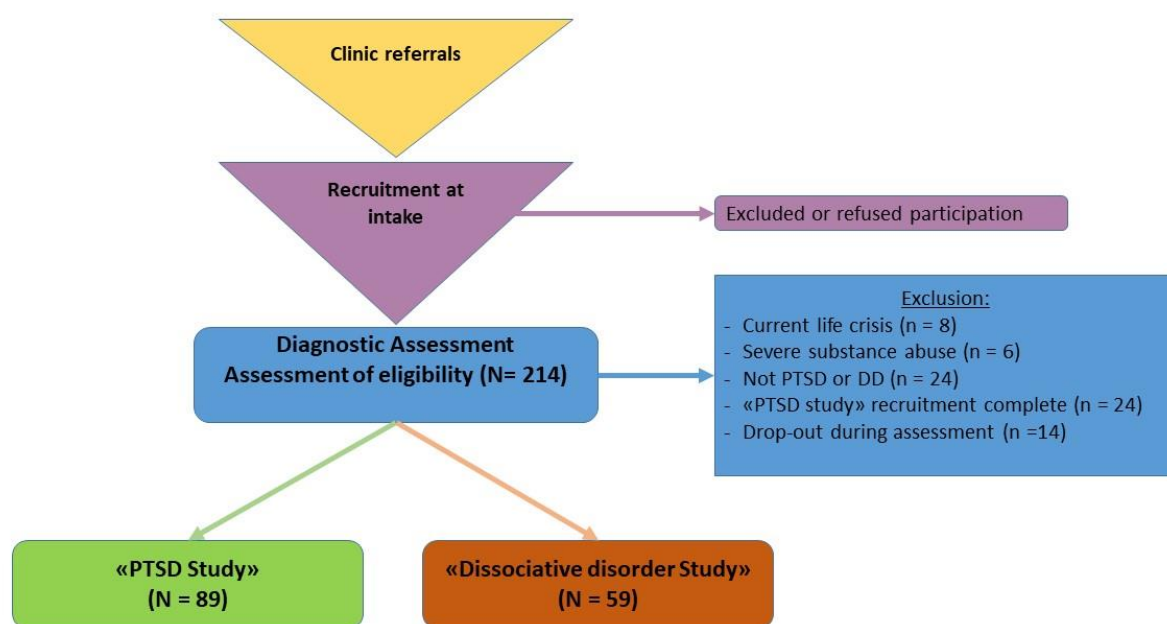
All patients referred to the clinic and eligible for group treatment were informed of the study at intake and asked to sign informed consent. A total of 214 participants were recruited and underwent diagnostic assessment. Inclusion and exclusion criteria are listed in table 4. 14 patients were excluded and 24 patients failed to meet inclusion criteria. Recruitment for the "PTSD study" was finalized earlier than the "Dissociative disorder study" and this resulted in a further 24 patients being excluded since they did not have a dissociative disorder.

Table 4. Criteria for inclusion and exclusion "Stabilizing Group Treatment for Complex Trauma": PTSD study and Dissociative Disorder Study

Inclusion	Exclusion
A history of childhood abuse	Acute Suicidality
A DSM – 5 diagnosis of PTSD*	Serious substance abuse interfering with treatment
and/or	Ongoing psychotic episode
A DSM – 5 diagnosis of Dissociative Identity Disorder or Other Specified Dissociative Disorder	Current life – crisis interfering with therapy (e.g. ongoing abuse, divorce, court case, somatic disease in spouse or children, etc.);
Sufficient language-skills in Norwegian to participate in a psychoeducational group	Neurological disease, mental disability, or life-threatening somatic disease

Notes: * PTSD diagnosis was not required to be directly related to experiences of childhood abuse as an index-trauma but could be related to other traumatic experiences.

3.3.1. Paper I

This paper was based on assessment data from the diagnostic assessment. Patients diagnosed with PTSD and/or CDD, and who had completed the measure used to operationalize the 4-D constructs, were included. The final sample consisted of 142 patients.

3.3.2. Paper II

This paper was based on treatment data of 89 patients diagnosed with PTSD and with self-reported histories of childhood abuse. The patients were randomly assigned to either immediate stabilizing group treatment (N=44) or a delayed - treatment condition (N=45).

3.3.3. Paper III

This paper was based on treatment-data of 59 patients diagnosed with complex dissociative disorders. As in paper I, these patients were randomly assigned to either immediate stabilizing group treatment (N=29) or a delayed - treatment condition (N=30).

3.4 Treatments

Stabilizing group treatment

In both substudies, the group treatments followed the same overall structure and approach, although the psychoeducation content was different. The treatment consisted of 20 weekly sessions that participants attended in addition to their regular individual therapy. Each group had nine participants and two clinicians leading the group sessions. Participants had one individual meeting with one of the clinicians before the first group-session, to be informed about the rules and regulations of the groups. In addition to rules such as not being aggressive towards others or contacting group-members outside of the group, participants were also told not to share details of their trauma-histories with other group members. In line with the stabilization-framework, this rule was important to avoid secondary-traumatization and destabilizing triggering of traumatic memories. All group-sessions consisted of two 45-minutes segments with a 10 minutes break in between segments. Each session started with a short welcome and grounding exercise. Focus then turned to giving each participant time to talk about their experience with the last session's topic and homework, with feedback from the therapists and other participants. After the break, the second segment primarily consisted of psychoeducation, with the clinicians giving a small lecture about the topic and reviewing next

week's homework. Participants were encouraged to contribute with their experiences, questions, or feedback. In each group-session, participants were also instructed in skills and exercises. Exercises were modeled and instructed by one of the therapists, and patients were given time and encouragement to practice themselves. Participants had access to written material and audio files of exercise – instructions and were tasked with practicing skills between group meetings. The group - treatment also included a meeting with the participants' individual therapist, as well as a meeting for next of kin, to inform them about the group – treatment.

PTSD study

The protocol used in the PTSD – study was developed based on experiences from pilot-groups conducted at the Trauma Clinic in Oslo. The material was inspired by previous research (Dorrepaal et al., 2010, 2012) and guidelines for stabilization treatment of PTSD (Ford et al., 2012). The protocol was published in 2008 under the name "Tilbake til Nåtid" (Eng. "Return to the present"; Modum Bad, 2014). The manual introduces topics on trauma – reactions, emotional regulation, interpersonal problems, daily-life functioning, and coping-skills (see table 3). Perspectives, skills, and exercises in the manual draw on different theoretical orientations such as cognitive-behavioral therapy, mindfulness, and short-term dynamic therapy.

Dissociative disorder study

The group treatment in the Dissociative disorder study was based on the published manual Coping with Trauma-Related Dissociation (Boon, Steele, & Hart, 2011). This manual is based on a theoretical understanding of dissociation and dissociative disorders rooted in the theory of structural dissociation (Hart et al., 2006a; Nijenhuis & van der Hart, 2011) and teaches the understanding of different dissociative parts and skills to facilitate inner cooperation between parts. Topics are in accordance with the first stabilization phase of treatment recommended by guidelines (ISSTD, 2011). Each of the 43 chapters of the full manual consists of educational pieces to foster the participants understanding of their disorder and instructions for coping-skills and homework. In order to shorten the treatment offered in the dissociative disorder study, the first author of the manual (Suzette Boon) selected topics for 20 sessions to be used as the experimental treatment (see table 5).

Table 5. Overview of topics in treatment protocols

Session	"PTSD Study"	"Dissociative disorder Study"
1	Rules, regulations, and motivation	Introduction. Rules, regulations, and motivation
2	Self-regulation: Window of tolerance	Learning to regulate yourself (1)
3	Posttraumatic stress	Understanding dissociation
4	Complex trauma	Symptoms of dissociation
5	Dissociation	Understanding dissociative parts of the personality (1)
6	Triggers	Understanding dissociative parts of the personality (2)
7	Coping with triggers	Overcoming phobia of inner experience
8	Mindfulness	Learning to reflect
9	Mind and body	Beginning to work with dissociative parts
10	Summary and review of content so far	Developing an inner sense of safety
11	Structuring daily activities	Summary and review of content so far
12	Sleep	Establishing a healthy daily structure
13	Trauma-related cognitions	Improving sleep
14	Reflective skills	Understanding traumatic memories and triggers
15	Understanding emotions	Coping with triggers (1)
16	Self-compassion	Learning to regulate yourself (2)
17	Anger management	Inner cooperation
18	Fear of relations	Planning for difficult times
19	Assertiveness and healthy boundaries	Preparing for saying goodbye
20	Evaluation and leave-taking	Evaluation and leave-taking

Individual treatment

As outlined previously, all patients recruited for the project were required to have ongoing individual treatment. The individual treatment served both as an addition to the group treatment and a control condition for patients in the waiting - period. When the participants were receiving group treatment, their individual therapists were invited to a meeting at the clinic and informed about the rationale and content of the treatment. Patients were encouraged to discuss their reactions and experiences from the group with their individual therapists. Apart from this, individual treatment was not protocolled or controlled but delivered as seen fit by the therapists and clinics. All participants and their individual therapists were asked to independently submit data on the frequency and content of the individual therapy, as well as their experience of the therapeutic alliance between therapist and patient. Details about the therapists and the individual therapy are reported in paper I and paper II.

3.5 Measures

3.5.1 Assessment and diagnostic instruments

<u>*Interview based*</u>

Childhood Trauma Questionnaire – Short form (CTQ-SF; Bernstein et al., 2003)
CTQ-SF was used in this project to assess the participants' experiences of childhood abuse. The measure is extensively used to allow respondents to retrospectively report experiences of childhood abuse and. The 28 items ask about five types of abuse and neglect: Emotional neglect, physical neglect, emotional abuse, sexual abuse, and physical abuse. Each of these subtypes are assessed with five items, both asking about specific behaviors (e.g. "I was punished with a belt, a board, a cord, or some other hard object") and more general descriptions (e.g. "When I was growing up, someone molested me"). Each item is rated to reflect the frequency of exposure from 0 ("never true") to 5 ("very often true"). A total – score can be calculated by summing all items scores and subscale – scores can be obtained by summing scores for the specific items. In addition, established cut-offs can be used to make a binary judgment on the presence of a maltreatment – type. In order to fulfill inclusion criteria in the present study participant had to confirm one or more subtypes of abuse or neglect. The Norwegian translation of CTQ-SF has previously been shown to have acceptable psychometric properties (Dovran et al., 2013). Participants could choose between submitting CTQ-SF answers as self-report or being asked the questions in an interview with a trained clinician.

The Post-traumatic Symptom Scale – Interview (PSS-I; Foa et al., 1993)
To assess PTSD the semi-structured interview PSS-I was used. This diagnostic instrument first asks the respondent to identify and describe an index - trauma and the interviewer must assess if the incident meets Criterion A as a traumatic experience. The interview then consists of 17 items that assess PTSD - symptoms according to DSM-IV criteria, Items are scored on a 4-point scale ranging from 0 (Not at all) to 3 (5 or more times a week / severe), reflecting frequency and severity of the symptom. The sum of all scores reflects the total severity of PTSD – symptoms, while scores of 1 or above on an item will be counted towards fulfillment of diagnostic criteria (Hembree et al., 2002). PSS-I has shown good interrater reliability and convergent validity with other measures of PTSD (Foa & Tolin, 2000). At the start of inclusion for the trial, no validated instrument for DSM-5 PTSD criteria existed. Assessors were therefore instructed to fill out a checklist of DSM-5 PTSD criteria (American Psychiatric Association., 2013), based on information obtained in the PSS-I interview.

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Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D; Steinberg et al., 1993)

To diagnose the presence of complex dissociative disorders we used SCID – D. This semi-structured interview assesses dissociative symptoms of amnesia, depersonalization, derealization, identity confusion, and identity alteration. Each domain is rated for severity. A checklist was used to further diagnose Dissociative Identity Disorder (DID; F44.81) or Other Specified Dissociative Disorder, type 1 (OSDD; F44.89), according to DSM-5 criteria (American Psychiatric Association, 2013)

Mini-International Neuropsychiatric Interview (MINI; Sheehan et al., 1998)

This widely used measure was administered to assess general psychopathology. MINI allows the interviewer to diagnose common psychiatric disorders according to DSM-IV or ICD-10. The sixth version used consists of 16 modules covering mood-disorders, anxiety-disorders, psychosis, eating disorders, and substance abuse. The modules for PTSD and antisocial personality disorder were not completed since these disorders were covered by other measures. The Norwegian translation of MINI has shown satisfactory psychometric properties (Mordal et al., 2010)

Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First et al., 1997)

SCID – II was conducted to assess personality disorders. This interview is used to diagnose 10 different axis – II disorders. SCID – II has previously been shown to have satisfactory psychometric properties and interrater reliability (First et al., 1995).

Self-report

The Multidimensional Inventory of Dissociation (MID; Dell, 2006b)

MID is a very comprehensive self-report measure that assesses subjective phenomena and symptoms across 14 different facets of dissociation. It consists of 218 items describing experiences and the respondent is asked to indicate how often this occurs to them on an 11-point Likert scale from 0 ("never") to 10 ("always"). 168 of the items measure different dimensions of dissociation, while 50 items measure validity. MID was translated to Norwegian for the current project. It was used both to assist the diagnostic evaluation of dissociative disorders and to operationalize the constructs investigated in paper I.

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The International Trauma Questionnaire (ITQ; Karatzias et al., 2016)

At the start of the project, no published and validated measure existed for the ICD-11 CPTSD diagnosis. After reaching out to the ICD-11 Working Group for trauma-related disorders, we obtained and translated a preliminary version of a self–report measure to assess PTSD and CPTSD. Later published as ITQ, this measure consists of 6 items measuring PTSD and 6 items measuring the additional symptoms defined in the CPTSD diagnosis, termed *disturbances in self-organization*. The respondent is asked to indicate to what degree a symptom has been bothering him or her in the last month, on a scale from 0 ("not at all" to 4 ("extremely"). Based on data from this and other projects, the Norwegian translation of ITQ has been validated and shown to have good psychometric properties (Sele et al., 2020).

In addition to the before-mentioned measures for assessment and diagnostic information, data relating to participants' background, family, education, treatment history, and work - status were collected with a generic form

3.5.2 Outcome measures

<u>Interview based</u>

Global Assessment of Functioning – Split version (GAF-S; Karterud et al., 1998)

GAF-S is an interview-based measure used to assess psychosocial functioning and was used as the main outcome measure in paper I and paper II. This outcome was chosen since a major goal of stabilizing treatment is to improve psychosocial functioning by strengthening the patient's ability to maintain personal safety, controlling symptoms, tolerating stress, and regulate emotions (Ford et al., 2012; ISSTD, 2011). GAF – S consists of two subscales: one that assesses global psychosocial functioning and one assessing the severity of symptoms. The interview asks about different areas of functioning and psychiatric symptoms, and each subscale is scored between 1 and 100, representing low to high functioning last 7 days.

Raters blind to randomization conducted the interviews in this project. Raters were trained using a web-based feedback training program for GAF-S scoring, shown to improve reliability and validity (Støre-Valen et al., 2015). After each interview, each subscale was scored. A second blind rater then gave an independent score, based on conveyed information from the interview by the first rater. The mean score of both raters then determined the final score. This procedure was developed based on generalizability studies showing that the use of two independent raters is most efficient to optimize reliability and precision (Pedersen et al., 2007). GAF interviews in both substudies were conducted before treatment (T1), after treatment

(T2), and at follow-up (T3 and T4). Because of resource restraints, we decided not to conduct interviews at assessment (T0).

Self – report

All self-report outcome measures were collected via a secure web-based platform (www.checkware.no) in ordinary use at Modum Bad. Participants were provided with instructions and an access code. They could choose to submit their response with tablets at the clinic or in private with their personal devices. Regular reminders were sent to participants if they had not that had not completed the measures. All self–report outcome measures were collected at assessment (t0), before treatment (T1), after treatment (T2), and at follow-up (T3 and T4).

PTSD Symptom Scale - Self-Report (PSS-SR; Foa et al., 1993)
PSS-SR is a self-report version of the previously described PSS-I and was used to measure symptoms of PTSD. It consists of 17 self-report items, measuring the three DSM-IV symptom dimensions of re-experiences, avoidance, and hyperarousal. Each item is scored on a Likert scale from 0 (not at all or only one time) to 3 (almost always or five or more times a week), based on frequency and severity of the symptom. PSS-SR has shown satisfactory psychometric properties (Coffey et al., 2006).

Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986; Carlson & Putnam, 1993)
DES is the by far most commonly used self-report measure for dissociative experiences. It is based on a dimensional theoretical understanding of dissociation and measure both pathological and non-pathological phenomena. It consists of 28-items rated on an 11-point Likert scale, asking respondents to indicate the percentage of their time an experience affected them. In a meta-analysis of 85 studies, DES showed excellent internal consistency and predictive validity in differentiating between dissociative and non-dissociative respondents (Van Ijzendoorn & Schuengel, 1996). These results were largely replicated in a more recent analysis of 216 studies (Lyssenko et al., 2018).

Symptom Checklist 90 Revised (SCL-90-R; Derogatis & Unger, 2010)
SCL-90-R is a self-report measure of 90 items designed to measure psychological symptoms and distress. It consists of nine symptom dimensions: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation,

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and Psychoticism. A global score obtained by summarizing symptom scores is referred to as the Global Severity Index. This index was used in this project as a measure of general psychological distress. The Norwegian version of SCL-90-R has satisfactory psychometric properties and is a valid measure of overall mental distress, as well as change over time (Siqveland et al., 2016)

Inventory of Interpersonal Problems (IIP; Horowitz et al., 2000; Horowitz et al., 1988)

IIP is a self-report measure designed to assess relational difficulties with 64 items. The items consist of descriptions of interpersonal experiences, starting with either «It is hard for me to ….» or "Things that you do too much". The respondents are asked to indicate to what degree these statements apply to them on a 5 point Likert scale, ranging from 0 (not at all) to 4 (extremely). A total score obtained by calculating the mean score across all items was used as a general measure of interpersonal difficulties in this project. The Norwegian translation of IIP has been shown to have acceptable reliability and convergent validity (Monsen et al., 2006)

Behavioral checklist (Brand et al., 2009; Brand et al., 2012)

This checklist has previously been used in treatment studies of dissociative disorders and was translated to Norwegian for inclusion in this project. The measure consists of items describing self-injurious behavior (suicide attempts, self-mutilation, behaviors that were dangerous enough to result in death, alcohol and drug abuse, and impulsive behaviors) and adaptive behaviors (volunteer work, school attendance or work, using techniques to cope with symptoms, socializing, and experiences of positive feelings). The respondents are asked to indicate the frequency of these behaviors in the last 30 days

3.5.3 Other measures

Treatment adherence

Based on the treatment-manuals, checklists were constructed covering the topics and procedures for each group session. These checklists were completed by both group therapists after each session and screened for protocol violations.

Registration of individual treatment

As previously described, participants and their therapists were asked to independently submit data about the individual therapy at each time point. A generic form was constructed for this purpose, asking about the frequency and content of the individual therapy, background of

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therapists, and changes in therapeutic contact. Both therapists and patients also completed the *Working Alliance Inventory* (Hatcher & Gillaspy, 2006) consisting of 12 items measuring the degree of bond, and agreement on goals and tasks between therapist and patient.

3.6 Statistical methods

All statistical analyses were performed using SPSS version 25 and 26.

3.6.1. Correlation / Regression / General Linear Model

To investigate the hypotheses in article I, testing the predictions outlined in the 4D-model, correlational and regression analyses were used. The procedures followed from the methodology used in previous investigations of the model (Brown & Frewen, 2017; Frewen et al., 2014; Frewen & Lanius, 2014). Correlations were calculated for the relationships between the different 4D constructs, as well as between these constructs and childhood trauma. Logistic and hierarchical regression analyses were performed to investigate if the 4D constructs related to dissociation measures and diagnostic categories as predicted by the model. Similarly, within-subject analysis of variance (ANOVA) was used to investigate differences in endorsement of the construct. For further posthoc comparisons Bonferroni - corrected levels of significance were used, to reduce the chance of type I errors due to multiple testing.

To investigate similarities and differences between the two patient groups with and without comorbid CDD in paper I, t-tests were used for continuous variables and chi-squared tests for dichotomous variables. Non-parametric t-tests were used for continuous variables that were not normally distributed. The same statistical procedures were used in paper I and II to investigate confounding threats to the validity of the experimental design, such as significant group differences between the treatment conditions or baseline differences between dropouts and completers.

3.6.2. Linear Mixed Models (LMM)

To investigate differences in treatment trajectories between subjects in paper II and paper III LMMs were used. This statistical approach is ideal for analyzing longitudinal data where repeated measurements are nested within statistical units, such as patients measured repeatedly throughout a clinical trial (Fitzmaurice et al., 2012). The *mixed* term relates to the models' inclusion of both fixed and random parameters (Curran & Bauer, 2011). In building the models with outcome-measures as dependent variables, we started with a fixed intercept, no random effects, and a linear time-function. We then added random effects and alternative covariance

structures if these improved model – fit. Model fit was assessed using the Akaike Information Criteria (AIC). Robust maximum likelihood (ML) was used for the estimation of parameters. We also tested alternatives to a linear time-function. As described previously, the research design is based on alternating group - treatment in the experimental condition and the delayed-treatment control condition. If the group – treatment is effective that would predict that patients would improve psychosocial functioning and reduce symptoms more in the periods they were receiving group treatment. To test this, we needed to include a non-linear time-function with a spline-model (Fitzmaurice et al., 2012). In this model, the time-function is split into different time-variables called *splines*, connected with a *knot.* To model the design we therefore used two splines with the knot at the switching point (T2). This allowed us to investigate if participants in the two conditions had different treatment trajectories before and after this time-point. In paper III we also included an interrupted timeline model, by recoding the timeline so that we could directly compare the intercepts of the conditions at different time-points. This was done to test if the intercept after the follow-up period in the experimental condition, was different from the intercept of the control condition after the delayed-treatment period.

3.6.3 Power considerations

A recurrent problem in clinical research is that many studies lack sufficient statistical power due to small sample sizes. This was a serious threat to the current project, since the naturalistic clinical setting limits resources for increasing recruitment and treatment. Also, the prevalence of complex dissociative disorders is lower than for many other psychiatric conditions, so recruitment of large samples for clinical trials has been a major obstacle to clinical research in this area (Brand et al., 2009). A lack of statistical power will impair the study's ability to detect a significant effect and thereby increase the chance of type II error.

For the "PTSD study", we performed a priori power calculation to assess the sample sizes that were required to detect an effect of group treatment compared to the control condition. To estimate the expected effect size, we relied on the study by Zlotnick and colleagues (1997) who found effect sizes ranging from .80 to 1.10, as well as a more conservative estimate of .45. Based on an analysis of covariance, using the pretreatment score as the covariate, we further assumed a pre-treatment to post-treatment correlation of r = .70 based on typical values found in psychotherapy research. This showed that a sample of 31 participants in each condition (total N = 62) would be sufficient to detect the conservative effect size, with an achieved power of .80 and a significance level of .05. Based on this calculation we therefore aimed to recruit 90 participants to account for attrition. Since the optimal group size for the stabilization groups is

thought to be nine participants, recruiting 45 participants in each treatment arm means having enough participants for five groups. As previously described, the planned number of participants was reached in the "PTSD – study".

In the "Dissociative Disorders – Study" the lack of previous clinical studies made it more difficult to obtain the estimates needed to perform a power analysis. We therefore decided to rely on the same estimates as the "PTSD – study". However, with 59 participants this sub-study was underpowered under the assumptions of the a priori power – calculation, reflecting the previously described difficulties in recruiting large samples of patients with complex dissociative disorders.

3.6.4. Missing data

We experienced substantial missing data, especially for the follow-up data on self-reported measures. Different analytical strategies were employed to accommodate this. In paper I, we used ordinary listwise deletion. In paper II and III, missing values were primarily handled by maximum likelihood estimations as part of the LMM procedure, under the assumptions of missing at random (Donders et al., 2006). To obtain unbiased estimates of means, standard deviations, and effect sizes we also employed multiple imputations. Multiple datasets for outcome measures were generated in SPSS, with pre-treatment scores as predictors and baseline characteristics as predictors. We then used pooled estimates of means and standard errors to calculate standard deviations and effect sizes.

3.7 Ethical considerations

At the core of this project are patients referred to treatment related to their psychological difficulties and traumatic experiences. The sensitivities and potential vulnerabilities involved have therefore made ethical considerations central to every aspect of the study. All procedures of the project were in compliance with the ethical standards of the Norwegian legislation for human research and with the Helsinki Declaration of 1975, as revised in 2008. As previously described, the research design was partially chosen to lessen the burden on the participants. With a delayed-treatment control, all participants received the treatment they were referred for. Although patients in the control condition had to wait until their corresponding group was finished, the mean waiting – time for participants in the research project did not increase as compared to regular clinical work in the clinic. Besides, most of the procedures, assessment instruments, and measures used in the study were already in use at the clinic as part of regular clinical monitoring and quality control, and thus did not significantly increase patient burden.

All research subjects gave their informed and signed consent to participate in the study. They were informed that their decision on participation would not influence the treatment they received at the clinic and that they could withdraw their consent at any time. Every precaution was taken to make the procedures as little invasive and burdensome as possible, and individual adjustments were made if participants reported discomfort. The project was approved by the Norwegian Regional Committees for Medical and Health Research Ethics (2013/2350) and implemented in accordance with this approval. The trial was also preregistered at Clinical Trials (NCT02450617).

4. Results

4.1. Summary of Paper I

Trauma Related Altered States of Consciousness (TRASC) in PTSD patients with or without comorbid Dissociative Disorders

The aim of this paper was to investigate the validity of the 4-D model of dissociation, by testing the theory's prediction in patients with histories of childhood abuse and diagnostic presentations of PTSD and CDD. The constructs of the model were operationalized using items from MID (Dell, 2006b) and the predictions were tested in a sample of 142 patients with PTSD, with (N=46) and without (N=96) comorbid dissociative disorders. The results were generally supportive of the predictions of the 4-D model of dissociation. Experiences of TRASC were less frequent and more specifically related to other measures of dissociation, dissociative disorder comorbidity, and a history of childhood sexual abuse as compared to experiences of NWC. Only the predicted lower intercorrelation of TRASC was not supported. The 4-D model therefore seems promising as a framework for understanding dissociation across trauma-related disorders.

4.2. Summary of Paper II

Stabilizing group treatment for childhood-abuse related PTSD: a randomized controlled trial

The aim of this paper was to investigate the efficacy of stabilizing group – treatment for patients with PTSD and histories of childhood abuse. In a delayed treatment design, a sample of 89 patients was randomly assigned to either 20-sessions of stabilizing group treatment or a corresponding waiting-period, both adjunct with conventional individual therapy. Main outcome measures were psychosocial functioning, measured with interview – assessed Global Assessment of Functioning (GAF), and self-reported PTSD symptoms. These were measured before treatment, after treatment, and at 6 months follow up. We found that treatment in both conditions was associated with large within-group effect-sizes for psychosocial functioning and moderate effect sizes for PTSD symptoms. However, contrary to our predictions, we did not find significant differences in treatment-trajectories between conditions, indicating that group-treatment was not more effective than individual treatment alone. Together with previous investigations of this treatment format, this indicates that stabilizing group treatment should not be recommended as first-line treatment for patients with PTSD related to childhood abuse.

4.3. Summary of Paper III

Group treatment for Complex Dissociative Disorders: A randomized controlled trial

The aim of this paper was to investigate the efficacy of stabilizing group treatment based on the manual *Coping with Trauma-Related Dissociation* (Boon, Steele, & Hart, 2011). In a similar delayed treatment design as in paper II, 59 patients with Dissociative Identity Disorder (DID) or Other Specified Dissociative Disorders (OSDD) were randomized to 20 sessions of stabilizing group – treatment, conjoint with individual therapy, or individual therapy alone. The primary outcome was Global Assessment of Functioning (GAF), while secondary outcomes were PTSD and dissociative symptoms, general psychopathology, interpersonal difficulties, and self-destructive behavior. Treatment was associated with overall improvements in psychosocial functioning, with large to medium within-group effect-sizes, but small to insignificant effects on other outcomes. These results partly confirmed our first prediction of overall positive effects of treatment. Our second prediction was not supported, as participation in group-treatment did not lead to greater improvements compared to the control condition. However, we observed that the effects of group treatment were more profound in the six months follow-up period, indicating possible positive long-term effects of the study treatment.

5. Discussion

5.1. Interpretation of the findings

A better understanding and definition of dissociative phenomena is important for both psychological research and the development of clinical interventions. The study of the 4-D model is the first investigation in a sample of patients with dissociative disorders. The results show general support for the predictions outlined by the authors (Frewen & Lanius, 2015), indicating the validity of the model in conceptualizing dissociation across trauma-related disorders. Previous studies have demonstrated the model's validity in participants recruited online or among students online (Brown & Frewen, 2017; Frewen & Lanius, 2014; Tzannidakis & Frewen, 2015), as well as clinical samples of acutely traumatized persons (Frewen et al., 2015), patients with personality disorders (Frewen et al., 2014) and patients with PTSD (Frewen & Lanius, 2014). Our replication in a sample of patients with severe childhood abuse, PTSD, and dissociative disorders is naturally important to validate the models' ability to describe experiences among persons most severely afflicted by dissociative pathology.

The main distinction drawn by the 4-D model is between reactions that are inherently dissociative (TRASC) and those that may remain part of normal waking consciousness (NWC). This distinction was supported in our results, since experiences of TRASC were less endorsed, more highly correlated with other measures of dissociation, and more distinctive to CDD comorbidity, than experiences of NWC. Similar delineations or distinctions of dissociative phenomena have been drawn previously. As described in the background, Nijenhuis & van der Hart (2011) for instance differentiate between *structural dissociation of the personality*, involving a lack of integration of the personality manifested in distinct parts of the personality, and other alterations of consciousness that don't belong to the dissociative realm. Another distinction is drawn between phenomena of detachment and compartmentalization (Holmes et al., 2005). The most used measure of dissociation, Dissociative Experiences Scale (DES), conceptualizes dissociation as a continuum, but a dissociative taxon of only eight of the 25 items (DES-T; Waller et al., 1996) supposedly better identify persons with more severe dissociative pathology.

Although the TRASC vs. NWC distinction somewhat overlaps previous theories, the 4-D model offers some new and important insights and benefits. First, the 4-D model expands previous theories by further describing how trauma-related experiences present in different dimensions of consciousness. This allows for a more fine-grained categorization of dissociative experiences and relates these to similar altered states of consciousness that are not trauma-related. For example, altered states of consciousness similar to dissociative experiences may

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occur as a consequence of drug use, sleep, hypnosis or epilepsy (Vaitl et al., 2005). Comparing and differentiating such experiences within the same framework can bee clinically important. Second, Frewen & Lanius (2015) have developed predictions that are empirically testable and have enabled numerous studies in different populations. It should be noted though, that research to date have not directly contrasted the predictions of the 4-D model with predictions of other theories of dissociation. Third, the 4-D model is theoretically stringent in that it points to non-self-referencing processing as an underlying process of experiences of TRASC. In other words, pathological dissociation is primarily a result of the person's ability and need to remove themselves from their experiences (i.e. "that didn't happen to me", "this isn't my body" or "the voice in my head don't belong to me"). This can be especially important for the understanding of CDD. Previous delineations risks being circular when describing these disorders since the core features of CDD is included in the formulation of pathological dissociation. The descriptions of structural dissociation (Nijenhuis & van der Hart, 2011), compartmentalization (Holmes et al., 2005), and dissociative taxon (Waller et al., 1996) all include diagnostic features of CDD such as amnesia and identity alterations, while experiences of TRASC does not include these symptoms. Nonetheless, our results show that experiences of TRASC differentiate between PTSD-patients with and without comorbid CDD, while avoiding this circularity in the definition of constructs.

In addition to differences in experiences of TRASC, the results from paper I show that patients with CDD are different from other PTSD-patients in levels of general symptomatology and other dissociative pathology. They also more often report a history of inpatient treatment, psychotic disorders, and more criteria associated with suicidality. These differences may point to the different treatment needs of these two samples.

The treatments investigated in paper II and paper III are based on different treatment-manuals and psychoeducational material, in an effort to adapt to these dissimilar needs of patients with PTSD and CDD. However, the structure and length of the treatments are similar. Also, the rationale for the two treatments and the practice guidelines they are based on (Cloitre et al., 2012; ISSTD, 2011; Mcfetridge et al., 2017) are closely related as both build on the phase-based model for treatment of trauma-related disorders (Herman, 1992b). We show that neither for patients with PTSD related to childhood abuse nor for patients with CDD, stabilizing group treatment produces superior results compared to individual treatment alone. The treatments are associated with significant improvements in psychosocial functioning, but less pronounced changes in self-reported symptoms.

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There are several possible interpretations of these findings. First of all, the results are in line with the broad critique of stabilization - treatment and the phase-based model in recent years (De Jongh et al., 2016). As previously described, the rationale for offering a preparatory stabilization-phase of treatment is concerns over the tolerability of trauma-focused treatment, especially for patients with histories of complex trauma, CPTSD, dissociative symptoms or disorders (Brand et al., 2019; Cloitre et al., 2010, 2012; Herman, 1992b; ISSTD, 2011). This rationale has been challenged by several empirical investigations of TF-PT, showing that variables thought to be associated with an inability to tolerate a trauma - focus, actually does not moderate outcome, attrition, or frequency of adverse events (van den Berg et al., 2016; van Minnen et al., 2012; Voorendonk et al., 2020; Wagenmans et al., 2018; Zoet et al., 2018). A series of studies of intensive trauma-focused treatment for instance have shown that PTSD - patients with histories of childhood sexual abuse (Wagenmans et al., 2018), dissociative symptoms (Zoet et al., 2018), or CPTSD (Voorendonk et al., 2020) have similar effects of treatment as patients without these characteristics. The effect-sizes obtained in these studies are much larger than those typically obtained in studies of stabilizing treatment, although it should be noted that a control group was not included. But a study of treatment in patients with PTSD and psychosis, another group previously thought to not tolerate TF-PT, not only showed that TF-PT produced superior outcomes, but also that the risks of symptom exacerbation and adverse events were lower compared to treatment as usual (van den Berg et al., 2016). Results such as these led to the abandonment of the phase-based model in the recently published guidelines for the treatment of PTSD and CPTSD by the International Society for Traumatic Stress Studies (Bisson et al., 2019). As previously described, very few clinical studies have been conducted of treatment for patients with CDD, but the phase-based model has also been challenged as it applies to these patients (Huntjens et al., 2019).

Other possible interpretations of our findings are that stabilizing treatment is less effective in a group setting or our specific study-population. Although widely disseminated, meta-analytic reviews seem to indicate that individual - treatment is less effective for the treatment of PTSD than group – treatment (Bisson et al., 2013; Sloan et al., 2013). The limited number of studies prevents us from investigating if this conclusion holds true for stabilizing treatment as well, but studies of individual non-trauma focused treatment for PTSD (Marylene Cloitre et al., 2010; Frost et al., 2014) generally report larger effect-sizes than found in studies of group treatment (Dorrepaal et al., 2012; Zlotnick et al., 1997). Additionally, stabilizing group treatment has only been studied in settings where patients also attend individual therapy. The rationale for this conjoint individual therapy is to ensure that patients have support to handle

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reactions and experiences from the group, as well as other life-events. Although surprisingly few comparative studies have been conducted with this treatment format, some research indicates that conjoint treatment may be less effective than individual or group treatment alone (Burlingame et al., 2016). The different treatments may lead to less engagement and cohesion, especially if the individual therapy and group therapy are not fully integrated and aligned. In our study, the two treatments were delivered by different therapists in different clinics, and could therefore have magnified this effect.

The characteristics of our specific study population might also have influenced our results. The trauma clinic where participants were recruited and groups delivered is used as a specialized service, so patients are primarily referred from other mental health clinics and practitioners. Many patients are referred because of a lack of progress in other treatments or since other clinicians deem their own service as insufficient to meet the patient's problems. The PTSD patients in paper II reported an average of 16 years since their first contact with mental health services, while the same average for the CDD patients in paper III was 15 years. Although this does not mean that they had been in treatment for all those years, it may speak to the chronicity of the sample and explain the small treatment gains. In other words, the generalizability of our findings may be limited by the research setting, and researchers in other contexts may have other results. A study in South-East Asia for instance reported very large within-person effect-sizes and remission rates from stabilization-treatment, for clients with PTSD and no previous treatment-histories (Eichfeld et al., 2019).

It should be noted though that the limited research to date about the treatment of CDD indicates that large treatment gains are difficult to achieve, and years of treatment are often necessary. This probably reflects the severity and complexity of mental health problems that are characteristic of most patients with CDD (Spiegel et al., 2011). The results of our study are in line with the effect-sizes observed in previous studies (Brand, 2012). Results from a previous naturalistic study (Brand et al., 2009) may put these gains into context since they reported GAF scores of patients in different phases of treatment as defined by ISSTD guidelines. Patients in the first stabilization-phase of treatment had mean GAF scores of 44.7, while patients entering the second phase of treatment had a mean of 48.7. In comparison, mean pre-treatment scores on GAF in our study were 41.3 while mean post scores were 47.5. An interpretation can be that CDD patients in our sample had poorer initial psychosocial functioning than an average of other patients in the early phase of treatment, but was brought significantly towards the next phase of treatment. This was achieved quicker than in the naturalistic study, where patients in the second phase had been in treatment for a mean of 4.1 years (Brand et al., 2009).

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More importantly, paper III is to our knowledge the first study with a randomized-controlled design to show that treatment of CDD is associated with improvements, not further deterioration as proposed by the iatrogenic hypothesis. According to its proponents, treatment of dissociation that learn clients about dissociative parts will act as suggestive influences and reinforce their incorrect beliefs, although to our knowledge no empirical confirmation of these fears has been presented (Brand et al., 2014). In the treatment - manual *Coping with Trauma-Related Dissociation* (Boon, Steele, & Hart, 2011), patients are taught to understand, identify and cooperate with inner parts of the personality, but acquiring this knowledge seems to be associated with later improvements in psychosocial function.

Despite our expectations of immediate differences in outcome betweeen group-treatment and control, it is understandable that positive outcomes were more apparent in the follow-up period. An essential part of the treatment is for the patient to learn new skills to cope with dissociation, and fascilitate a better understanding for working with dissociative parts of the personality alone and together with the therapist (Boon et al., 2011). Furthermore, the manual consist of 43 chapters, but this was abbreviated to a 20-session protocol for this study. Many patients may require a longer time to fully comprehend the psychoeducational material and learn the necessary skills to regulate symptoms. These processes can therefore take some time to have an impact on symptoms and functioning. This delayed treatment-response was more pronounced in paper III than in paper II, where progress was more linear. This might be explained by the higher levels of TRASC observed in CDD patients in paper I, and the underlying non-self-referencing processing described by the 4-D model (Frewen & Lanius, 2015). Self-referencing encoding, where persons relate information to themselves, has been shown to improve recall (Symons & Johnson, 1997). If persons with CDD are characterized by an effort to not relate information to themselves, that may have the opposite effect. Indeed, persons with CDD have been found to have several types of memory deficits, not just dissociative amnesia as described by the diagnostic criteria (Dorahy et al., 2014).

5.2. Methodological challenges

Several methodological challenges are important to consider when interpreting the findings of this dissertation, as these may have influenced the validity of the results.

The study population and setting of this research project challenge the *external validity* and generalizability of the findings. The effects we found may therefore not hold true in settings at different service levels or involving different patient-groups. There are also several threats to

the *internal validity* of the study (Shadish et al., 2002). First, we experienced substantial attrition in both the "PTSD-study" (32.5%) and the "DD-study"(24%). This creates uncertainty about the treatment effects if patients who drop-out of treatment are systematically different from completers. If drop-outs systematically occurred in patients with lower pre-treatment scores, this would inflate treatment effects. We have tried to reduce this risk by using intent-to-treat analyses and our handling of missing data and also tested for differences in baseline characteristics between completers and drop-outs, without finding significant differences.

Another threat to the internal validity of our research design would be if there were systematic differences between the treatment conditions either at baseline or in confounding variables during treatment. The randomization procedure is designed to produce similar samples, but differences can happen by chance. However, when testing for differences in baseline characteristics we did not find significant differences in paper II or paper III. Also, nonsignificant differences in pre-treatment outcome-variables are accommodated by including a main effect of condition in our mixed-models (Fitzmaurice et al., 2012). Of special importance in our designs is the un-protocolled conjoint individual therapy patients receive, since systematic differences between experimental conditions would threaten internal validity. If for instance participants receiving group-treatment simultaneously benefitted from qualitatively or quantitatively superior individual treatment compared to participants in the waiting-period, this could lead to differences in treatment outcome that was not attributable to the effect of group-treatment. To control for this, we collected data on these treatments and found no significant differences in paper II or paper III, but differences in uncontrolled variables might have occurred. Our design can also be criticized for not including a no-treatment control-group since this makes it difficult to control for natural recovery and regression to the mean (Shadish et al., 2002). The observed changes might have occurred even without treatment. However, given our study population of referred patients with generally low psychosocial functioning (GAF < 50) and profound mental health difficulties, a no-treatment control group would be unethical to employ. Also, as previously mentioned, the samples predominantly consisted of patients with long treatment-histories, so significant natural recovery was probably unrealistic. Similarly, our delayed-treatment control was employed for ethical reasons and made it difficult to interpret differences after the follow-up period, since patients in both condition had received the group-treatment at that time-point. An active control-condition, for instance an evidence based trauma-focused treatment, would also have made it possible to draw more strong inferences about comparative efficacy.

There are also methodological weaknesses in our study regarding how different constructs have been operationalized, threatening *construct validity* (Shadish et al., 2002). This weakness is most profound in the operationalization of 4-D constructs in paper I, where individual items of another measure were chosen based on face validity and used in the analyses. It is difficult to establish the validity of the measurements resulting from this procedure and comparisons with results to other investigations of the 4-D model should be done with caution. Another question is if the measures used to assess outcome best capture the kind of change that might occur in the treatment of trauma-disorders. In both paper II and paper III, we used the same outcome measures, despite differences in treatment and sample, and only the GAF – ratings were observer-based. This choice was made due to resource-constraints, but interview-based outcome measures specific for each sample (i.e. PTSD symptoms and dissociative symptoms) might have yielded other results. Furthermore, a lack of reliability- and fidelity-analyses makes it difficult to assess if diagnostic-constructs and treatment-constructs were operationalized as intended. Although diagnostic assessments were conducted by trained and experienced assessors, and diagnostic decisions were made jointly, we did not assess interrater-reliability. Similarly, fidelity checks were not observer-based, but based on the group - therapists own reporting, so *treatment-drift* might have occurred. However, since the treatments were highly structured and manualized, and groups were conducted by therapist-pairs that were changed between groups, the likelihood of drift was reduced.

Finally, some challenges threaten the *statistical conclusion validity* of our findings. Especially there are weaknesses that increase the chance of accepting the null-hypothesis of no effect, even if this is false (e.g type II error rate). The most serious threat is the low statistical power caused by small sample sizes together with attrition. Obtaining large samples in clinical research is difficult and resource-demanding, and this is especially true for conditions with lower prevalence-rates such as CDD. We were not able to recruit as many participants with CDD as planned based on our a priori power-calculation in the "DD-study", so the findings in paper III are especially sensitive to type II errors. Additionally, we experienced a large proportion of missing data, especially in self-reported measures. This was probably due to the web-based platform that many participants found difficult and burdensome. Although we employed analytic strategies to compensate for missing data, this weakens the confidence of our estimates.

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5.3. Conclusions and future directions

This study has provided new knowledge to further our understanding and treatment of trauma-related disorders. We show that the 4-D model is a promising framework for understanding trauma-related reactions and disorders. Future studies should investigate how symptoms of TRASC influence treatment and if trauma-reactions related to different dimensions of consciousness may require different treatments. Research on the impact of dissociation on treatment outcome has been inconsistent, since some studies show poorer outcome for patients high on dissociation (Bae et al., 2016; Kleindienst et al., 2016), while others fail to find such an association (Halvorsen et al., 2014; Zoet et al., 2018). However, differences in how dissociation is defined and measured may account for this variation. Studies of the impact of experiences of TRASC on treatment may provide new insight, and symptoms related to different dimensions of consciousness may have dissimilar interactions with treatment. Lanius (2015) has also proposed that TRASC of different dimensions of consciousness may require different treatments. For instance, patients struggling with TRASC of the body – dimension may benefit from body-oriented or mindfulness interventions, while TRASC of time may need memory-focused work. Interventions aimed at symptoms of TRASC and non-self referential processing, may also be especially promising for patient with CDD. Future clinical studies should seek to investigate such proposals.

The main finding from the two clinical trials was that stabilizing-group treatment, delivered as an add-on to conventional individual therapy, does not produce better outcomes than individual therapy alone. For patients with PTSD, several other treatment-options have shown better outcomes, also for patients with histories of childhood trauma and abuse, most notably trauma-focused treatments (Bisson et al., 2019; Dorrepaal et al., 2014; National Institute for Health and Care Excellence, 2018). Although we did not directly compare stabilizing treatment to TF-PT, our results together with previous research indicate that stabilizing group treatment should not be considered first-line treatment for this patient-group, unless the patient explicitly prefers such treatment or other treatment options are unavailable. Future research can investigate if stabilization groups are more effective with other patient groups or settings. It may also be a more easily disseminated option if large – scale training of therapist in trauma-focused treatments are difficult. More research is also needed to establish if stabilization-treatment can bolster treatment gains from later or concurrent trauma-focused treatment (Cloitre et al., 2010). Given that many patients are reluctant to engage in trauma-

focused treatment, stabilizing-groups can also be explored as a way to increase motivation for such treatments.

In contrast, no other treatment options have been shown to better alleviate suffering and improve psychosocial function for patients with CDD. Our findings confirm previous research showing that psychotherapy for CDD is associated with positive outcomes, not further harm as some have suggested. Although stabilizing group treatment was not significantly more efficient than the control condition, we found indications of positive long-term effects of the treatment. Future studies should include longer follow-up periods to confirm or reject this finding. Most importantly, our results show that randomized and controlled clinical studies with CDD patients are possible, but also that there is much room for improvement in outcomes. The field should welcome innovation both in interventions and treatment delivery to find better treatments for these patients. Both evidence-based treatments for other conditions and interventions based on clinical experience and practice guidelines should be explored. And I hope that our study is the first of many clinical trials on the treatment of CDD in the coming years so that we better can counter the massive suffering and costs people with this condition experience.

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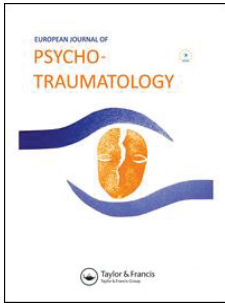
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7. Paper I - III

I

Trauma-related altered states of consciousness in post-traumatic stress disorder patients with or without comorbid dissociative disorders

Harald Bækkelund, Paul Frewen, Ruth Lanius, Akiah Ottesen Berg & Espen Ajo Arnevik

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Trauma-related altered states of consciousness in post-traumatic stress disorder patients with or without comorbid dissociative disorders

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ABSTRACT

Background: The four-dimensional ('4-D') model has been proposed as a theoretical framework to understand and delineate trauma-related dissociative experiences, categorizing symptoms into trauma-related altered states of consciousness (TRASC) and normal waking consciousness (NWC), which occur along four dimensions: time, thought, body and emotion.
Objective: The main aim of the present study was to evaluate the validity of this model in patients with post-traumatic stress disorder (PTSD), with and without comorbid dissociative disorders.
Method: The predictions of the 4-D model were tested in 142 patients with PTSD, with ($N = 46$) and without ($N = 96$) comorbid dissociative disorders.
Results: As predicted by the 4-D model, experiences of TRASC were less frequent and more specifically related to other measures of dissociation, dissociative disorder comorbidity and a history of childhood sexual abuse compared to experiences of NWC. The predicted lower intercorrelation of TRASC was not supported.
Conclusion: The 4-D model represents a promising framework for understanding dissociation across trauma-related disorders.

Estados Alterados de Conciencia Relacionados al Trauma (TRASC en su sigla en inglés) en pacientes con TEPTD con o sin Trastornos Disociativos comórbidos

Antecedentes: El 'modelo 4-D' ha sido propuesto como un marco teórico para entender y delinear las experiencias disociativas relacionadas al trauma, categorizando los síntomas en estados alterados de conciencia relacionados al trauma (TRASC en su sigla en inglés) y la conciencia en vigilia normal (NWC en sus siglas en inglés), que ocurren a lo largo de cuatro dimensiones: (1) tiempo; (2) pensamiento; (3) cuerpo; y (4) emoción. El principal objetivo del presente estudio fue evaluar la validez de este modelo en pacientes con Trastorno de Estrés Postraumático (TEPT), con y sin trastornos disociativos comórbidos.
Métodos: Los predictores del modelo 4-D fueron probados en 142 pacientes con TEPT, con (N=46) y sin (N=96) trastornos disociativos comórbidos.
Resultados: Como predice el modelo 4-D, las experiencias de los TRASC fueron menos frecuentes y más específicamente relacionados a otras medidas de disociación, comorbilidad del trastorno disociativo y una historia de abuso sexual infantil en comparación a las experiencias de NWC. La predicción de la intercorrelación más baja de los TRASC no fue confirmada.
Conclusión: El modelo 4-D representa un prometedor marco para el entendimiento de la disociación de forma transversal en los trastornos relacionados al trauma.

在合并或者未合并的解离障碍的PTSD患者中创伤相关的意识改变状态 (TRASC)

背景：'4-D模型'已被提议作为理解和描述创伤相关的解离经验的理论框架，将症状分类为创伤相关的意识改变状态（TRASC）和正常清醒意识（NWC），其中有四个维度：（1）时间；（2）思想；（3）身体；（4）情绪。本研究的主要目的是评估该模型在合并或者未合并的解离障碍的创伤后应激障碍（PTSD）患者中的有效性。
方法： 对142例PTSD患者考察4-D模型的预测性，其中N = 46共病解离障碍，N = 96无共病。
结果： 正如4-D模型预测的那样，与NWC的经验相比，TRASC的经验较少出现，并且更具体地与其他解离症状、解离障碍共病证和儿童性虐待史相关。预期的TRASC的内部相关性没有得到支持。
结论： 4-D模型代表了一个理解创伤相关疾病中的解离症状的框架。

HIGHLIGHTS
• The '4-D model' of dissociation categorizes symptoms into trauma-related altered states of consciousness (TRASC) and normal waking consciousness (NWC), which occur along four dimensions: time, thought, body and emotion.
• The main predictions of the model were supported in patients with PTSD, with and without comorbid dissociative disorders.
• The 4-D model represents a promising framework for understanding dissociation across trauma-related disorders.

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ⓘ Supplemental data for this article can be accessed here.

1. Introduction

The fifth edition of the Diagnostic and Statistic Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013) recognizes a 'close relationship' (p. 291) between dissociative disorders and trauma- and stressor-related disorders, such as post-traumatic stress disorder (PTSD). This relationship manifests in both symptomatic overlap and high comorbidity. Patients with PTSD generally experience increased levels of dissociative symptoms compared to trauma-affected people without PTSD (Carlson, Dalenberg, & McDade-Montez, 2012; Dorahy & van der Hart, 2015), while a dissociative subtype of PTSD patients (DPTSD) is characterized by pervasive symptoms of derealization and depersonalization and often related to childhood abuse (Lanius, Brand, Vermetten, Frewen, & Spiegel, 2012; Lanius et al., 2010). In addition, PTSD symptoms such as flashbacks and trauma-related amnesia are regarded by many theorists as dissociative phenomena (Dell, 2006b; Frewen & Lanius, 2015; Nijenhuis, Hart, & Steele, 2010). Patients with dissociative disorders, which are characterized by pervasive and severe dissociative symptoms, almost invariably also suffer from PTSD, with comorbidity rates from 88% to 97% (Foote, Smolin, Neft, & Lipschitz, 2008; Rodewald, Wilhelm-Göling, Emrich, Reddemann, & Gast, 2011).

However, several authors have noted that confusion remains as to how dissociation should be defined and which symptoms and experiences should be included as dissociative (Brown, 2006; Dell, 2009; Holmes et al., 2005). Empirical data clearly suggest that dissociative experiences do not form a unitary dimension, but are better understood as multidimensional phenomena (Briere, Weathers, & Runtz, 2005; Bryant, 2007; Dell, 2006b; Holmes et al., 2005). It is, for instance, common to differentiate between compartmentalization, involving an inability to access or control normal mental processes, and detachment, such as depersonalization, derealization and numbing. For research, theory and clinical practice it is therefore critical that researchers define clearly the specific phenomenological construct of dissociation to which they are referring (e.g. dissociative flashbacks vs depersonalization vs derealization vs identity dissociation) (Brand & Frewen, 2017).

To better understand and differentiate dissociative phenomena, Frewen and Lanius (2015) argue that it is necessary to distinguish between subtypes of trauma-related reactions that are intrinsically dissociative and those that are not intrinsically dissociative in nature but rather may present as forms of distress within normal waking consciousness (NWC). The four-dimensional (4-D) model emphasizes phenomenological first-person descriptions of conscious experience and how such experiences might be affected by trauma. The more inherently dissociative reactions, involving a distinct non-self-referential form of processing (i.e. 'this isn't me', 'this is happening to somebody else') are labelled trauma-related altered states of consciousness (TRASC). Specifically, four phenomenological dimensions of a person's awareness that can be affected during as well as in the aftermath of trauma are described: time, thought, body and emotion. TRASC of the time dimension was proposed to involve traumatic flashbacks that involve a profound sense of reliving as compared to the NWC experience of upsetting and intrusive memories that do not exhibit a reliving component. Negative voice-hearing is characterized as a TRASC phenomenon of the thought dimension, whereas NWC experiences involve negative self-referential cognitions occurring in first-person perspective. Along the body dimension, disembodied experiences (e.g. depersonalization) are regarded as TRASC, while embodied forms of distress (e.g. hyperarousal) are considered as a symptom of NWC. Lastly, severe emotional numbing and disowned/compartmentalized emotions are proposed to be TRASC, while NWC expressions will involve generally negative affects (e.g. sadness, anger and shame) that are not disowned/compartmentalized. The 4-D model contends that symptoms of TRASC can be experienced both together with and apart from identity alterations that occur in severe dissociative disorders, such as dissociative identity disorder (DID). As such, experiences of TRASC are not specific for dissociative disorders, but are thought to represent transdiagnostic states across trauma-related disorders.

To investigate the validity of the 4-D model, Frewen and Lanius (2015) make four testable predictions. First, because experiences of NWC distress are conceptualized as being within the typical and normal state of humans, they should be more common and frequently endorsed than experiences of TRASC. Secondly, because experiences of TRASC are hypothesized to be more compartmentalized as dissociative experiences, they are hypothesized to less intercorrelated (Brown, 2006; Holmes et al., 2005) across the four dimensions than in the form of NWC distress, especially when measured over time (i.e. dimensions of NWC should correlate more strongly than dimensions of TRASC). Thirdly, the 4-D model predicts that experiences of TRASC should be more frequently reported by people with high scores on other measures of dissociation, especially other measures of pathological dissociation. Finally, Frewen and Lanius (2015) hypothesize that TRASC typically develop as a result of repeated traumatization at sensitive periods of development, and therefore predict that experiences of TRASC will be related

more specifically than NWC distress to a history of repeated traumatization and childhood abuse.

Several studies have investigated and largely found support for the predictions of the 4-D model in different samples, such as undergraduate students (Brown & Frewen, 2017; Frewen & Lanius, 2014a), clinical populations with and without PTSD (Frewen, Kleindienst, Lanius, & Schmahl, 2014; Frewen & Lanius, 2014a), acutely traumatized individuals (Frewen et al., 2015) and community samples recruited online (Frewen, Brown, & Lanius, 2017; Tzannidakis & Frewen, 2015). The first prediction, that NWC will be endorsed more frequently than TRASC, and the third prediction, that TRASC will be more strongly associated with other measures of dissociation, have been supported across all studies to date. The second prediction, hypothesizing higher intercorrelations among the dimensions in NWC distress than the TRASC form, was supported in all studies except in a sample of 258 women diagnosed with borderline personality disorder, with and without comorbid PTSD (Frewen et al., 2014). Finally, support for the fourth prediction, that symptoms of TRASC will be specifically related to a history of repeated traumatization and childhood abuse, has been less consistent. Frewen and Lanius (2014a) found an association between a history of childhood sexual abuse (CSA) and voice-hearing in women with PTSD, but no general relationship between experiences of TRASC and other forms of childhood abuse was demonstrated. In comparison, Frewen et al. (2014) found a specific relationship of TRASC with emotional neglect, but not across other forms of childhood trauma. Other investigations have generally found positive correlations between reports of childhood trauma and both NWC distress and TRASC, but with no consistent pattern regarding specificity emerging.

Although the studies described above largely provide support for the 4-D model of dissociation, an important goal of the theory is to describe dissociation transdiagnostically across the spectrum of trauma-related disorders. Therefore, a major limitation of the research to date is that, to our knowledge, the 4-D model has never been investigated in a sample of patients with diagnosed dissociative disorders. The main aim of the present study was therefore to evaluate the validity of the 4-D model of trauma-related dissociation by testing predictions in patients with histories of childhood abuse and diagnostic presentations including PTSD and dissociative disorders.

The hypotheses are:

(1) Experiences of TRASC will be specifically related to a self-reported history of childhood abuse.
(2) Comorbid dissociative disorder will be specifically associated with higher endorsement of experiences of TRASC, not NWC distress.
(3) Experiences of TRASC will be less frequently endorsed than distress associated with NWC in PTSD patients with and without a comorbid dissociative disorder.
(4) Experiences of TRASC will be less intercorrelated than experiences of NWC.
(5) Experiences of TRASC will be more strongly related to other measures of dissociation than experiences of NWC.

2. Methods

2.1. Participants and procedures

All participants were recruited from patients referred to an outpatient clinic specializing in the treatment of trauma-related disorders, as part of an ongoing clinical trial (Clinical Trials NCT02450617). The study was approved by the Norwegian Regional Committees for Medical and Health Research Ethics (REC) and funded by Modum Bad Psychiatric Hospital. Subjects aged between 18 and 65 years who had sufficient competence in Norwegian and reported childhood abuse and trauma-related symptoms were eligible for inclusion. Exclusion criteria included acute suicidality, severe substance abuse, psychotic illness, current life crisis (e.g. ongoing abuse, divorce, court case, somatic disease in spouse or children), neurological illness, intellectual disability and life-threatening somatic disease.

Participants ($N = 177$) were enrolled and completed a comprehensive diagnostic assessment by trained interviewers. Only patients who fulfilled criteria for PTSD were included in the present study, as this was a requirement for the clinical trial. One patient with a dissociative disorder failed to meet criteria for PTSD. Also, 34 patients were excluded as they had not filled out the measure used to operationalize 4-D scores. Analysis of available data found that excluded patients did not differ from the included patients on age, gender or symptomatology assessed by other measures. The resulting sample ($N = 142$) consisted of 46 patients with a comorbid dissociative disorder and 96 without such comorbidity. Of the patients with dissociative disorders, 25 fulfilled criteria for DID (characterized by pronounced dissociative amnesia and the presence of two or more distinct personality states), and 21 fulfilled criteria for other specified dissociative disorders (characterized by chronic dissociative symptoms, but with less distinct identity parts as in DID). These two disorders are collectively categorized as complex dissociative disorders (CDDs) (Dell, 2009). The vast majority of the sample were female (88.7%) and the mean age was 39.1 years (SD = 10.09).

2.2. Measures

All assessments used approved Norwegian translations. Patients could request assistance if they had difficulty understanding the questions or information.

The *Post-traumatic Symptom Scale – Interview* (Foa, Riggs, Dancu, & Rothbaum, 1993) was used to assess PTSD. Because of a lack of validated diagnostic instruments for DSM-5 at the start of data collection, diagnosis was based on DSM, 4th Edition (DSM-IV) criteria and did not assess DPTSD.

The *Structured Clinical Interview for DSM-IV Dissociative Disorders* (Steinberg, Cicchetti, Buchanan, & Hall, 1993) was used to assess dissociative disorders.

The *Mini-International Neuropsychiatric Interview* (MINI) (Sheehan et al., 1998) and *Structured Clinical Interview for DSM-IV Axis II Personality Disorders* (SCID-II) (First, Benjamin, Gibbon, Spitzer, & Williams, 1997) were administered to assess general psychopathology and personality disorders.

Background information and sociodemographic data were registered using a generic form.

The *Multidimensional Inventory of Dissociation* (MID) (Dell, 2006a) is a self-report measure with 218 items that uses a 11-point Likert scale. Of these items, 168 measure different dimensions of dissociation, while 50 measure validity. The measure was translated into Norwegian and back-translated into English. The back-translation was checked for inconsistencies and approved by the original author. The MID was used in this study to quantify experiences of NWC distress in comparison to TRASC, as described further in Section 2.3.

The *Childhood Trauma Questionnaire – Short Form* (CTQ-SF) (Bernstein et al., 1994; Dovran et al., 2013) is an extensively used measure for retrospective reporting of experiences of abuse and neglect in the respondents' childhood. CTQ-SF has 28 items scored from 0 ('never true') to 5 ('very often true'). Cronbach's alpha for CTQ total score in the present sample was .83, indicating good internal consistency. CTQ has five subscales: emotional neglect (Cronbach's α = .82), physical neglect (Cronbach's α = .64), emotional abuse (Cronbach's α = .93), sexual abuse (Cronbach's α = .79) and physical abuse (Cronbach's α = .85).

The *Dissociative Experiences Scale* (DES) (Bernstein & Putnam, 1986; Carlson & Putnam, 1993) is a 28-item self-report questionnaire designed to measure both pathological and non-pathological dissociative experiences. It uses an 11-point Likert scale, asking respondents to indicate the percentage of their time the experiences affect them. A meta-analysis reported an overall Cronbach's alpha coefficient of .96 and a significant difference in DES scores between dissociative patients and non-dissociative controls (Van Ijzendoorn & Schuengel, 1996). Cronbach's alpha in the present sample was also .96.

The *Somatoform Dissociation Questionnaire* (SDQ) (Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1996) has 20 items asking about somatoform dissociative symptoms on a five-point scale. SDQ-20 has shown good reliability and validity (Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1998). Cronbach's alpha in the present sample was .88.

The *Symptom Checklist-90 Item – Revised* (SCL-90-R) (Derogatis, 1994) is a widely used self-report measure for psychological symptoms and distress consisting of 90 items. The summary score, referred to as a Global Severity Index (GSI), is often used as a measure of general psychopathology. Cronbach's alpha in the present sample was .97.

2.3. Data reduction

The TRASC and NWC factors for each dimension were calculated using items from the MID (Table 1). The originators of the 4-D model (RL and PF) selected items thought to best correspond to NWC and TRASC on each phenomenological dimension, while being blind to the data. The selections were compared to selections of MID items used in previous work (Frewen & Lanius, 2015), and the final items were decided unanimously. Mean scores on the selected items were used to give each participant a score for NWC and TRASC on each dimension (i.e. eight different scores; Table 1).

2.4. Statistical analysis

Table 1. Items from the Multidimensional Inventory of Dissociation (MID) descriptions of trauma-related altered states of consciousness (TRASC) and normal waking consciousness (NWC) across the four-dimensional (4-D) model dimensions of time, thought, body and emotion.

	TRASC	NWC
Time	Items 14, 114, 145 and 146 Cronbach's a = .688 Example: 'Reliving a past trauma so vividly that you see it, hear it, feel it, smell it, etc.'	Item 115 'Bad memories coming into your mind and you can't get rid of them.'
Thought	Items 6, 30, 42, 61, 84, 118, 140, 159, 171, 199 and 207 Cronbach's a = .936 Example: 'Hearing a voice in your head that tries to tell you what to do.'	Items 22 and 151 Cronbach's a = .696 Example: 'Strong thoughts in your head that "come from out of nowhere".'
Body	Items 3, 91, 126 164, 172, 191, 197 and 203 Cronbach's a = .889 Example: 'Standing outside of your body, watching yourself as if you were another person.'	Item 125 'Re-experiencing *body sensations* from a past traumatic event.'
Emotion	Items 27, 60, 169 and 196 Cronbach's a = .688 Example: 'Very strong feelings (e.g. fear, or anger, or emotional pain and hurt) that *suddenly go away*.'	Items 32, 57 and 185 Cronbach's a = .743 Example: 'Your mood changing rapidly without any reason.'

All statistical analyses were carried out using SPSS version 25. Analyses were performed as outlined in previous methodology (Brown & Frewen, 2017; Frewen et al., 2014; Frewen & Lanius, 2014b). The first hypothesis regarding the relationship between TRASC/NWC and childhood abuse was investigated by examining bivariate correlations. For the second hypothesis, logistical regressions were performed with CDD comorbidity as a dichotomous outcome and TRASC/NWC variables as predictors, while age and general psychopathology were included as nuisance parameters. To investigate the third hypothesis, we performed within-subjects analyses of variance, with dimension (four levels: time, thought, body and emotion) and form of consciousness (two levels: NWC and TRASC) as factors. Significant results were followed by post-hoc comparisons, using Bonferroni-corrected levels of significance. The fourth hypothesis was tested by calculating intercorrelations between TRASC/NWC scores across dimensions, and comparing these through conversion to z-scores (Fisher transformation). Finally, for the fifth hypothesis we performed hierarchical regressions with other measures of dissociation as dependent variables and alternating stepwise order of TRASC and NWC as predictors. Since MID items were used to calculate TRASC/NWC scores, DES and SDQ were used as dependent variables.

3. Results

3.1. Sample characteristics

Descriptive statistics and group differences between patients with and without comorbid CDD are reported in Table 2. The CDD group was more likely to report a history of inpatient treatment and comorbid psychotic symptoms, as assessed by MINI, and general psychopathology, as assessed by SCL-90. A strong association was found between severe suicidality scores on MINI and CDD comorbidity. Few differences were observed in the level of reported childhood abuse, except for experiences of emotional neglect. The group with comorbid CDD was also significantly younger, by a mean of 4.4 years (SD = 10.36).

3.2. Hypotheses

Hypothesis 1. *Experiences of TRASC will be specifically related to a self-reported history of childhood abuse*

Examining bivariate correlations between TRASC/NWC and CTQ scores, mean NWC symptoms were not significantly related to self-reported childhood abuse, while mean TRASC symptoms were correlated with CTQ total score ($r = .253$,

$p = .005$) and CTQ sexual abuse ($r = .295$, $p = .001$). Further investigating correlations between CTQ subscales and TRASC/NWC scores across dimensions (Table 3), a significant association between sexual abuse and symptoms of TRASC was replicated across all dimensions. Only NWC symptoms of the body dimension were significantly correlated with any CTQ subscales.

Hypothesis 2. *Comorbid dissociative disorder will be specifically associated with higher endorsement of experiences of TRASC, not NWC distress*

Patients with comorbid CDD endorsed both NWC and TRASC symptoms to a greater degree than patients without comorbid CDD across all four dimensions (Figure 1). Results from logistic regression analyses are shown in Table 4. Consistent with predictions, TRASC symptoms significantly predicted CDD comorbidity across all four dimensions, while controlling for group differences in age and general psychopathology. Scores on NWC distress were not significant as predictors.

Hypothesis 3. *Experiences of TRASC will be less frequently endorsed than distress associated with NWC*

Mean symptom endorsement for each dimension of TRASC and NWC compared in patients with and without CDD can be seen in Figure 1. Within the whole sample, both form of consciousness [$F(1,135) = 397.987, p < .001, \eta^2 = .747$] and dimension of consciousness [$F(3,405) = 37.004, p < .001, \eta^2 = .215$] emerged with significant main effects, with a form X dimension interaction [$F(3,405) = 82.598, p < .001, \eta^2 = .169$]. This indicates that although form of consciousness (NWC vs TRASC) predicts endorsement with a large effect size, this association varies across dimensions. Follow-up paired t-tests comparing NWC and TRASC on all dimensions were all significant at the $< .001$ level, with effect sizes ranging from 0.544 to 1.143 in the predicted direction (NWC > TRASC). Performing the same analyses in subsamples with and without comorbid CDD largely replicated these results (see supplementary material).

Hypothesis 4. *Experiences of TRASC will be less intercorrelated than experiences of NWC*

Intercorrelations between the four different dimensions of TRASC and NWC can be seen in Figure 2. Contrary to predictions, TRASC subscales generally had higher intercorrelations ($Mr = .612, SDr = .046$) than NWC subscales ($Mr = .489, SDr = .108$). In

Table 2. Sample characteristics and clinical comorbidity.

	PTSD with CDD[a] ($N = 46$)	PTSD without CDD[a] ($N = 96$)	Difference between groups
Age (years)	36.1 (10.4)	40.5 (9.7)	2.442(138), $p = .016$*
Gender, male	4.3%	14.6%	$\chi^2 = 3.259$, $p = .71$
Married or partner	52.4%	43.9%	$\chi^2 = 0.802$, $p = .371$
College-level education	46.3%	45.7%	$\chi^2 = 0.005$, $p = .945$
GSI	1.95 (0.661)	1.66 (0.664)	$t(118) = -2.252$, $p = .026$*
MINI number of comorbid axis-I disorders	5.2 (2.5)	4.5 (2.3)	$t(135) = -1.783$, $p = .077$
MINI any depressive disorder (present or lifetime)	90.7%	91.5%	$\chi^2 = 0.023$, $p = .879$
MINI any bipolar disorder (present or lifetime)	23.3%	19.1%	$\chi^2 = 0.306$, $p = .580$
MINI severe suicidality (scored above 2)	72.1%	20.2%	$\chi^2 = 34.26$, $p = < .001$**
MINI any anxiety disorder (present or lifetime)	88.4%	85.1%	$\chi^2 = 0.263$, $p = .608$
MINI substance abuse	11.6%	13.8%	$\chi^2 = 0.125$, $p = .723$
MINI any psychotic disorder (present or lifetime)	30.2%	13.8%	$\chi^2 = 5.162$, $p = .0023$*
MINI any eating disorder	18.6%	8.5%	$\chi^2 = 2.914$, $p = .088$
SCID-II number of comorbid axis-II disorders	.907 (1.06)	.904 (1.06)	$t(135) = -.14$, $p = .702$
SCID-II borderline personality disorder	14%	12.8%	$\chi^2 = 0.035$, $p = .849$
Inpatient treatment ever	74.3%	46.5%	$\chi^2 = 7.345$, $p = .007$*
Inpatient treatment last year	35.3%	18.3%	$\chi^2 = 3.656$, $p = .056$
Work incapacity	80.5%	75%	$\chi^2 = 0.459$, $p = .498$
CTQ total	77.29 (20.235)	71.15 (18.057)	$t(120) = -1.704$, $p = .091$
CTQ – Emotional abuse	17.85 (5.332)	17.63 (5.458)	$t(120) = -0.216$, $p = .830$
CTQ – Physical abuse	12.05 (6.253)	10.40 (5.647)	$t(120) = -1.473$, $p = .143$
CTQ – Sexual abuse	16.17 (7.11)	14.47 (7.27)	$t(119) = -1.223$, $p = .224$
CTQ – Emotional neglect	19.49 (4.879)	17.44 (5.153)	$t(120) = -2.106$, $p = .037$
CTQ – Physical neglect	11.73 (5.301)	11.38 (4.931)	$t(120) = -0.360$, $p = .719$
MID mean score	42.13 (17.486)	21.74 (15.318)	$t(140) = -7.083$, $p < .001$**
SDQ-20	40.667 (12.249)	30.900 (9.057)	$t(101) = -4.545$, $p < .001$**
DES total	42.785 (19.822)	18.912 (16.387)	$t(103) = -6.519$, $p < .001$**

[a]Data are shown as mean (SD) or percentages. PTSD, post-traumatic stress disorder; CDD, complex dissociative disorder; GSI, Global Severity Index; MINI, Mini-International Neuropsychiatric Interview; SCID-II, Structured Clinical Interview for DSM-IV Axis II Personality Disorders; CTQ, Childhood Trauma Questionnaire; MID, Multidimensional Inventory of Dissociation; SDQ, Somatoform Dissociation Questionnaire; DES, Dissociative Experiences Scale.
*$p < .05$, **$p < .01$.

Table 3. Correlations between dimensions of trauma-related altered states of consciousness (TRASC) or normal waking consciousness (NWC), and measures of dissociation and childhood abuse.

	DES	SDQ	CTQ – total	EA	PA	SA	EN	PN
TRASC – Time	.731**	.678**	.178*	.127	.165	.271**	−.017	.006
NWC – Time	.566**	.338**	.127	.157	.015	.099	.121	.042
TRASC – Thought	.662**	.608**	.139	.094	.091	.237**	.034	−.075
NWC – Thought	.515**	.409**	−.047	−.052	−.049	.054	−.100	−.057
TRASC – Body	.777**	.787**	.230*	.146	.162	.280**	.072	.095
NWC – Body	.548**	.447**	.267**	.208*	.169	.244**	.140	.115
TRASC – Emotion	.801**	.718**	.327**	.225*	.269**	.213*	.189*	.182*
NWC – Emotion	.546**	.364**	.057	.033	.047	.108	.043	−.075

DES, Dissociative Experiences Scale; SDQ, Somatoform Dissociation Questionnaire; CTQ, Childhood Trauma Questionnaire; EA, emotional abuse; PA, physical abuse; SA, sexual abuse; EN, emotional neglect; PN, physical neglect. All forms of childhood abuse were measured with the CTQ.
*$p < .05$, **$p < .01$.

particular, the differential strength of correlation coefficients was found to be statistically significant in three out of six cases, specifically, in the case of the time and emotion dimensions (TRASC $r = .590$, NWC $r = .432$, $\Delta r = .158$, $p = .04$), thought and body dimensions (TRASC $r = .625$, NWC $r = .442$, $\Delta r = .183$, $p = .02$) and body and emotion dimensions (TRASC $r = .692$, NWC $r = .347$, $\Delta r = .345$, $p < .01$). However, the difference was not significant in the case of the time and thought dimensions (TRASC $r = .600$, NWC $r = .616$, $\Delta r = .016$, $p = .81$), time and body dimensions (TRASC $r = .616$, NWC $r = .481$, $\Delta r = .135$, $p = .07$) or thought and emotion dimensions (TRASC $r = .544$, NWC $r = .619$, $\Delta r = .075$, $p = .29$). Moreover, this general, overall trend was replicated in the subsamples with CDD (TRASC $Mr = .567$, $SDr = .126$; NWC $Mr = .378$, $SDr = .102$) and without comorbid CDD (TRASC $Mr = .529$, $SDr = .061$, vs NWC $Mr = .488$, $SDr = .145$).

Hypothesis 5. *Experiences of TRASC will be more strongly related to other measures of dissociation than experiences of NWC*

As reported in Table 3, both NWC and TRASC across all dimensions were significantly correlated with other measures of dissociation. NWC distress failed to significantly incrementally predict scores on DES beyond TRASC scores ($\Delta R^2 = .009$, total $R^2 = .763$, ΔF change $= 3.681$, $p = .058$), but slightly improved the model for SDQ ($\Delta R^2 = .018$, total $R^2 = .684$, ΔF change $= 5.742$, $p = .018$). By contrast, symptoms of TRASC incrementally improved predictions for DES ($\Delta R^2 = .273$, $\Delta F = 117.57$, $p < .001$) and SDQ ($\Delta R^2 = .428$, $\Delta F = 135.35$, $p < .001$) beyond symptoms of NWC, supporting the hypothesis. These results were largely replicated in both subsamples when analysed separately (see supplementary material).
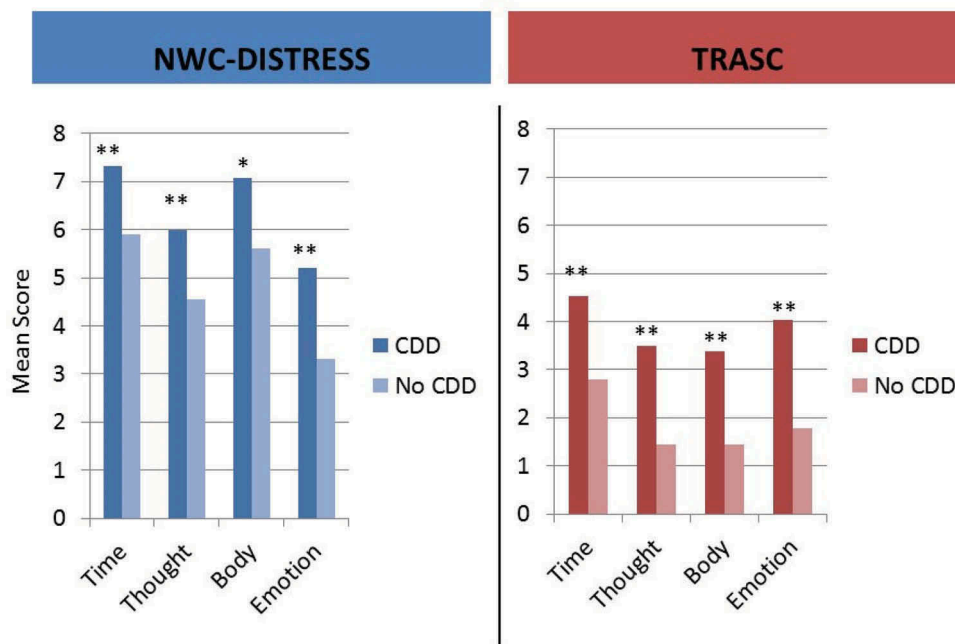
Figure 1. Mean symptom endorsement for each dimension of trauma-related altered states of consciousness (TRASC) and normal waking consciousness (NWC) compared in patients with and without complex dissociative disorder (CDD).
  *p < .05, **p < .01.

Table 4. Logistic regressions predicting a comorbidity of complex dissociative disorder.

Dimension		β (SE)	OR	Model χ² (df)	Model r² (Nagelkerke)
Mean				22.902 (114)**	.250
	TRASC	.758 (.218)**	2.133		
	NWC	−.042 (.157)	0.959		
Time				6.360 (112)*	.075
	TRASC	.233 (.112)*	1.263		
	NWC	.039 (.094)	1.040		
Thought				12.091 (114)**	.138
	TRASC	.353 (.115)**	1.424		
	NWC	.010 (.094)	1.010		
Body				14.284 (111)**	.165
	TRASC	.393 (.125)**	1.482		
	NWC	.022 (.078)	1.022		
Emotion				25.419 (114)**	.275
	TRASC	.526 (.145)**	1.446		
	NWC	.144 (.100)	1.155		

TRASC, trauma-related altered states of consciousness; NWC, normal waking consciousness. Age and Global Severity Index were included as parameters.
  *p < .05, **p < .01.

4. Discussion

The results of this study found general support for the predictions of the 4-D model of dissociation (Frewen & Lanius, 2015). The theoretical distinction between reactions that are inherently dissociative (TRASC) and those that may remain part of normal waking consciousness (NWC) revealed predicted endorsement rates and correlations with other measures of dissociation across the sample of patients with PTSD with and without comorbid CDD. The separation of these two constructs was supported, even when measured in a highly traumatized sample and using only items from an inventory designed to assess pathological dissociation. These results replicate findings from previous investigations in patients

with PTSD (Frewen et al., 2014; Frewen & Lanius, 2014b) and bipolar disorder (BPD) (Frewen et al., 2014), acutely traumatized individuals (Frewen et al., 2015), and online (Frewen et al., 2017; Tzannidakis & Frewen, 2015) and student samples (Brown & Frewen, 2017; Frewen & Lanius, 2014b). The focus on TRASC, defined as non-self-referential alterations of consciousness, therefore, in our opinion, represents a promising narrowing and delineation of the term dissociation.

The results also represent a noteworthy expansion of previous empirical support for the 4-D model in that the predictions are supported in the sample with comorbid CDD, and the finding that experiences of TRASC specifically predicted CDD membership beyond PTSD status and levels of general

	NWC Time	NWC Thought	NWC Body	NWC Emotion	TRASC Time	TRASC Thought	TRASC Body	TRASC Emotion
NWC Time		.616	.481	.432	.533	.419	.436	.449
NWC Thought			.442	.619	.536	.536	.453	.419
NWC Body				.347	.578	.433	.493	.415
NWC Emotion					.496	.526	.417	.476
TRASC Time						.6	.616	.59
TRASC Thought							.625	.554
TRASC Body								.692
TRASC Emotion								

Figure 2. Intercorrelations between the four different dimensions of trauma-related altered states of consciousness (TRASC) and normal waking consciousness (NWC). All correlations are significant at $p < .001$.

psychopathology. It is worth noting that although the 4-D model aims to describe pathological dissociation, it does not specifically address the diagnostic criteria of CDD (e.g. amnesia and identity alterations). As such, the items used to operationalize TRASC in this study do not measure presumed core symptoms of CDD, such as significant time loss, dissociative fugue or the presence of alters/parts of the personality. As previously noted, the 4-D model holds that experiences of TRASC do not occur exclusively within the context of identity fragmentation. This is evident in the present study, as PTSD patients without CDD comorbidity also endorsed having experiences of TRASC, albeit to a lesser degree than those with CDD comorbidity. This supports the 4-D model as a framework for understanding dissociation across different clinical presentations with different levels of psychopathology and trauma exposure.

We did not find support for the prediction that experiences of TRASC would be less intercorrelated than experiences of NWC, replicating the findings from a previous investigation in patients with BPD (Frewen et al., 2014), but contrasting with findings from samples with less pronounced psychopathology. This might point to dissociation forming a more unidimensional structure, across the four dimensions, in more clinically severe and trauma-affected samples. It is conceivable that experiences of TRASC are experienced as isolated or transient phenomena for less severely traumatized individuals, but are more pervasive across the dimensions of conscious

awareness in those affected by severe childhood trauma. People with DID for instance, with distinct dissociative identity states, can typically experience a full range of dissociative phenomena simultaneously. However, the original prediction of the 4-D model regarding symptom intercorrelations refers to state-dependent assessment, that is, as taking place during discrete moments in time, which remains to be investigated.

As in previous investigations of the model in trauma-affected samples, the relationship between dissociation and trauma history was more complex than predicted, with only sexual abuse emerging as a consistent correlate of TRASC. This is in line with a recent meta-analytic review (Vonderlin et al., 2018) that also found CSA to be especially strongly related to dissociation, when compared to neglect and emotional abuse. CSA has also been identified as a potent risk factor for auditory hallucinations (Bentall et al., 2014), which are conceptualized as a symptom of TRASC in the 4-D model. Furthermore, higher reporting of childhood emotional neglect emerged as the only significant difference between patients with and without CDD comorbidity. Although physical abuse and sexual abuse are mostly hypothesized as etiological factors in the development of CDD (Brand & Frewen, 2017; Dalenberg et al., 2012), this may point to a role of experiences of emotional neglect in the development of CDD comorbidity. For example, DePrince, Huntjens, and Dorahy (2015) found alienating appraisals (i.e. 'I am

disconnected from people', ' I feel lonely') to distinguish patients with DID from those with PTSD, perhaps reflecting disturbances in the sense of self and others related to experiences of neglect.

It should be noted as a limitation that information on trauma history in this study was based on retrospective reporting, so possible recall bias may influence group differences. The measurement used did not provide detailed information related to the abuse, such as age of onset, number of events or relation to perpetrator. Also, as childhood abuse was an inclusion criterion for the study, the general level of abuse reported was very high. This makes it difficult to differentiate between groups and identify strong effects.

The implications drawn from this study must be further interpreted with caution owing to several other limitations. As in most previous investigations of the 4-D model, the operationalization of the constructs was based on a measure that was not originally designed to capture this specific model. Therefore, some constructs were less well represented in the MID and based on few or single items. The study was also based entirely on self-reports of dissociative symptoms, measured at a single time-point, and thus future research should examine the possibility of using observer-based data and repeated measurements. In addition, the sample in this investigation consisted entirely of help-seeking patients with PTSD and histories of childhood abuse, with the large majority being female. Generalizing the findings to men and less trauma-affected populations should be done cautiously. Finally, the study did not differentiate between PTSD patients with and without a dissociative subtype (Lanius et al., 2012, 2010). The dissociative subtype has been shown to be especially prevalent in PTSD patients with histories of childhood abuse, and it is therefore probable that a substantial proportion of patients in this sample would fulfil criteria for DPTSD. Future research should differentiate between PTSD and DPTSD patients, as this subgroup will probably confound results.

In spite of these limitations, this study expands on the empirical support for the 4-D model as a promising theory for understanding trauma-related reactions and disorders. Lanius (2015) further outlines how the model could guide treatment for trauma-affected patients, as TRASC of different dimensions of consciousness may require different treatments, something that future clinical studies could investigate. Studies on the impact of dissociation on treatment show inconsistent results, with some studies finding dissociation to predict poorer response (Bae, Kim, & Park, 2016; Kleindienst et al., 2016) while others fail to find such an effect (Minnen & Harned, 2012; Zoet, Wagenmans, van Minnen, & de Jongh, 2018). Heterogeneity in how

dissociation is measured and conceptualized may influence the results, making it important to investigate whether experiences of TRASC affect treatment outcome; such an evaluation is planned for the present randomized controlled trial. Finally, the 4-D model can inform the limited literature on treatment of CDDs. Although psychotherapeutic treatment of these disorders has been shown to be beneficial (Brand et al., 2012), little is known about specific interventions and change mechanisms. Interventions aimed at symptoms of TRASC, as well as the proposed underlying non-self referential processing, may have promise for this patient group.

Disclosure statement

No potential conflict of interest was reported by the authors.

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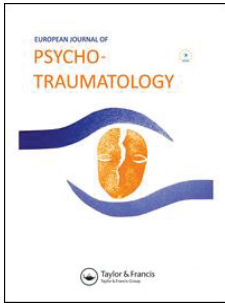## References

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Stabilizing group treatment for childhood-abuse related PTSD: a randomized controlled trial

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ABSTRACT

Background: Patients with PTSD related to childhood-abuse often experience additional problems such as emotional dysregulation and interpersonal difficulties. Psychotherapy focused on stabilization of symptoms, emotion-regulation, and skills training has been suggested as a treatment for this patient population, either as preparation for further treatment or as a stand-alone intervention.

Objective: The present study tests the efficacy of treatment using a group-protocol for stabilizing treatment delivered adjunct with conventional individual therapy.

Methods: In a delayed-treatment design with switching replication, a clinically representative sample of 89 patients with PTSD and histories of childhood abuse were randomly assigned to either 20-week stabilizing group treatment or a corresponding waiting-period, both adjunct with conventional individual therapy. After the waiting-period, patients in the control condition were offered group treatment. The primary outcome was psychosocial functioning, measured with interview – assessed Global Assessment of Functioning (GAF), while secondary outcome was self-reported PTSD symptoms. These were measured before treatment, after treatment and at 6 months follow up. The trial was preregistered at Clinical Trials (NCT02450617).

Results: We found large within-group effect sizes in both conditions on GAF and moderate effects on PTSD symptoms. Linear mixed-models did not indicate significant differences in treatment trajectories between conditions.

Conclusion: Stabilizing group treatment focused on emotional-regulation and skills-training does not improve outcomes beyond individual-treatment alone, and should not be recommended as first-line treatment for this patient-group

Tratamiento grupal para estabilización en el tratamiento de estrés postraumático asociado a abuso infantil: Un ensayo clínico aleatorizado

Antecedentes: Los pacientes con trastorno de estrés postraumático (TEPT) asociado a abuso infantil con frecuencia experimentan problemas adicionales como desregulación emocional y dificultades interpersonales. Se ha propuesto a la psicoterapia enfocada en la estabilización de síntomas, la regulación emocional y el entrenamiento en habilidades como un tratamiento para esta población de pacientes, tanto como preparación para algún tratamiento adicional o como una intervención única.

Objetivo: Este estudio evalúa la eficacia del tratamiento empleando un protocolo grupal para estabilización realizado junto con la terapia individual convencional.

Métodos: El estudio contó con un diseño de inicio retrasado del tratamiento con entrecruzamiento de grupos. Los participantes de una muestra clínicamente representativa de 89 pacientes con TEPT y antecedente de abuso infantil fueron aleatorizados ya sea a un tratamiento grupal para estabilización de 20 semanas o a un tiempo de espera de igual duración. Ambos grupos recibieron terapia individual convencional. Luego del tiempo de espera, a los pacientes en el grupo de control se les ofreció el tratamiento grupal. El resultado principal fue el funcionamiento psicosocial, medido en una entrevista empleando la Evaluación Global de Funcionamiento (GAF, por sus siglas en inglés). El resultado secundario fueron los síntomas del TEPT auto-reportados. Estos fueron medidos antes del tratamiento, después del tratamiento y a los 6 meses de seguimiento. El ensayo clínico fue pre-registrado en "Clinical Trials" (NCT02450617).

Resultados: Encontramos tamaños del efecto grandes dentro de los grupos en ambas condiciones con la GAF; además, encontramos tamaños del efecto moderados para los síntomas del TEPT. Los modelos mixtos lineales no mostraron diferencias significativas en las trayectorias del tratamiento entre ambas condiciones.

Conclusiones: El tratamiento grupal para estabilización enfocado en la regulación emocional y en el entrenamiento de habilidades no mejoró los resultados clínicos más allá del tratamiento individual como monoterapia y no debería ser recomendado como un tratamiento de primera línea para este grupo de pacientes.

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🅰 Supplemental data for this article can be accessed here.

针对童年期虐待相关PTSD的稳定化团体治疗：一项随机对照试验

背景： 童年期虐待相关PTSD患者经常经历其他问题，例如情绪失调和人际交往困难。已经提出了专注于症状稳定、情绪调节和技能培训的心理疗法，作为对该患者群体的一种治疗方法，可以作为进一步的治疗准备或作为独立的干预措施。

目的： 本研究考查了使用稳定化团体治疗方案辅助传统个体疗法的治疗效果。

方法： 采用交换重复的延迟治疗设计，将89例有童年期虐待史的PTSD患者临床代表性样本随机分配至20周稳定化团体治疗组或相应的等待期组，均辅助传统个体治疗。等待期过后，给予对照状态的患者团体治疗。主要结果是心理社会功能，通过访谈式评估的总体功能评估（GAF），次要结果是自我报告的PTSD症状。在治疗前、治疗后和6个月随访时进行测量。该临床试验进行了预先注册（NCT02450617）。

结果： 我们发现，在两种情况下组内效应均对GAF均具有较大的效应量，而对PTSD症状具有中等效应。线性混合模型并未显示不同条件之间治疗轨迹的显著差异。

结论： 专注于情绪调节和技能培训的稳定团体治疗不能改善个体治疗以外的结果，因此不应该将其推荐为对此患者群体的一线治疗。

Childhood abuse is recognized as a major contributor to the development of mental health difficulties and is associated with a higher prevalence of a wide range of psychiatric disorders (Scott, Smith, & Ellis, 2010). For many, childhood abuse leads to the development of Posttraumatic Stress Disorder (PTSD), either directly as a triggering traumatic event, or indirectly as a heightened vulnerability to develop PTSD after later traumatic experiences (Kessler et al., 2014). Trauma and abuse often occur in the context of other types of adverse childhood events, that are cumulatively associated with disrupted development and a range of somatic and mental health problems (Anda et al., 2006). Patients with histories of childhood abuse therefore often present with other difficulties in addition to severe PTSD symptoms. This is reflected in the proposed category complex PTSD (CPTSD; (Herman, 1992), characterized by interpersonal problems, difficulties in regulating emotions, and negative self-beliefs, in addition to PTSD symptoms, that have an impact on the person's psychosocial functioning. CPTSD was recently included as a distinct diagnostic entity in the 11th revision of the International Classification of Diseases (ICD-11; Cloitre, Garvert, Brewin, Bryant, & Maercker, 2013; Maercker et al., 2013). The diagnosis is not exclusively related to any particular type of event, but research has shown that severe and repeated interpersonal trauma, including childhood abuse, increases the risk of the disorder (Brewin et al., 2017). This nosology remains controversial though, as some argue that multiple trauma exposure and complex presentations are common in all PTSD patients (Resick et al., 2012).

1. Treatment

Studies indicate that patients with PTSD related to childhood trauma experience poorer outcomes from current evidence-based treatments (Dorrepaal et al., 2014; Mahoney, Karatzias, & Hutton, 2019). Concerns have been raised that these patients can struggle to tolerate trauma-focused treatment due to difficulties in regulating strong affect, increasing the risk of symptom-exacerbation, drop-out or destructive behaviour (Cloitre et al., 2010;

Mcfetridge et al., 2017), This has led to calls for more personalized multi-component treatments (Cloitre, 2015) and interventions that help patients manage symptoms and improve overall psychosocial functioning and quality of life (Stadtmann, Maercker, Binder, & Schnepp, 2018). The risks of symptom-exacerbation and drop-out are disputed though (De Jongh et al., 2016), and recent research shows that childhood trauma does not increase drop-out from trauma-focused treatment (Eftekhari, Crowley, Mackintosh, & Rosen, 2020)

A proposed alternative to trauma-focused treatment recommended by expert guidelines (Cloitre et al., 2012; Mcfetridge et al., 2017) is *stabilizing treatment*, focused on emotion – regulation, stress – management, and skills – training, rather than processing traumatic memories. Stabilizing treatment can be delivered as a preparatory phase before trauma-focused treatment (phase-based treatment; Cloitre, Courtois, Carapezza, Stolbach, & Green, 2011), but has also been suggested as a stand-alone intervention (Courtois, Ford, & Cloitre, 2009).

In mental-health services stabilizing treatment is often offered in a group-format, either alone or conjoint with individual treatment (Dorrepaal et al., 2012; Herman & Kallivayalil, 2019; Robertson, Blumberg, Gratton, Walsh, & Kayal, 2013; Stige, 2011; Zehetmair et al., 2018; Zlotnick et al., 1997). The group setting makes it possible to counteract a sense of isolation and offer an opportunity for new interpersonal experiences, while the individual therapy ensures support to handle reactions and experiences from the group (Schwartze, Barkowski, Strauss, Knaevelsrud, & Rosendahl, 2019). To our knowledge, the efficacy of stabilizing group treatment for PTSD has only been investigated in two randomized controlled trials. Zlotnick and colleagues (Zlotnick et al., 1997) in a small study with 48 women with sexual abuse histories, found that stabilizing group treatment was significantly beneficial compared to individual treatment alone in reducing PTSD and dissociative symptoms. Meanwhile, Dorrepaal and colleagues (Dorrepaal et al., 2012) found that adding stabilizing group treatment did not produce superior outcomes in a multicenter trial with 71 patients diagnosed

with CPTSD and histories of childhood abuse, although within-person effect-sizes were large. Neither of these studies reported follow-up data.

1.1. Study aim

In light of these inconclusive results, there is a need for further empirical investigations of the efficacy of this widely offered treatment format to guide clinical practice. Also, previous investigations have only reported outcomes specifically related to trauma-pathology, such as PTSD, CPTSD, and dissociative symptoms. As it is a stated goal of stabilization-treatment to increase psychosocial functioning, it is important to investigate the effect on this outcome. The current study therefore aims to investigate the efficacy of stabilizing group – treatment, focused on emotion-regulation and interpersonal problems, delivered adjunct with conventional individual treatment, compared to individual-treatment alone. The conventional individual treatment was not trauma-focused. We specifically predicted that the combined treatment would be more effective in increasing psychosocial functioning and alleviating PTSD symptoms than individual treatment alone.

2. Methods

2.1. Participants

Participants were recruited from patients referred to group treatment at an urban outpatient clinic in Oslo, Norway. The clinic accepts referrals from patients with a reported trauma history and trauma-related symptoms, seeking specialized group treatment. Patients are also required to have planned or ongoing individual treatment at another clinic or practice. Between September 2014 and March 2016, all patients referred for trauma treatment and with presenting problems corresponding with PTSD symptoms were invited to participate at intake. Written informed consent was obtained from all patients followed by structured diagnostic interviews. Inclusion and exclusion criteria were the same as those used by the clinic (Figure 1). To be included in the study patients had to: (a) meet DSM-5 criteria for PTSD; (b) report a history of childhood abuse; (c) be between 18 and 65 years of age. PTSD symptoms did not have to be directly associated with experiences of childhood abuse, but could be related to other traumatic experiences. Exclusion criteria were: (a) acute suicidality; (b) serious substance abuse interfering with treatment; (c) serious psychotic symptoms; (d) current life – crisis interfering with therapy (e.g. ongoing abuse, divorce, court case, somatic disease in spouse or children, etc.); (e) neurological disease, mental disability or life-threatening somatic disease; (f) insufficient competence in Norwegian to be able to participate in a psychoeducational group: (g) a diagnosis of Dissociative Identity Disorder (DID) or Dissociative Disorder Not Otherwise Specified (DDNOS), assessed by DSM-IV Dissociative Disorders-Revised (SCID-D;Steinberg, Cicchetti, Buchanan, & Hall, 1993).[1]

The study was funded by Modum Bad Psychiatric Hospital. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the
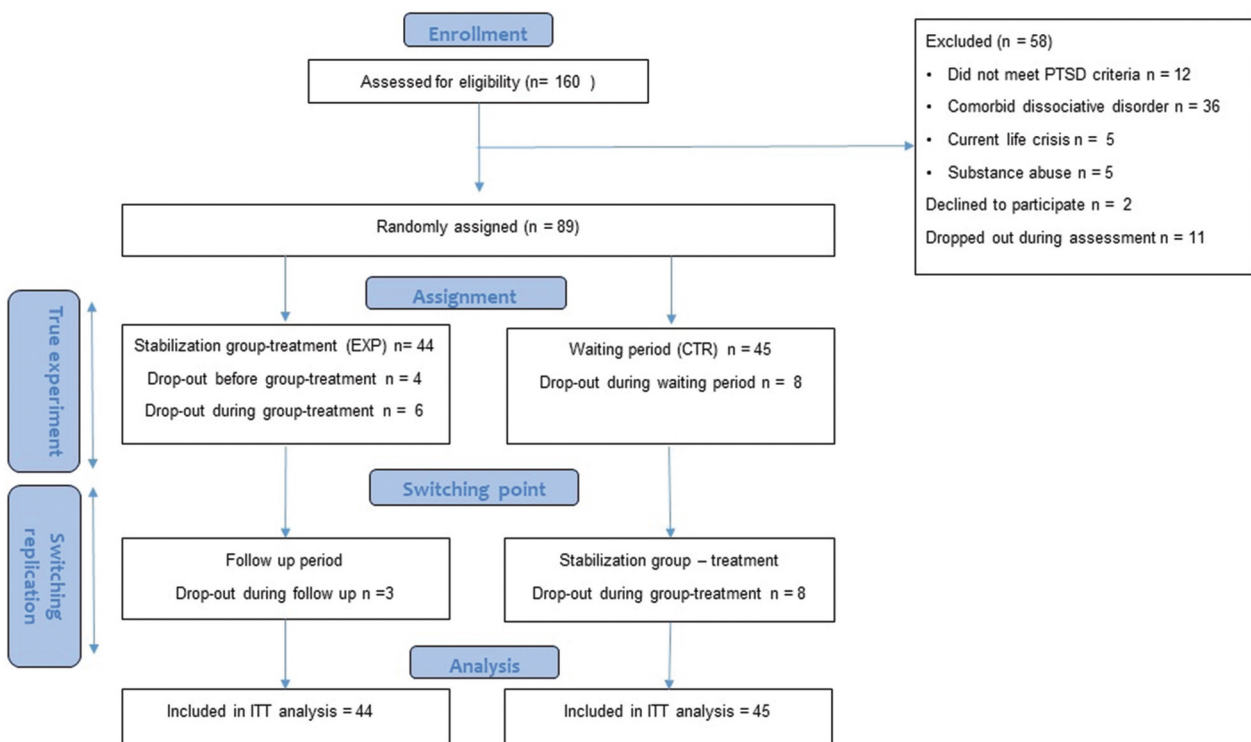

Figure 1. Flow-diagram of randomized trial of stabilizing group treatment with a delayed treatment control group.

Helsinki Declaration of 1975, as revised in 2008. All procedures involving human subjects/patients were approved by the Norwegian Regional Committees for Medical and Health Research Ethics (2013/2350).

2.2. Design and randomization

The study employed a multimethodological design, combining a randomized trial with a delayed treatment control group and multiple time series with switching replication (Heath, Kendzierski, & Borgida, 1982). A delayed-treatment control was believed to be a pragmatic and ethical choice in a clinical setting with referred patients, where a no-treatment control would be difficult. Included patients were randomly assigned to receive stabilizing group treatment immediately (EXP) or after a waiting period (CTR). After the end of group treatment of their corresponding cohort (Switching point), all patients in the control condition were offered the experimental group treatment. All patients received conventional individual treatment conjoint with the group treatment and during the waiting period. Patients were also assessed 6 months after the end of group treatment, to investigate long term effects. This design allows for a 'true experiment' and a quasi-experimental switching replication to infer effectiveness, while also including long-term effects (Figure 1).

Randomization was performed by an independent administrative assistant, not involved in the research group, using random sequences generated from software at www.graphpad.com. To ensure the assignment of nine participants in each treatment group, a blocked randomization procedure with cohorts of 18 was used. One patient withdrew consent after randomization, so one cohort had only 17 subjects, leaving the final sample at 89. Information on condition – assignment was given directly to the patients and therapists, without informing the researchers or assessors. The trial was preregistered at Clinical Trials (NCT02450617).

2.3. Interventions

The stabilizing group treatment focused on psychoeducation and skills – building, primarily to enable patients to cope with PTSD symptoms, strengthen emotional regulation, and increase interpersonal functioning. The treatment is manualized (Bad, 2014) and consists of twenty 90-minutes sessions, each with a new topic, exercise and homework The manual is based on recommendations for stabilization in treatment guidelines for patients with CPTSD (Cloitre et al., 2012; Mcfetridge et al., 2017) and previous work (Dorrepaal et al., 2012) and incorporate elements from cognitive-behavioural therapy and mindfulness interventions. Based on experiences from pilot-groups, the manual carefully introduces topics on trauma, trauma –

reactions, and coping-skills (see supplementary A). Each group had nine participants and two therapists. Sessions were highly structured to increase each participant's sense of safety and predictability. The first part of each session focused on giving each participant time to talk about their experience with the last session's topic and homework, with feedback from the therapists and participants. The second part primarily consisted of psychoeducation, with one of the therapists giving a small lecture about the topic and reviewing next week's homework. Each session also included instructions in different exercises, such as grounding, relaxation, or mindfulness. Exercises were modelled and instructed by one of the therapists, and time was allocated for the patients to practice themselves. Participants had access to written material and audiofiles of exercise – instructions and were tasked with practicing skills between group meetings. The participants were encouraged to share their experiences and thoughts with the group, but not allowed to share details of their trauma-histories to avoid secondary traumatization and affecting other group members (Barrera, Mott, Hofstein, & Teng, 2013; Dorrepaal et al., 2012).

Individual treatment was not protocolled, but delivered as seen fit by the therapists. Therapists were psychologists, psychiatrists, or nurses working in other clinical departments or private practice. Few therapists were trained in trauma-focused treatment (for details see supplementary B). Individual therapists were invited to a meeting at the start of the stabilization group treatment and informed about the rationale and content of the treatment. Patients were encouraged to share written material and discuss their experiences from the group with their therapists.

2.4. Therapists and treatment integrity

Group therapists were experienced psychologists, a psychiatrist or a psychiatric-nurse employed at the clinic. All had previous training and experience with conducting groups based on the manual and participated in weekly group-supervision. After each group – session, both therapists completed a checklist (see supplementary C) that was used to screen for protocol violations. No major violations of fidelity were reported.

3. Measures

3.1. Diagnostic assessment and baseline characteristics

The Post-traumatic Symptom Scale – Interview (PSS-I; Foa, Riggs, Dancu, & Rothbaum, 1993) was used to assess PTSD. Using PSS-I, the

interviewer first establishes a traumatic event before asking about 17 symptoms of PTSD based on DSM-IV. The information and scoring obtained during the interview were used to diagnose patients based on DSM-5 criteria, since the DSM-5 version of PSSI was not published at the start of the study. PSS-I has shown good interrater reliability and convergent validity with other measures of PTSD (Foa & Tolin, 2000)

The Mini-International Neuropsychiatric Interview (Sheehan et al., 1998) and **SCID – II** (First, Benjamin, Gibbon, Spitzer, & Williams, 1997) were administered to assess general psychopathology and personality disorders. Both instruments have shown satisfactory psychometric properties and interrater reliability (First et al., 1995; Mordal, Gundersen, & Bramness, 2010).

Childhood Trauma Questionnaire – Short form *(CTQ-SF;* Bernstein et al., 1994) was used to assess childhood trauma history. CTQ-SF has 28 items scored from 0 ("never true") to 5 ("very often true") covering experiences related to five subcategories of abuse: Emotional neglect, physical neglect, emotional abuse, sexual abuse, and physical abuse. Validated cut-off scores for each subcategory (sexual abuse ≥ 8, physical abuse ≥ 8, physical neglect ≥ 8, emotional abuse ≥ 10, emotional neglect ≥ 15) to classify if participants fulfilled inclusion criteria (i.e. scored above cut-off on at least one category). The Norwegian translation of CTQ-SF has shown good reliability (Dovran et al., 2013).

The International Trauma Questionaire (ITQ; Cloitre et al., 2018) was used to assess CPTSD. ITQ was developed by members of the ICD-11 Working Group for trauma-related disorders. ITQ consist of 6 items measuring PTSD and 6 items measuring disturbances in self-organization (DSO), that are used in this study. These are scored on a scale from 0 to 4 (0 = 'not at all', 1 = 'a little bit', 2 = 'moderately', 3 = 'quite a bit' and 4 = 'extremely') to indicate to what degree this symptom has been bothering to the respondent in the last month. The Norwegian translation of ITQ has shown good psychometric properties (Sele, Hoffart, Bækkelund, & Øktedalen, 2020).

Background information and sociodemographic data were registered with a generic form.

3.2. Primary outcome measure

Global Assessment of Functioning – Split version (GAF-S; Karterud, Pedersen, Loevdahl, & Friis, 1998) was used to assess psychosocial functioning. GAF-S is scored between 1 and 100, representing low to high functioning last 7 days. It consists of two subscales that assess global psychosocial functioning and severity of symptoms, and the lowest of these scores are used. GAF-S scores in this study were obtained based on semistructured interviews

conducted by raters blind to randomization. Relevant information from each interview was also conveyed to a second blind rater who gave an independent score, with the mean score of both raters determining the final score. This procedure has been shown to increase the reliability of the GAF scoring (Pedersen, Hagtvet, & Karterud, 2007). Raters had previously completed a web-based feedback training program for GAF-S scoring, shown to further strengthen reliability and validity (Støre-Valen et al., 2015). Interrater reliability between the two independent raters was found to be high (intraclass correlation coefficient (3.1) = 0.88, 95% CI: 0.85– 0.90). GAF scores were collected before treatment, after treatment, and at follow-up.

3.3. Secondary outcome measure

PTSD Symptom Scale – Self-Report (PSS-SR; Foa et al., 1993) assess the severity of PTSD symptoms with 17 self-report items, measuring three symptom dimensions (re-experiences, avoidance, and hyperarousal) Each item is scored, based on frequency and severity of the symptom, on a Likert scale from 0 (not at all or only one time) to 3 (almost always or five or more times a week). PSS-SR has shown satisfactory sensitivity, reliability, internal consistency, and validity. A cut-off score of 14 indicates clinically significant PTSD-symptoms (Coffey, Gudmundsdottir, Beck, Palyo, & Miller, 2006)

Other self-report instruments measuring general psychopathology, interpersonal problems, dissociative symptoms, self-destructive behaviour, and quality of life were collected. These are described in supplementary D, E, and F.

Self-report measures were collected at assessment, before treatment, after treatment and follow-up, via a secure web-based platform (www.checkware.no) in ordinary use at the hospital. Participants were provided with instructions and access-code and could choose to submit their responses at the clinic or in private. Regular reminders were sent to participants that had not completed the measures.

3.4. Individual treatment

To measure the frequency and quality of the individual treatment, both patients and therapists completed a form consisting of items asking about therapist competence, frequency, and length of treatment. Both therapists and patients also completed the *Working Alliance Inventory* (WAI; Hatcher & Gillaspy, 2006) consisting of 12 items measuring the degree of bond, and agreement on goals and tasks between therapist and patient. Both measures were administered at the start and end of treatment.

3.5. Power considerations

To estimate the effect size (δ) to be detected, we relied on Zlotnick et al (1997) who found effect sizes in the range of .80 to 1.10. With a more conservative effect δ at .45 and alpha = .05 (one- tailed), and an analysis of covariance, using the pretreatment score as the covariate with pre – treatment to post-treatment correlation of r = .70 (the typical value in psychotherapy research), then 31 patients in each group are needed to achieve power of .80 to detect a statistically significant effect. To account for attrition we therefore chose to recruit participants for five treatment groups of nine patients each, giving a total of 45 patients in each treatment condition.

3.6. Statistical analyses

Demographics, clinical characteristics, and individual treatment- data were analysed for group – differences at pre-treatment with t-tests for continuous variables and chi-square test for categorical data. Non-parametric tests were used if assumptions of normality were not met.

Linear mixed-models (LMM) were used to compare outcome trajectories in the two therapy conditions, with GAF and PSS-SR as outcome variables. This analytical method allows modelling of dependencies in nested data, for instance repeated measures within individual patients. Assumptions of LMM were checked and met. In building the models we started with only a fixed intercept and no random effects. We tested both a linear and nonlinear time-function by fitting a linear-spline model with a knot at the switching point. This model allows for differences in slopes before and after the knot, thereby accommodating the switching-design. Random intercept and slope were added if they significantly improved model-fit, using the Akaike Information Criteria (AIC). Finally, alternative covariance structures of the residuals were tested. Robust Maximum Likelihood (ML) was used for estimation (Fitzmaurice, Laird, & Ware, 2011). Both the linear and spline models were used to investigate differences in treatment trajectories between conditions. The final model chosen, based on the best model fit, includes random intercept with unstructured covariances, but without random slope. Within-group effect sizes were calculated using Hedges's *g* and interpreted based on classifications by Cohen (Cohen, 1988).

All statistical analyses were carried out using SPSS version 25.

3.7. Missing data

On different time-points between 6% and 42% had insufficient data to calculate GAF and mean PSS-SR scores, including missing scores for patients that dropped out. Rates of missing data were highest for self-report measures collected at follow-up. Under the assumption of missing at random (MAR), missing data were handled using maximum likelihood estimation in the mixed models. To obtain unbiased estimates of means, standard deviations, and effect sizes we also employed multiple imputations. Twenty datasets for GAF and PSS-SR, with pre-treatment scores as predictors, were generated and pooled estimates were used to calculate means, standard deviations, and effect sizes.

4. Results

4.1. Patient characteristics, attrition, and comparability

In the experimental group, four participants dropped out between allocation and treatment start, six participants dropped out during treatment and three dropped out during follow-up. In the control condition, eight participants dropped out during the waiting period and eight dropped out during group treatment, leaving the total attrition rate at 32.5%. Of the 77 patients that started group treatment, 14 (18%) dropped out during treatment. We observed no significant differences between drop-outs and completers on pre-treatment scores or demographic variables (see supplementary G). Demographical information, treatment history, and prevalence of childhood trauma for the treatment samples can be seen in Table 1. The patients presented severe trauma histories and a high degree of co-occurring psychiatric diagnoses. The majority of the patients were unable to participate in work and had been in contact with mental health services for many years. A majority reported having been diagnosed with PTSD before their participation in this study.

The most prevalent forms of childhood abuse reported were emotional abuse (90.7%) and sexual abuse (75%). Most participants reported being exposed to several types of abuse. Almost all patients reported a history of depression. A little over half of the sample reported disturbances of self-organization consistent with ICD-11 criteria for CPTSD.

Based on statistical analyses we determined that there were no significant differences between the treatment-groups on patient characteristics or pre-scores on outcome variables. There were also no significant differences in patient – reported frequency of individual treatment or therapeutic alliance with individual therapist before or during treatment.

4.2. Treatment Effects

In the mixed-models we investigated if GAF and PSS-SR scores changed over time, and if these measures changed differently in the two groups participating in

Table 1. Sample and group characteristics.

Characteristic	Total (89)	EXP (Fitzmaurice et al., 2011)	CTR (Cohen, 1988)
Demographics			
Age	39.15 (9.9)	38.9(10.05)	39.4 (9.84)
Female gender	84.3%	84.1%	84.4%
Married or partner	48.6%	52.3%	35.1%%
College-level education	51.4%	48.6%	54.1%
Living with children	36.1%	40%	32.4%
Occupational status*			
Work incapacity	82.4%	81.1%	83.8%
Student, full or part time	13.7%	11.1%	16.2%
Employed, full- or part-time	27%	27%	27%
Unemployed	2.2%	2.8%	2.7%
Treatment history			
Years since first contact with mental health services	16.16(10.07)	15.52(11.06)	16.84 (9.00)
Inpatient treatment ever	42.2%	44.1%	40%
Inpatient treatment last year	17.2%	17.6%	16.7%
Previous PTSD diagnosis or treatment	59.1%	55.9%	62.5%
Reported childhood abuse			
CTQ mean score	13.82 (3.48)	13.39(3.51)	14.21(3.44)
CTQ – Emotional abuse	90.7%	90.2%	91.1%
CTQ – Physical abuse	58.1%	58.5%	57.8%
CTQ – Sexual abuse	75.3%	72.5%	77.8%
CTQ – Emotional neglect	66.3%	61%	71.1%
CTQ – Physical neglect	68.6%	58.5%	77.8%
Number of CTQ abuse types	3.58 (1.12)	3.39(1.22)	3.76(1.00)
Clinical comorbidity			
MINI Number of comorbid axis-I disorders	5.04(2.15)	5.09 (2.07)	5.00 (2.25)
MINI any depressive disorder (present or lifetime)	91%	95.5%	86.7%
MINI any bipolar disorder (present or lifetime)	4.5%	4.5%	4.4%
MINI severe suicidality (scored above 2)	7.9%	6.8%	8.9%
MINI any anxiety disorder (present or lifetime)	82%	84.1%	80%
MINI substance abuse	11.2%	6.8%	15.6%
MINI any psychotic disorder (present or lifetime)	11.2%	9.1%	13.3%
MINI any eating disorder	9%	6.8%	11.1%
SCID-II Number of comorbid axis-II disorders	0.85 (1.18)	0.954 (1.31)	0.755(1.04)
PSS-I total	33.37 (8.21)	33.8 (8.48)	32.97 (8.04)
ITQ – disturbance of self – organization	56.2%	66.7%	45.9%

Note: Data presented as means (SD) or percentages. CTQ = Childhood Trauma Questionaire – Short form; PSS-I = Posttraumatic Symptoms Scale – Interview; ITQ = International Trauma Questionnaire
*Participants can belong to more than one category.

stabilization-groups either immediately (EXP) or after a waiting period (CTR). The linear model estimated a significant effect of time for GAF (t = 6.2, p >.001) and PSS-SR (t = −2.81, p > .05) indicating significant treatment effects. Means, standard deviations (pre and post), effect sizes, and change trajectories are shown in Figure 2. We observed large within-group effect sizes in both conditions for GAF and medium effects for PTSD symptoms from assessment to follow-up.

However, as reported in Table 2 we observed no significant time x randomization interaction effects (GAF: t = −1.35, p = .18; PSS-SR: t = 0.34, p =.97) with a linear model over time. As predicted, the non-linear splines with a knot at the switching point improved model fit, indicating differences in trajectories before and after this time-point. However, neither time – variables were significant in interaction with randomization for GAF or PSS-SR (see Table 2). This indicates that contrary to the hypothesized effect, patients did not have different trajectories of change in both conditions independent of participation in stabilizing group treatment.

5. Discussion

5.1. Main findings

The main aim of the present study was to evaluate the efficacy of group-based stabilization therapy focused on emotion regulation and skills-training delivered adjunct with individual therapy. We predicted that participating in stabilization group treatment would more effectively increase psychosocial functioning and reduce PTSD symptoms, than individual therapy alone.

The results show that although patients experienced improvements during the course of treatment, participation in stabilization group treatment did not significantly influence the trajectories of change, compared to individual therapy alone. Effect sizes indicate that most gains were experienced in psychosocial functioning while PTSD symptoms were reduced to a lesser degree. These moderate treatment gains should be interpreted in light of the substantial time and resources invested in the group treatment, involving 20 sessions of 90 minutes. The study therefore does not support the delivery of stabilizing group – treatment as an efficacious
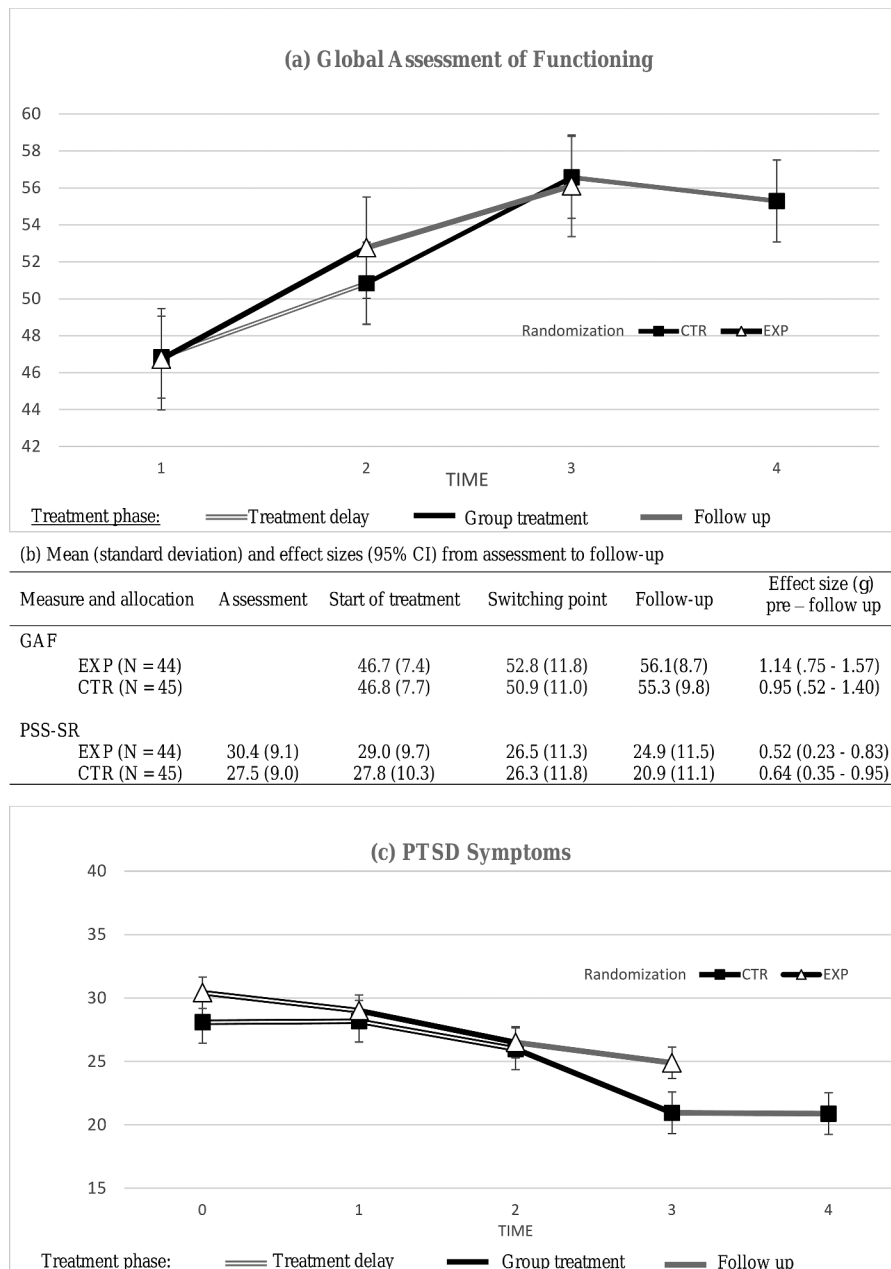
(a) Global Assessment of Functioning

(b) Mean (standard deviation) and effect sizes (95% CI) from assessment to follow-up

Measure and allocation	Assessment	Start of treatment	Switching point	Follow-up	Effect size (g) pre – follow up
GAF					
EXP (N = 44)		46.7 (7.4)	52.8 (11.8)	56.1(8.7)	1.14 (.75 - 1.57)
CTR (N = 45)		46.8 (7.7)	50.9 (11.0)	55.3 (9.8)	0.95 (.52 - 1.40)
PSS-SR					
EXP (N = 44)	30.4 (9.1)	29.0 (9.7)	26.5 (11.3)	24.9 (11.5)	0.52 (0.23 - 0.83)
CTR (N = 45)	27.5 (9.0)	27.8 (10.3)	26.3 (11.8)	20.9 (11.1)	0.64 (0.35 - 0.95)

(c) PTSD Symptoms

Figure 2. Treatment trajectories of immediate (EXP) or delayed (CTR) stabilizing group treatment measured on Global Assessment of Functioning (GAF) and PTSD Symptoms (PSS-SR). (a) The effect of treatment on primary outcome (GAF) with error bars. (b) The means, standard deviations and effect sizes of outcome measures of both conditions. (c) The effect of treatment on primary outcome (PSS-SR) with error bars.

adjunctive intervention for patients with PTSD related to childhood abuse.

The results from this study are in line with Dorrepaal, Thomaes (Dorrepaal et al., 2012), who similarly did not find significant differences between stabilizing group treatment and treatment as usual. In a recently published meta-analysis, Mahoney and colleagues (Mahoney et al., 2019) similarly observed superior effectiveness of group treatments for PTSD that included trauma-focused interventions, compared to psychoeducational interventions. The results also lend support to recent criticism raised against the phase-based model for treatment of CPTSD (De Jongh et al., 2016). The rationale for stabilization-

treatment is based on the notion that patients with childhood trauma and complex symptom-profiles will have difficulties tolerating an explicit trauma-focus, leading to symptom – exacerbation and adverse effect (Cloitre et al., 2012, 2010). However, trauma-history or symptom profile have been shown to be unrelated to symptom-exacerbations in trauma-focused treatment (Larsen, Wiltsey Stirman, Smith, & Resick, 2016) and does not predict treatment outcome (Minnen & Harned, 2012). In a study of patients with PTSD and psychosis for instance, symptom exacerbations and adverse events were more frequent in the wait-list condition than in the trauma-focused conditions (van den Berg et al., 2016). Such results have led researchers

Table 2. Multilevel mixed-models with GAF and PSS-SR as dependent variables.

	Parameter/Outcome	GAF	PSS-SR
Linear		Fixed parameters	
Model	Intercept	42.1**(1.6)[38.9– 45.3]	30.5**(1.6)[27.3– 33.8]
	Randomization	1.2 (2.1) [3.0– 5.4]	−2.4 (2.2) [−6.8– 2.1]
	Time	5.0** (0.8)[3.4– 6.2]	−1.9*(0.6)[−3.2 − −0.5]
	Time *randomization	−1.3 (0.9) [−3.8– 0.6]	0.02 (0.8) [−1.5– 1.6]
		Random parameters	
	Intercept	33.3**(7.9)	80.9** (16.2)
	AIC	1583.1	1669.4
Spline		Fixed parameters	
Model	Intercept	43.6** (3.8)[36.3– 50.1]	30.8**(1.7)[27.5–34.1]
	Randomization	1.6 (4.6)[−7.8– 10-7]	−3.6 (2.3) [−8.1– 0.9]
	Time 1	3.3 (3.3)[−3.4– 9.9]	−2.4* (1.2) [−4.8– −0.1]
	Time 2	3.1 (2.1)[−0.1– 7.2]	0.01 (1.4) [−3.0– 3.0]
	Time1 *randomization	−1.6 (4.1) [−9.8– 6.5]	2.8 (1.5) [−0.1– 5.8]
	Time2 * randomization	−1.7 (2.4)[−4.9– 4.5]	−2.9 (1.7) [−6.2– 0.4]
		Random parameters	
	Intercept	32.80**(7.8)	80.1** (14.9)
	AIC	1573.8	1657.2

Note. Standard error in parentheses, 95% Confidence Intervals in brackets.
*$p < 0.05$
**$p < 0.01$
GAF = Global Assessment of Functioning; PSS-SR = PTSD Symptom Scale – Self-Report

to contend that stabilization-treatment unnecessarily prolongs treatment for patients and only delays access to effective interventions (De Jongh et al., 2016). The current study adds support to this criticism since the benefits of stabilizing treatment on PTSD symptoms are small. Proponents of phase-based treatments however, argue that a preparatory stabilization-phase also can enhance treatment gains in later trauma-focused treatment (Cloitre, 2015). As with previous studies on group-based stabilization-treatment, this hypothesis cannot be investigated in this study, due to a lack of a control group that is being offered trauma-focused treatment before or after stabilization-treatment.

The observed effects in both conditions in this study indicate that improvement in psychosocial functioning for this patient group does not necessarily hinge on large reductions in PTSD symptoms. Treatments without an explicit trauma – focus may help patients cope with distress and thereby increase functioning, without necessarily reducing symptoms (Stadtmann et al., 2018). Contrary to our first hypothesis however, improvements in psychosocial functioning were not directly influenced by group participation, but generally improved over time. Although there is some evidence to suggest that trauma-focused treatments also can improve psychosocial functioning in PTSD, there is a general lack of research focusing on this outcome (Reich, Nemeth, & Acierno, 2019). Future research should investigate interventions that can improve psychosocial functioning and how this relates to improvements in symptoms.

It should be noted that a majority of the group-participants chose to discuss the group topic with their individual therapists, indicating that they found the experience important, and some patients experienced substantial gains during the study period. Also, stabilization treatment might be more effective in different PTSD populations and settings. Eichfeld, Farrell (Eichfeld et al., 2018) for instance

observed very large within-person effect-sizes and remission rates from stabilization-treatment for PTSD in a large study conducted in South-East Asia, albeit without a control condition. In that study, no clients had previous treatment-histories and the authors conclude that stabilization-treatment is effective, safe, and easily disseminated in post-conflict settings. Meanwhile, the current study was conducted in a specialist clinic with patients referred from other mental health clinics. This might have had an impact on the chronicity of the recruited participants, as these patients are usually referred based on lack of progress in previous treatments or perceived complexity by referring clinicians. All patients had previous treatment histories, with a mean of 16 years since their first contact with mental health services.

5.2. Limitations

It is worth noting that the observed effects in the present study contrast the two previous investigations with similar treatments, patient-samples, and research designs (Dorrepaal et al., 2012; Zlotnick et al., 1997), who both reported larger effect-sizes in the group-conditions. This should be interpreted in light of some noteworthy differences between the studies. First, the current study recruited a more diverse sample of patients. Both previous investigations included only females, while men were also included in the current study, albeit in small numbers ($N = 8$). We observed smaller treatment gains and higher drop-out rates in male participants, although the small size of this subgroup limited the statistical power to detect significant differences. Furthermore, female-only groups have been shown to be more effective than mixed-gender groups in substance abuse treatment (Prendergast, Messina, Hall, & Warda, 2011), with increased group cohesion and feelings of safety (Greenfield, Cummings, Kuper, Wigderson, & Koro-Ljungberg, 2013), and it is conceivable that this

difference would be equally important for women with abuse-related PTSD. Also, in both previous investigations, all participants fulfilled criteria for Disorders of Extreme Stress (Pelcovitz et al., 1997), an earlier version of CPTSD criteria, while the current study included both patients with and without CPTSD according to ICD-11 criteria. Lastly, the treatment-protocol used is not identical to those used in the previous studies, since these were not available for translation. Although the rationale, content, and broad themes covered are similar, specific adaptations and additions were made, such as the inclusion of mindfulness-focused interventions and less emphasis on cognitive-behavioural interventions.

The results should further be interpreted in light of some other important limitations. Since the individual treatment in both conditions was delivered by therapists in other services than the study-clinic, the content and frequency of this treatment were not protocolled. The use of stabilization interventions in individual therapies might have impacted the differences between conditions. Across conditions, seventy percent of participants reported receiving individual treatment less frequently than once a week, and 45% had to change therapists during the study period primarily due to staff turnover. This might have contributed to a diminished treatment response across conditions. We also experienced more attrition than expected, influencing statistical power to detect treatment differences, although the number of patients in each group at the switching point (34 vs 36) was within the parameters set by the power analysis. Furthermore, the delayed-treatment design makes it impossible to infer differential effects after the end of treatment, since patients in both conditions had received the study treatment at that time-point. Finally, the current study did not control for medication use, which may have confounded results.

5.3. Conclusion

The results of this study do not support offering stabilizing group treatment as an add-on to individual therapy in specialist healthcare settings, for patients with PTSD and experiences of childhood abuse. Together with the results of previous investigations, these results indicate that stabilization groups should primarily be considered if preferred by the patient or if other evidence-based treatments are unavailable. Future studies could investigate if stabilization groups would be better applied to lower levels of care or in settings where large – scale training of therapist in trauma-focused treatments are difficult (Eichfeld et al., 2018). Investigations should also examine if stabilization-treatment can bolster treatment gains from later or concurrent trauma-focused treatment, and increase motivation for trauma-focused interventions in patients who are reluctant to engage in such treatment. To enable strong inferences, studies should include clear treatment protocols, fidelity ratings, and robust research-designs, including longer follow-up and active treatment-controls.

Note

1. These patients were included in another trial investigating specialized treatment for this diagnostic group.

Data availability

The datasets generated and/or analyzed during the current study are not publicly available due to ethical approval and confidentiality agreements made with participants, but are available from the corresponding author on reasonable request.

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III