

**Out of Mind – Out of Sight
Studies on Clinical and Psychophysiological
Characteristics of Dissociative Identity Disorder.**

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Abstract

Dissociative identity disorder (DID; APA, 1994), previously labeled Multiple personality (APA, 1980) and Multiple Personality Disorder (APA, 1987), has good diagnostic validity (Gleaves, May, & Cardena, 2001) and is supported by taxometric research, whereby two types of dissociation have been identified: Pathological dissociation, whose features are consistent with DID, and non-pathological dissociation (Waller, Putnam, & Carlson, 1996). On these grounds, we aimed to contribute to a further validation of the construct of DID by (1) testing to which extent DID may be separated from other dissociative disorders on a series of clinical and psychophysiological measures, and (2) exploring the characteristics of DID within the framework of Personal construct theory.

14 persons with DID were compared with persons with other dissociative disorders, and non-clinical comparison participants with regard to severity of PTSD related features, dissociative functioning, hypnotizability (Paper I), and prepulse inhibition (PPI) of the acoustic startle eye-blink reflex (Paper II). Persons with DID had reduced habituation of startle reflexes and increased PPI, compared to non-DID participants. These data suggest the operation of an aberrant voluntary attentional processes in the face of unpleasant and threatening stimuli, and this may be a defining characteristic in DID. This finding supports the notion that DID is a separate clinical and nosological entity (Gleaves et al., 2001; Waller et al., 1996). Results also showed that persons with DID differed significantly from persons with other dissociative disorders with regard to the complexity and magnitude of dissociative symptomatology, and with regard to hypnotizability. These results are also indicative of DID being a separate clinical entity, qualitatively

different from other dissociative disorders (Gleaves et al., 2001; Waller et al., 1996).

As expected, histories of childhood sexual and physical assault were reported among persons with DID and persons with other dissociative disorders and both these groups attained high PTSD scores. Although the clinical groups did not differ significantly with regard to scores of current and lifetime PTSD, some differences were observable with regard to the type and occurrence of abuse, with, e.g., a higher percentage of the DID group having experienced sexual assault by a close relative during childhood compared to the group with other dissociative disorders. This is consistent with findings that DID is linked to the nature of the assault and to the relationship between the victim and the perpetrator (Boon & Drajer, 1993).

In a design involving test technology developed within the framework of Personal construct theory (Kelly, 1955), 13 persons with DID were compared to persons with other clinical conditions and non-diagnosed comparison participants with regard to cognitive complexity (Paper III). Contrary to expectations, results showed that displaying alternate personalities does not imply a more multidimensional level of thinking. However, persons with DID seemed to have a more advanced social skill in role thinking and role conceptualization, in comparison with non-dissociative persons.

The results have important implications for the identification, treatment, and understanding of DID.

List of papers

The present dissertation consists of this introduction and the following three papers, which will be referred to in the text by their Roman numerals:

Paper I

Dale, K. Y., Berg, R., Elden, Å., Ødegård, A., and Holte, A. Testing the diagnosis of dissociative identity disorder through measures of dissociation, absorption, hypnotizability and PTSD: A Norwegian pilot study. *Journal of Trauma and Dissociation*. (in press; accepted for publication 16. April 2008)

Paper II

Dale, K. Y., Flaten, M. A., Elden, Å., and Holte, A. Dissociative identity disorder and prepulse inhibition of the acoustic startle reflex. *Neuropsychiatric Disease and Treatment*. (in press; accepted for publication 2. April 2008)

Paper III

Dale, K. Y., Ødegård, A., Tschudi, F., Cromwell, R., Saunders, R., Elden, Å., and Holte, A. Exploring Personal construct theory and dissociative identity disorder. (submitted to *Journal of Constructivist Psychology*.)

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My mother, sister and brother, have been patient and supportive in this long process. My father, who passed away just a few years ago, had a huge influence on me, and I know he would be glad and relieved now. The energy to do the last rounds, I owe to Linda, my darling, who came into my life just over a year ago. Without her, this would have been a bridge too far.

I wish to dedicate this work to all the participants. My dearest thoughts go to those who have struggled most to find a way to survive with their selves.

Karl Yngvar Dale

Molde, June 2008

INTRODUCTION

Background

Dissociative identity disorder (DID; APA, 1994), previously labeled Multiple personality (APA, 1980) and Multiple Personality Disorder (APA, 1987), has good diagnostic validity (Gleaves, May, & Cardeña, 2001) and is supported by taxometric research, whereby two types of dissociation have been identified: Pathological dissociation, whose features are consistent with DID, and non-pathological dissociation (Waller, Putnam, & Carlson, 1996). On these grounds, we aimed to contribute to a further validation of the construct of DID by (1) testing to which extent DID may be separated from other dissociative disorders on a series of clinical and psychophysiological measures, and (2) exploring the characteristics of DID within the framework of Personal construct theory.

DID is defined according to the following criteria of inclusion (APA, 1994):

- the presence of two or more distinct identities, or personality states, each with its own relatively enduring pattern of perceiving, relating to, and thinking about the environment and self
- at least two of these personality states recurrently take control of the person's behavior
- inability to recall important personal information that is too extensive to be explained by ordinary forgetfulness
- the disturbance is not due to the direct physiological effects of a substance

DID is assumed to reflect a failure to integrate various aspects of identity, memory and consciousness. Each personality state may be exper-

perienced as if it has a distinct personal history, self-image, and identity, including a separate name. Individuals with this disorder experience frequent gaps in memory for personal history, both remote and recent. In addition they endure severe adjustment problems towards family, work and friends. Moreover, they experience emotional lability, impeded impulse control, eating disturbances, self mutilation and derealization (APA, 1994).

Approximately 5 % of the general population (Loewenstein, 1994) and around one-quarter of patients with psychiatric illness (Putnam et al., 1996; Saxe et al., 1993) have been reported to have a substantial level of dissociation. Dissociative phenomena are believed to occur as defenses, both during and after traumatic experiences (Spiegel, Hunt, & Dondershine, 1988). Severe and persistent sexual and physical abuse is considered to be the main etiological factor in the development of pathological dissociative survival responses and symptomatology (Boon & Draijer, 1993; Kirby, Chu, & Dill, 1993). The earlier the onset of the abuse, the more serious the symptoms (Kirby et al., 1993). Boon and Draijer (1993) found that, among seventy-one patients with DID, a history of childhood physical and/or sexual abuse was reported by 94.4% of the subjects, and 80.6% met criteria for posttraumatic stress disorder (PTSD; APA, 1994). Additional factors to be taken into consideration include the timing of the trauma and the nature of the family environment (Kirby et al., 1993).

A variety of self report instruments have been validated for the assessment of dissociative disorders. Most frequently used is the 28 item Dissociative Experience Scale (DES; Bernstein & Putnam, 1986). The DES provides a general measure of the level of dissociative experiences in everyday life. Participants are required to circle the percentage of time (given in

increments of 10% ranging from 0% to 100%) that they have had the kind of experience described within each item. A total score is computed as the mean of the responses to the 28 items. From normative data high dissociators are usually identified at a mean score above 30.

The DES is not a diagnostic tool but can serve as a screening device. More precise clinical judgments can be made on basis of the Structured Clinical Interview for DSM-IV (SCID-D; Steinberg, 1995). The SCID-D is a 276 item structured clinical interview designed to make DSM-IV dissociative disorder diagnosis. The SCID-D has an overall interrater reliability of 0.68 (Kappa), a sensitivity of 90%, and a specificity of 100% for diagnosing DID and assesses dissociative symptomatology within four dissociative subcategories, ranging from Amnesia, Depersonalization, Identity confusion, and Identity change.

DID has been categorized as a nosologic entity in our largest systems of mental disorders for nearly three decades (APA, 1980, 1987, 1994; WHO, 1992). At the same time there has been considerable debate whether DID exists as a separate clinical entity, or whether it is merely a fad (Piper & Merskey, 2004a; Piper & Merskey, 2004b) or a variant of schizophrenia, PTSD, hysteria, or borderline personality disorder (Gleaves et al., 2001). The controversy also relates to the etiology of the disorder, with opponents claiming that the disorder is iatrogenetically developed (McHugh, 1993; Merskey, 1992), and to the validity of the dynamics of the disorder, with opponents claiming that persons with DID only act out different roles (Spanos, 1994).

In view of these controversies, Gleaves et al. (2001) reviewed the empirical evidence for the diagnostic validity of DID on grounds of research conducted during the past ten years. They concluded that DID appears to

meet all of the guidelines for inclusion and none of the exclusion criteria. DID is also one of the few disorders currently supported by taxometric research. A critical finding in this respect was made by Waller et al. (1996) who identified two types of dissociation, pathological and non-pathological dissociation, by using taxometric analyses. Furthermore, the taxometric studies seem to support the validity of a pathological dissociative disorder whose features are consistent with that of DID (Gleaves et al., 2001).

The taxonic model of pathological dissociation was corroborated by Waller and Ross (1997) in a study involving taxometric analyses on DES data from 1,055 adult residents of Winnipeg. Results indicated that approximately 3.3% of the general population belongs to a taxon of pathological dissociation.

Pathological dissociation can be identified by an eight-item subscale from the DES (item 3, 5, 7, 8, 12, 13, 22 and 27) labeled the DES-T (Waller et al. 1996). Two primary content areas are represented by the DES-T items: (1) Amnesia of dissociative states and (2) Derealization or depersonalization. None of these tap normal dissociative experiences such as absorption and imaginative involvement. A total score is computed as the mean of the responses to the 8 items.

The DES-T consists of the following items:

- Some people have the experience of finding themselves in a place and having no idea how they got there.
- Some people have the experience of finding new things among their belongings that they do not remember buying.
- Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see them-selves as if they were looking at another person.

- Some people are told that they sometimes do not recognize friends or family members.
- Some people have the experience of feeling that other people, objects, and the world around them are not real.
- Some people have the experience of feeling that their body does not seem to belong to them.
- Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people.
- Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing.

Dissociation, hypnotizability and trauma

Butler, Duran, Jasiukaitis, Koopman, and Spiegel (1996) hypothesized that hypnosis and pathological dissociation share an underlying process: It was observed that hypnosis could produce a variety of dissociations and that the features of absorption, dissociation, and suggestibility/automaticity could be discerned in dissociative pathology. Concordantly, in the neodissociation perspective hypnosis and dissociation are regarded as inseparable phenomena, both characterized by an ability to divide awareness (Hilgard, 1994). Moreover, involuntary hypnotic responding, or “autohypnosis”, is hypothesized to be instrumental for how mental subsystems are dissociated/disconnected by amnesic barriers, as the case might be in DID (Butler et al., 1996; Ross, 1999).

Persons with dissociative disorders have been shown to be significantly more hypnotizable than persons with other mental disorders and non-diagnosed persons (Frischholz et al., 1992). In addition, assessment instru-

ments for dissociation, such as the DES (Bernstein & Putnam, 1986) and its subscale for pathological dissociation, the DES-T (Waller et al, 1996), show high correlations with standardized hypnotizability measures (Butler & Bryant, 1997; Carlson & Putnam, 1989).

Although trauma mediates dissociation (Boon & Draijer, 1993; Kirby et al., 1993), and there is evidently a close relationship between dissociation and hypnotizability, a history of trauma does not alter hypnotizability in most individuals (Putnam & Carlson, 1998). Putnam, Helmers, Horowitz, and Trickett (1995) found that hypnotizability was not more predominant among abuse victims compared to non-abuse controls. However, highly hypnotizable subjects in the abuse group were significantly more dissociative than low hypnotizable subjects. Hence, a subgroup of “double dissociative” subjects, high in both hypnotizability and dissociativity, was identified. Furthermore, “double dissociation” was associated with multiple perpetrators and earlier onset of sexual abuse.

DID and startle

Severe dissociation is linked to sexual and physical trauma during childhood and patients with dissociative problems usually suffer the full spectrum of symptoms related to the diagnosis of PTSD (Nijenhuis, Vanderlinden, & Spinhoven, 1998; Kirby et al., 1993). There are three main types of PTSD symptoms: re-experiencing the traumatic event, avoiding reminders of the trauma and symptoms of hyperarousal or heightened anxiety (APA, 1994). The most disruptive symptoms of PTSD involve intrusive memories of the traumatic event, bad dreams about the traumatic event, flashbacks or a sense of reliving the event, feelings of intense distress when reminded of the trauma,

and physiological stress response to reminders of the event (pounding heart, rapid breathing, nausea, muscle tension, sweating) (APA, 1994).

PTSD patients have been reported to differ from normal survivors by poor habituation of skin conductance to a repetition of loud startling noises (Shalev et al., 1992). Davidson et al. (2004) suggested that this tendency to continue to identify and classify the loud tones as threatening may represent a primary defect among persons with PTSD. Due to this defect, PTSD patients are likely to continue to react to noises rather than rejecting them as redundant information (Davidson et al., 2004). It has also been suggested that individuals with PTSD have an increased tendency for vigilance, i.e., they monitor the environment for potentially threatening stimuli (Orr et al., 2002).

The startle response is a reflex that occurs among most humans and animals in reaction to an abrupt, strong sensory stimulus, for instance a loud noise. The magnitude of this response exhibits several forms of plasticity, e.g., prepulse inhibition (PPI) of the startle response. PPI refers to attenuation in response to a strong stimulus (pulse) if this is preceded shortly by a weak non-startling stimulus (prepulse). It provides an operational measure of sensorimotor gating that serves to prevent the interruption of ongoing perceptual and early sensory analysis. Prepulse inhibition is hypothesized to reflect an automatic pre-attentive inhibitory process that functions to protect the initial processing of the prepulse by dampening the effects of other concurrent or immediately following events such as a startle stimulus (Graham, 1975). In an experiment involving a series of repetitions of a startle eliciting stimulus, Ladwig et al. (2002) found that high-level dissociative patients with PTSD, compared to high-level dissociative patients without PTSD, showed increased startle reflexes and delayed habituation, indicative of

increased arousal in these patients. These data suggest that dissociative disorders are not associated with increased physiological reactivity. In fact, dissociative disorders seem to be associated with reduced physiological reactivity. Griffin, Resick, and Mechanic (1997), using heart rate and skin conductance as measures, found that there was significantly more suppression of autonomic physiological responses among high dissociators compared to low dissociators when interviewed about previous rape episodes. Ebner-Premier et al. (2005) found smaller startle reflexes in borderline disorder patients with high dissociation compared to borderline patients with low dissociation.

One possible mechanism that could explain reduced physiological reactivity in dissociative disorders is reduced attention to external stimuli. Kirino (2006) examined the pathophysiology of dissociative phenomena using the P300 component of event-related potentials, an index of controlled attentional processing, and found that patients with dissociative diagnoses exhibited attenuation of P300 amplitudes during dissociative episodes when compared with controls, indicative of reduced attention to external stimuli, but exhibited recovery to control levels in remission. The data from Kirino (2006) suggest impaired attention in DID, but only during dissociative episodes. However, that study did not use stimuli that could be classified as threatening. Taken together, these studies are consistent with the hypothesis that dissociative disorders are characterized by defensive processes in the form of reduced sensory intake or impaired attention to external stimuli.

Personal construct theory and DID

Dissociation, as a construct in psychology, sprang primarily from the work of Pierre Janet (1923). It referred to the splitting up of thought processes into compartments and sometimes the loss of conscious awareness of certain of these compartments. To describe these compartmentalized sectors of thought, sometimes lost to recall, Janet used the term subconscious. Morton Prince (1906), on the other hand, introduced the term coconscious to subsume dissociative events. Hence, it was emphasized that these various compartments could maintain an equal status of awareness with normal levels of awareness. One important theoretical implication from this work emphasized that psychogenic amnesia was secondary, i.e., subsumed by, the dissociative processes rather than being a separate phenomenon.

Since these beginnings the construct of dissociation has become more objectified in two major ways. One way concerns the formal typology (APA, 1994) with operational criteria for DID. The other has been as a collective group of personality features: (a) imaginative absorption, such as daydreaming, reading, or other activity that reduces awareness of current time, space, and self; (b) depersonalization, i.e., the loss of personal identity, and derealization, which refers to the loss of sense of self in time and place; and (c) psychogenic amnesia, i.e., a failure in memory of some aspects of experience (Bernstein & Putnam, 1986).

One benefit of this empirical shift in recent years has been that the features of imaginative absorption are found to bear no empirical link to the other features of dissociation (Waller et al., 1996). On the other hand, depersonalization and derealization not only bear an empirical link to each other but also to psychogenic amnesia as an expression of ascending severity

(Langelle, 1996). This latter research lent an aspect of construct validity to the earlier work of Janet and Prince for the superordinate construct of dissociation. Furthermore, dissociation is a part of the criteria that characterize the latter day concept of PTSD (APA, 1994). This construct of event-referenced trauma involves dissociation, anxiety, and depression.

Personal construct theory and rep grid technology (Kelly, 1955) would appear to be an appropriate framework to investigate the purported features of dissociation. For example, the DSM (APA, 1994), like all typologies, affords hypotheses that would link dissociation constructs to the total person as an observational unit (i.e., element of classification). According to Kelly (1955), personal constructs are ways of perceiving or interpreting events. An individual may be described in terms of the constructs used and in terms of the structural aspects of the construct system (for example, complex vs. simple construct system). For example, "good-bad" is a construct frequently used by people as they consider events. Under favorable circumstances, the developing individual responds to new elements (e.g., persons) in the environment with the development of new constructs, more abstract constructs, and a more hierarchical construct system. Pathological developments occur when anxiety leads to rigid construct system functioning or to chaotic system functioning in the face of repeated invalidations (Bannister & Fransella, 1966).

Both Langelle (1996) and Cromwell, Sewell, and Langelle (1996) administered the rep grid (Kelly, 1955) to high dissociators including DID patients. In both studies it was suggested that high dissociators differ from both normal controls and other mentally disordered populations in terms of how they construe the world, relationships, and life events. In Cromwell et al.'s study (1996) two DID patients, hospitalized and in treatment, completed

the rep grid. Following the stepwise procedure indicated by a computer, the participants generated their own constructs from grouping triads of elements. The elements were real people, including persons by whom the participants had been sexually offended (perpetrators), and also each individual's alternate personalities. A total number of 22 elements were used. Elements were presented, three at a time, and each patient was asked to indicate ways in which any two elements were alike and different of the third.

The authors suggest that persons with DID, when confronted with certain contradictory constructs, do not use the typical resolution by revising their existing constructs. They seem not to reconstrue themselves by developing new constructs, or a more hierarchical construct system. Instead, it is believed that the dissonance, and sense of intra-psychic conflict, is resolved by creating personified constructs ("person icons"), or "alternate" personalities.

AIMS OF THE PROJECT

We aimed to contribute to a further validation of the construct of DID. This was accomplished (1) by testing to which extent DID may be separated from other dissociative disorders on a series of clinical and psychophysiological measures, and (2) by exploring the characteristics of DID within the framework of Personal construct theory.

SUMMARY PAPERS

Paper I: Testing the Diagnosis of Dissociative Identity Disorder through Measures of Dissociation, Absorption, Hypnotizability and PTSD: A Norwegian Pilot Study.

In Paper I we expected that persons with DID and other dissociative disorders, compared to non-diagnosed comparison participants, had higher scores on a series of measures related to both dissociation and PTSD. Furthermore we expected that higher levels of dissociation were related to higher levels of hypnotizability. Lastly, we expected that persons with DID, to some extent, would be separable from persons with other dissociative disorders, with regard to measures of dissociativity, hypnotic susceptibility and PTSD.

14 persons with DID were compared with 10 persons with other dissociative disorders, and 14 non-diagnosed comparison participants with regard to the variety and magnitude of serious dissociative symptomatology, general dissociative level, pathological dissociation, absorption, current and lifetime traumatic stress, current and lifetime subjective distress, and exposure to traumatic events.

Descriptive and psychometric statistics for all groups were calculated (mean scores, CIs and SDs) and the distribution of the data was examined by Levene's test for equality of variance. Because the clinical variables failed to meet the normal distribution of the scores, we chose to use the Mann-Whitney test, a non-parametric analysis of variance, in combination with a post test Bonferroni adjustment of significance level (in order to control for type 1 error). Differences across groups with regard to age, educational level, and trauma categories were analyzed with independent samples t-tests. To ascertain if educational level could explain the variance in any of the other variables t-tests were performed on these variables with educational level, serving as the independent variable, broken into two: (1) low education participants, 9 – 12 years, and (2) high-education participants, 12 - 16 years. Significance level was adjusted post test for these analyses through the Bonferroni procedure. Power analyses on data concerning dissociative level (DES) and pathological dissociation (DES-T) data were performed to determine how much larger the samples would need to be in order to reach an alpha value of $p = .050$.

Both of the clinical groups reported histories of childhood trauma and attained high PTSD scores. The DID group differed significantly from the group with persons with other dissociative diagnoses and the non-diagnosed comparison group with regard to hypnotizability and the variety and magnitude of serious dissociative symptomatology. However, no significant differences between the two clinical groups were detected with regard to absorption, general dissociative level or symptoms related to traumatic stress.

Paper II: Dissociative Identity Disorder and Prepulse Inhibition of the Acoustic Startle Reflex.

In Paper II we assumed that attentional processing of a stimulus first engages preattentive mechanisms, i.e., automatic, reflex-like orienting, detection, and analysis, that allows the assessment of whether the stimulus is important and in need of further processing. We further assumed that if the stimulus is considered important or relevant, attention is directed to the stimulus by controlled or voluntary processes. Nijenhuis et al. (1998) claimed that dissociative defensive reactions are elicited almost instantaneously, implying that preattentive processing is sufficient for the expression of the defensive reactions and that the reactions occur without conscious control. In this study, prepulse inhibition (PPI) of the startle reflex, which may index both automatic and controlled processing, was investigated in individuals with dissociative disorders and dissociative identity disorder (DID). The ability to protect oneself from stressors, hypothesized to be accentuated in high dissociators, should be related to prepulse inhibition. The present study investigated whether this protection occurred at a preattentive automatic level, or whether it could best be understood as a controlled voluntary process. The following predictions were made: 1) If patients with dissociative disorder have reduced sensory intake or impaired attention to external stimuli (Kirino, 2006), they should show impaired PPI. If the deficits in attentional processing occurred at a preattentive level, reduced PPI should be seen in both the task and no-task conditions, at the 30 to 120 ms stimulus onset asynchronies (SOAs). At the 150 and 420 ms SOAs, reduced PPI would be indicative of impaired controlled attention directed to the prepulse. 2) Based on findings by Ebner-Priemer et al. (2006), it was also predicted that high dissociators should show smaller startle

reflexes to the startle-eliciting stimulus presented alone. This would be consistent with the defensive reaction of reduced attention to external stimuli.

8 persons with DID were compared with a group of 8 persons with other dissociative disorders (the DD group), and a group of 13 non-diagnosed comparison participants (the CONTROL group) with regard to prepulse inhibition (PPI) of the acoustic startle reflex. In the present study PPI was tested at stimulus onset asynchronies (SOAs) between the prepulse and the startle-eliciting stimulus of 30 to 420 milliseconds. Preattentive processes were tested in a condition where PPI was tested without any requirements (no-task), whereas controlled processes were introduced in a separate condition by instructing the participants to judge the duration of the stimuli presented (task). The design was a 3-Group (DID, DD, and CONTROL) \times 2 Task (Task, No-task) \times 6 SOA (30, 60, 90, 120, 150, 420 ms) mixed design with the first factor treated as a between-participants factor and the two last factors treated as within-participants factors. Subjective arousal and mood were analyzed as a 3 Group by 3 Test (before, between the conditions, after) mixed design. The data were analyzed by analysis of variance and significant effects were followed-up with contrast analyses. An alpha level of .01 was used when the presence of PPI was tested and multiple contrasts were computed. Effect sizes were computed as η^2 . To ascertain that PPI was observed, t-tests of differences from 0 (no PPI) were performed for each Group at each SOA.

The findings suggest maladaptive attentional processes at a controlled level, but not at a preattentive automatic level, in persons with DID. The prepulse occupied more controlled attentional resources in the DID group compared to the other two groups. Preattentive automatic processing, on the other hand, was normal in the DID group. Moreover, startle reflexes did not

habituate in the DID group. In conclusion, increased PPI and delayed habituation is consistent with increased vigilance in individuals with DID.

Paper III: Exploring Personal Construct Theory and Dissociative Identity Disorder.

Cognitive complexity reflects a capacity to construe social behavior in a multi-dimensional way. "A more cognitively complex person has available a more differentiated system of dimensions for perceiving others' behavior than does a less cognitively complex individual" (Bieri et al., 1966, p. 185). In Paper III it was assumed that displaying alternate personalities implies a more multidimensional level of thinking. Hence a greater complexity among DID patients was expected.

13 persons with DID, 13 persons with other mental disorders, and 10 non-diagnosed comparison participants were given Kelly rep grids and compared on the dimension of cognitive complexity. In addition, clinical observations were made in the test situation by the test leader (first author). The grids were analyzed with regard to intensity with Flexigrid, a software program developed by the third author. Intensity is a classical measure of cognitive complexity and refers to the average correlation in the grid, arrived at by squaring all the correlations, adding them together and then taking the square root. A lower amount of correlations in the grid, i.e., lower intensity, is indicative of higher levels of cognitive complexity. One-way ANOVA was used to compare intensity in the groups, followed up by independent sample t-tests with prior hypotheses. Levene's test for equality of variances was used. None were found to be significant. The distributions were thus considered not to deviate from normal. A statistical power analysis was performed post hoc

on the intensity differences between the DID and the non-diagnosed comparison group.

Displaying alternate personalities does not imply a more multi-dimensional level of thinking. Instead, the group of non-diagnosed participants had the greater degree of complexity in comparison to both clinical groups. A notable observation in the test situation was that DID patients, compared to non-DID participants, displayed a greater ease and speed of completion of the rep grid task and had less difficulty understanding the rep grid instructions, required less assistance and were faster and more autonomous in completing the test.

ETHICAL ASPECTS

The research was approved by the Regional Committee for Medical Research Ethics in Health Region V in Norway, and was conducted according to the Declaration of Helsinki. Written informed consent was obtained from all participants. No monetary reward was given.

Although trauma related research is not inevitably upsetting for participants, research on such issues must not be carried out without a thorough evaluation of the procedures involved, or without a thorough moral evaluation of the whole project (Carlson, 1996). This implies that any personal or scientific goals must be weighed against the potential for causing distress among participants. Also, special attention should be given to securing the highest degree of confidentiality.

The potential was large in this project for reviving strong feelings of inferiority, shame, and anxiety among those who had been traumatized. The worst case scenario would be that some of these participants were re-traumatized due to procedures or due to lack of sufficient support. There was also a possibility for participants who had not experienced invading circumstances to perceive the procedures as invading and threatening. Hence, it was regarded paramount that all participants should be treated with the outmost sensitivity and respect in order to reduce emotional distress. Furthermore, every bit of interaction that would take place between the test leader and assistants and the participants was given special attention on beforehand in order to prepare a psychologically secure environment for all involved. Optimally, one would be able to obtain the clinical data, without having participants feeling that they had been used, or even worse, abused.

During the clinical interviews and the rep grid sessions, there were inquiries concerning incidents of physical and sexual abuse. Participants who had histories of such events were advised to take breaks, or abort the session, if they experienced negative affect. There was also a possibility for the test leader to abort or suspend sessions due to observed negative emotional development on behalf of the participants. Prior to the procedures, participants were briefed on the contents of the inquiries and they were informed of their possibility to take brakes or abort the session. Fragile and especially sensitive participants were assisted by a friend, spouse or professional helper. There was also prepared a procedure for getting professional assistance for those who might need it due to a crisis reaction, during or after the test program.

DISCUSSION

A broader understanding of DID

As expected, histories of childhood sexual and physical assault were reported among persons with DID and persons with other dissociative disorders (Paper I) and both these groups attained high PTSD scores. I.e., all participants in the DID group met the criteria for PTSD diagnosis, both current and lifetime, a finding which is consistent with earlier research (Boon & Drajer, 1993). Although the clinical groups did not differ significantly with regard to scores of current and lifetime PTSD, some differences were observable with regard to the type and occurrence of abuse, with, e.g., a higher percentage of the DID group having experienced sexual assault by a close relative during childhood compared to the group with other dissociative disorders. This is consistent with findings that DID is linked to the nature of the assault and to the relationship between the victim and the perpetrator (Boon & Drajer, 1993).

In Paper II it was reported that inhibition of startle reflexes at 420 ms among persons with DID indicated that attention was not shifted away from the prepulse in this group, and that the prepulse still occupied resources. This finding is highly unusual and indicates extended processing of prepulses in the DID group. One possible explanation is that significant PPI at the 420 ms SOA reflects an inhibitory process that protects the individual from an intrusive stressor, i.e., the startle-eliciting stimulus. This has been described as a defining characteristic of dissociation (Nijenhuis et al., 1998; Perry & Pollard, 1998; van der Kolk et al., 1996; Williams, Haines, & Sale, 2003).

The DID group also showed a lack of habituation, which might be indicative of heightened vigilance as these participants did not inhibit the

response to the intense noise bursts as was observed in the other two groups. Reduced habituation of the startle reflex has been related to hypervigilance (Orr et al., 2002). It might also be explained in accordance with Davidson et al. (2004) as a disability to classify loud noises as redundant information and hence stop reacting to them.

Spanos (1994) argued that DID can be understood as a type of complex role play. According to Ross (1999) this would imply that there should be no discrete psychophysiological states in DID. However, the findings reported in Paper II of reduced habituation of startle reflexes and increased PPI in persons with DID, compared to non-DID participants, point in a different direction: The data suggest that persons with DID are separable from non-DID persons due to the operation of an aberrant voluntary attentional process in the face of unpleasant and threatening stimuli. In line with Ross's (1999) reasoning, this finding supports the notion that DID is a separate clinical and nosological entity (Gleaves et al., 2001; Waller et al., 1996).

Nijenhuis et al. (1998) claimed that dissociative defensive reactions are elicited almost instantaneously, implying that preattentive processing is sufficient for the expression of the defensive reactions and that the reactions occur without conscious control. This might be true, but in the circumstances created in the PPI experiment (Paper II), we obtained data that supported the conclusion that there is a controlled voluntary process involved in the protective process hypothesized to inhibit the effect of intrusive stressors in high dissociators. In other words, the data do not support the hypothesis that the protective process occurs at an automatic level. Hence, it is possible that persons with DID, at least under non-life-threatening circumstances, are able to consciously redefine their perceptions of the environment when this

environment starts to become unpleasant and intrusive. In this process it is quite possible that they reroute the perception of the stimuli observed and alter their experience of the situation.

As shown in Paper I persons with DID differed significantly from persons with other dissociative diagnoses with regard to the complexity and magnitude of dissociative symptomatology, and with regard to hypnotizability. Although one could expect that the DID group also differed from the non-DID groups with regard to DES and DES-T scores, results are consistent with earlier findings on the relationship between dissociativity and hypnotizability: Higher degrees of dissociativity are related to higher degrees of hypnotizability (Butler & Bryant, 1997; Carlson & Putnam, 1989; Putnam et al., 1995).

The results reported in Paper I expand our knowledge on the role of hypnotizability in DID in that there is now reason to believe that hypnotizability is one of the most central clinical features in DID. These results also support the notion that DID is a separate clinical entity, qualitatively different from other dissociative disorders (Gleaves et al., 2001; Waller et al., 1996).

The purpose of the study reported in Paper III was to continue a query of the utility of dissociation and the construct of DID within the theoretical framework of Kelly's Personal construct theory. Contrary to expectations, results showed that displaying alternate personalities does not imply a more multidimensional level of thinking. I.e., the DID group did not have available a more differentiated system of dimensions for perceiving others' behavior compared to non-dissociative participants. However, DID group members, compared to non-dissociative comparisons, might have a more advanced

social skill in role thinking and role conceptualization. As suggested by Cromwell et al. (1996), they appear to think in terms of "person icon" configurations rather than in construct-contrast configurations. There is also a possibility that the speed differences between DID and non-DID persons may be viewed in terms of the dimension of reflectivity vs. impulsivity. In this case the non-DID person, with or without other mental disorder, may do more self-monitoring and second guessing of their response with each step in completing the rep grid. The DID persons would be viewed as acting more immediately without these contemplations.

Perspectives on trauma and dissociation

As a species, humans have developed a wide variety of biopsychological survival mechanism (adaptive responses) in face of life-threatening and invading circumstances (Kolb, 1993; van der Kolk & Fislser, 1994; van der Kolk, 1997). Each individual has a repertoire of stress responses in relation to different stressors depending on the severity of the stressor and how prepared each individual is, mentally and emotionally, for the exposure. When exposed to threat or pain in the most extreme circumstances, there might be involved defensive responses without conscious processing. These range from "fight or flight"- responses, or hyperarousal - which involves extraordinary bodily activation and arousal (Cannon, 1929; Kardiner, 1941), to "surrender"- responses (Perry & Pollard, 1998) which are characterized by altered perceptions of the environment, and a seemingly normalized level of bodily activation. High dissociators are believed to react mostly within the surrender-spectrum in life-threatening circumstances (Nijenhuis et al., 1998; Perry & Pollard, 1998). The surrender-reaction may, to some extent, be linked to what

Holmes et al. (2005) have labeled "compartmentalization," which is a type of dissociative reaction characterized by an inability to control one's actions and by dysregulation in meta-cognitive processes. Within the surrender-spectrum there might also occur the type of involuntary hypnotic responding, or autohypnosis, which is believed to be essential for the development of DID (Butler et al., 1996, Ross, 1999). Tentatively, it is conceivable that those who develop DID, to a greater extent than those who develop other dissociative disorders, enter into a state of autohypnosis during overwhelming and life-threatening experiences. Autohypnosis is believed to facilitate, by amnesic barriers, the dissociation and disconnection of mental subsystems. In other words, while the child is protected against the full impact of the assaults through compartmentalization/autohypnosis, the process of autohypnosis also induces a parallel system of dissociated personality structures. These dissociated structures are, in turn, strengthened and become more complex as a result of repeated abuse.

During more normal day activities and under exposure to moderate degrees of stress, it is likely that persons with DID are characterized with what Holmes et al. (2005) depict as "detachment," which is defined as an altered state of consciousness characterized by a sense of separation from self or the world. Our finding in Paper II of the operation of a voluntary process that directs attention away from unpleasant or threatening stimuli among persons with DID, might reflect such a *modus operandi*.

In sum, one might presume that persons with DID, depending on the situation and the stressor, either have dissociative experiences that are beyond conscious control, or they are able to detach themselves voluntarily from the situation. These different cognitive patterns reflect different aspects of an

organism reaching for, within its own parameters, the most optimal solutions, or as Sel (1997) argues, this is a “Complex Adaptive System” (CAS). A typical CAS will involve a variety of dissociative capabilities that serve to protect the organism during and after overwhelming stress. These capabilities are believed to reduce the risk of severe disruptions in the developmental process. Hence, dissociation can, paradoxically, be regarded as a very effective means of self-preservation.

Clinical and therapeutic implications

Our results verify that dissociative disorders are associated with histories of childhood physical and sexual abuse, and that most high dissociators display the full spectrum of symptoms related to PTSD. Hence, it is reasonable to believe that persons who show clinical levels of dissociative symptoms would benefit from treatment methods that deal with trauma and are recommended in the field of PTSD.

Our results may indicate that DID can be identified more precisely if patients are assessed for hypnotic susceptibility. In accordance with Frischholz et al. (1992), it would be advisable for practitioners to use a standardized hypnosis test in combination with a standardized clinical instrument as a differential diagnostic procedure. Our results also give reason to believe that clinical hypnosis may play a central role in the treatment of DID (Dale, 1996; Kluft, 1992; Ross, 1999).

Participants with DID seemed to have an unrestrained and near intuitive comprehension of the test instructions in the rep grid procedure. To which extent the rep grid might prove to be useful for individuals with DID in a therapeutic setting must be established through further clinical research.

Strengths and limitations

A major strength in the project is that DID has been triangulated from a wide variety of angles, reflecting the fact that DID is a multifaceted and complex disorder. Through a combination of experimental procedures, personality testing, self-report questionnaires, a series of clinical interviews, and lastly, a hypnosis test, we have attained an extensive set of data. In turn, this has provided a broad basis for comparing our findings with previous observations. In addition, measures that are novel in the field of dissociation, such as PPI, the CAPS, and the rep grid, add valuable nuances to our model of DID and also provide new insight into the underlying mechanisms of the condition.

The main limitations in the project are that the samples were small and groups were to various extents uneven with regard to educational level and age. Furthermore, the non-dissociative comparison group in the PPI experiment (Paper II) was not optimally matched to the clinical groups in terms of medication.

Participants with dissociative disorders and DID came from all over Norway and were recruited through a nationwide search including 46 psychiatric institutions and via an advertisement campaign run in the local newspapers of Tromsø and Stavanger. These strategies were used within a time period of 8 months. A larger number of participants with DID and other dissociative disorders would be advantageous in terms of statistical power, but in order to obtain larger samples, a significantly longer recruitment period would have been necessary.

Participants in all the clinical groups joined the studies through self-selection or on basis of encouragement from their therapist. Even though there

are no obvious reasons why this should make a difference for the results, such strategies should be reconsidered in future studies. Ideally, clinical samples should be drawn through screening procedures within the general population in order to avoid selection bias.

There may have been underreported levels of anxiety and distress in the non-clinical comparison groups (Paper I and II). The CAPS, basically mirroring the structure of the PTSD diagnosis as defined in the DSM-IV, is not a very "fine-masked" instrument for measuring traumatic exposure. Scores are only attained when subjects report having experienced one or more traumatic event (reflecting Criterion A in the DSM-IV diagnosis), which none of the non-clinical participants did. Optimally, we could have supplemented the CAPS with an assessment tool that captured stress-related symptoms irrespective of traumatic incidents.

The most critical limitation in the rep grid procedure (Paper III) is the lack of a comparison group consisting of persons with other dissociative disorders. The inclusion of such a group would have allowed us to specify to which degree our findings are applicable to persons with dissociative disorders in general or only to persons with DID.

Future research

Personal construct psychology and rep grid methodology provides opportunities to elaborate on the perspectives wherein DID is understood to reflect a resourceful, albeit rigid, survival system. Further research within this theoretical realm is also called for in order to capture the essence of DID, which is the presence of two or more distinct personality states. Such research might be done in line with an approach used by Golinkyna and Ryle (1999)

among patients with borderline personality disorder, where each person was tested in different personality states.

There should be available a series of other options regarding future research on DID. As indicated in Paper II, it may be relevant to use threatening stimuli as prepulses or to use fear conditioning procedures as in Davis, Schlesinger, and Sorenson (1989) or Sasaki and Hanamoto (2007). One might expect that any tendencies detected in the current experiment (Paper II) with regard to PPI might be more pronounced in response to threatening stimuli. On the other hand, and in view of the autohypnosis perspective, one might also expect that persons with DID have yet another, unique, pattern of responsiveness under circumstances where (a certain degree of) anxiety is experimentally induced.

Functional neuroimaging has opened a wide range of possibilities in decomposing the psychophysiological mechanisms of DID. It has, e.g., been hypothesized that different types of dissociative parts are mediated by different parts of the nervous system (van der Hart, Nijenhuis, Steele, & Brown, 2004). These parts are believed to represent two types of action systems: (1) action systems dedicated to defense against bodily threat from others and against attachment loss (“emotional parts of the personality,” or EPs) and (2) action systems related to functioning in daily life (“apparently normal parts of the personality,” or ANPs). EPs are presumed to have different psychological, physiologic and neural reactivity to conditioned threat cues: EPs would be fixed in emotional reactivity, whereas ANPs would engage in inhibition of emotivity. These assumptions have to some extent been supported by Reinders et al. (2003). Reinders et al. used functional neuroimaging within a group of 11 persons with DID in order to investigate the

anatomical localization of self-awareness and the brain mechanisms involved in consciousness. It was demonstrated specific changes in brain activity consistent with the ability among participants to generate at least two distinct mental states of self-awareness. The findings revealed the existence of different regional cerebral blood flow patterns for different senses of self.

Generalizability theory (G-theory) is a framework for studying psychometric properties of instruments such as tests, observational measures, and clinical ratings (Hagtvet, 1997). It was originally introduced by Cronbach, Nageswari, and Gleser (1963) in response to limitations of the still popular true-score-model of classical reliability theory (Spearman, 1904). In classical test theory, we have true scores and a single error. The use of G-theory is advantageous compared to classical theory because it allows us to assess multiple sources of error in a specific measurement situation. G-theory assumes that for every construct, there exists a universe of admissible observations. This universe consists of observations which the decision maker considers interchangeable. A person's universe, or true, score is considered his/her score on all admissible observations. In order to obtain a generalizability estimation, generalization studies (G-studies) and decision studies (D-studies) are carried out. The G-study addresses questions of how well measures taken in one context generalize to another and these estimates can be used to design efficient measurement procedures.

Dissociation is closely linked to hypnotizability and PTSD. In terms of G-theory, this implies that a universe of admissible observations concerning dissociation also contains observations concerning hypnotizability and PTSD. Performing a G-study and a series of D-studies on items drawn from assessment instruments that tap these measures (i.e., the HGSHS, the SCID-D,

and the DES) would allow us to estimate how many items would be needed to suggest an optimal measure of dissociation. Furthermore, a series of D-studies, where the independent variables are manipulated in different designs (fixed/random and so on), will generate different generalization components. Through this procedure, we might identify a set of items that re-composes the original material, i.e., we might construct a new “test” for dissociation. A critical analysis will be needed in order to ascertain to which degree each item really represents the construct dissociation, and to which degree the test itself, as a whole, also represents dissociation. Furthermore, the test’s qualities as a differential diagnostic tool could be examined, i.e., to which degree the test differentiated between different types and degrees of dissociation. Does it, e.g., clearly differentiate persons with DID from persons with other dissociative diagnoses? If so, the test could prove to be very useful, both as a screening device in prevalence studies and as a first-step assessment tool in clinical practice. Optimally, it would prove to be as precise as a full scale SCID-D interview, but significantly less time consuming. This type of test might also be sensitive towards a set of subcategories of dissociative conditions that have hitherto not been detected through existing instruments. Such a discovery would both shed new light on the phenomenon of dissociation and it would have serious clinical implications. For instance, it might be established, through further clinical research, that different subcategories of dissociative disorders need different treatment approaches.

Undoubtedly, persons with DID have unique cognitive capabilities and a unique sense of the world. In order to expand our understanding and knowledge of this complex condition, we will need to combine a wide range of experimental and clinical research approaches. Ultimately, a more precise

knowledge of DID with regard to clinical, cognitive and psychophysiological features will ensure a more precise diagnostic and therapeutic practice.

CONCLUSIONS

The three Papers in the present dissertation are consistent with the following conclusions:

DID can be regarded as a clinical entity which is separable from other dissociative disorders (Paper I and Paper II).

DID is associated with histories of childhood sexual and physical assault and high PTSD scores. I.e., all participants in the DID group met the criteria for PTSD diagnosis, both current and lifetime (Paper I).

DID, compared to other dissociative disorders, is associated with more dissociative symptoms and a significantly wider range of serious dissociative symptomatology, as measured by the SCID-D (Paper I).

There is reason to believe that hypnotizability is one of the most central clinical features in DID (Paper I).

Increased PPI and delayed habituation is consistent with increased vigilance in individuals with DID (Paper II).

Persons with DID are characterized by maladaptive attentional processes at a controlled level, but not at a preattentive automatic level (Paper II).

Persons with DID, at least under non-life-threatening circumstances, are able to consciously redefine their perceptions of the environment when this environment starts to become unpleasant and intrusive. In this process it is quite possible that they reroute the perception of the stimuli observed and alter their experience of the situation (Paper II).

Displaying alternate personalities does not imply a more multidimensional level of thinking (Paper III).

Persons with DID display a greater ease and speed of completion of the rep grid task; compared to non-DID participants they have less difficulty understanding the rep grid instructions, require less assistance and are faster and more autonomous in completing the test (Paper III).

DID group members, compared to non-dissociative comparisons, might have a more advanced social skill in role thinking and role conceptualization (Paper III).

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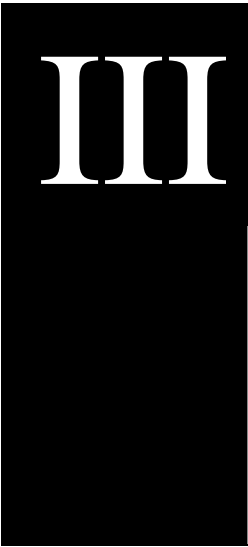
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III





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