

DePrince, A.P. & Freyd, J.J. (2014). Trauma-induced dissociation. In M.J. Friedman, T.M. Keane, & P.A. Resick (Eds.), *Handbook of PTSD: Science & Practice, Second Edition* (pp 219-233). New York: Guilford Press. [Updated version of DePrince & Freyd (2007).]

CHAPTER 12

Trauma-Induced Dissociation

Anne P. DePrince and Jennifer J. Freyd

A man who had seen his greatest friend killed beside him developed the following symptoms. At first he struck several of his comrades, but later he assumed a semi-stuporose condition, in which he would stare curiously at such objects as shining buttons and play with them as a child. He became depressed, tearful, vacant, speechless and heedless of what was said to him. . . . He took no notice of a pin-prick until it had been repeated several times, whereupon he gazed at the spot without attempting to withdraw from the pricking. . . . Two days later, he suddenly sat up and exclaimed: "Where am I." Then he got out of bed and sat by the fire, speaking quite intelligently to the orderly, but with no memory of his military life. After a few minutes he relapsed into his former state. The next day he became very restless, and on being quieted and assured that he was in hospital, he gradually came to himself, but had completely lost all memory of what had occurred since he left the trenches. He had to be evacuated in this condition to England, where, it was considered, he made a complete recovery. But after his return to duty in England, he began to complain of shakiness, bad dreams, attacks of headache and dizziness, which, when severe, caused "fainting attacks." Finally after a sudden shock he was readmitted to hospital, suffering from complete "functional paraplegia."

—MYERS (1940, pp. 46–48)

Hysteria, soldier's heart, and shell-shock are among the many terms that signify psychiatry's history of grappling with human responses to trauma. The roots of traumatic stress studies began as early as the 19th century, when psychiatrist Pierre Janet drew a connection between traumatic experiences and "hysteria" in adult women (van der Kolk, Weisaeth, & van der Hart, 1996). Janet was the first to articulate the basic principles of dissociative phenomena based on observations of alterations in consciousness in patients with hysteria (Putnam, 1989). Beyond articulating principles of dissociation, Janet was among the first investigators to elucidate the adaptive nature of dissociation for dealing with acute and/or chronic trauma (Putnam, 1989). The foundation for traumatic stress studies established by Janet and his colleagues at the turn of the century was lost to a period of neglect of dissociation and trauma, with limited interest resurfacing after World Wars I and II (see Herman, 1992; Hilgard, 1986; van der Kolk et al., 1996). For example, Myers (1940) described dissociative reactions to combat exposure, as in the quotation opening this chapter, in which a soldier was "vacant" and forgot his combat experience. A sustained interest in dissociation on the part of clinicians and researchers working with trauma began in the 1980s and has continued strongly into the present.

Methodological Considerations

Defining Dissociation

As clinical and research interest in dissociation has increased over the last two decades, the need to define the term clearly has arisen. During this period, definitions of dissociation have varied along many dimensions, including the degree of specificity of what we mean by the term "dissociation." Among the issues that need to be considered in defining the phenomenon are distinctions between continuum and taxon, state and trait, mechanism and outcome, and adaptive and maladaptive elements of dissociation.

Various Definitions of Dissociation

Although varied, definitions of "dissociation" have generally converged on the idea that dissociation involves a lack of integration of aspects of information processing that would typically be connected. Beyond an agreement that dissociation involves a lack of integration, theorists vary in estimates of the scope and type of disintegration necessary to characterize experiences meaningfully as trauma-induced dissociation (see van der Hart, Nihenhuis, Steele, & Brown, 2004, for discussion). Similar to van der Hart and colleagues' definition of dissociation as a "lack of integration among psychobiological systems that constitute personality" (p. 906), Putnam (1997) argued that pathological dissociation is "characterized by profound developmental differences in the integration of behavior and in the acquisition of developmental competencies and metacognitive functions" (p. 15). More recently, Cardena and Carlson (2011) characterized dissociation symptoms as involving

- (a) a loss of continuity in subjective experience with accompanying involuntary and unwanted intrusions into awareness and behavior (so-called positive dissociation); and/or
- (b) an inability to access information or control mental functions, manifested as symptoms such as gaps in awareness, memory, or self-identification that are normally amenable to such access/control (so-called negative dissociation) and/or
- (c) a sense of experiential disconnectedness that may include perceptual distortions about the self or environment." (p. 251-252)

Continuum-Taxon

Janet's early conceptualization of dissociation suggested that a subset of individuals experience dissociative states that nondissociative individuals do not experience (see Putnam, 1997). In spite of Janet's view that dissociation involves a distinct category of experience, the prevailing view placed dissociation on a continuum; that is, theorists assumed that everybody dissociates to some degree. Common forms of dissociation were thought to include highway hypnosis or absorption in a movie/book. When the most widely used measure of adult dissociation, the Dissociative Experiences Scale (DES; see the section "Observing Dissociation" for more information), was developed, the prevailing assumption was that dissociation exists on a continuum. Factor analysis of the DES reveals an absorption-imaginative factor (Ross, Ellason, & Anderson, 1995; Sanders & Green, 1994) that seemingly encompasses experiences that are more normally distributed in the population than pathological dissociation.

Taxometric analyses have been used to justify treating dissociation as a taxon instead of a dimensional variable (e.g., Waller, Putnam, & Carlson, 1996). In this view, dissociation exists as a taxon, in which individuals display behaviors that are or are not consistent with pathological dissociation. This shift is important because it affects theories about the development and maintenance as well as measurement of dissociation. For example, existing measures include nonpathological experiences that may not be informative or related to pathological degrees of dissociation. The taxon view influences theory building by assuming that those individuals who pathologically dissociate differ in their basic cognitive organization (Putnam, 1997).

The issue of whether dissociative phenomena fall on a continuum or a taxon necessarily invokes consciousness. Arguably, many experiences (e.g., absorption, daydreaming, trance states) can cause alterations in consciousness; however, the quality of such an experience may be better described as something other than dissociation. For example, van der Hart and colleagues (2004) argued that experiences such as daydreaming or trance can involve alterations in the level of consciousness (the degree to which the individual has awareness of consciousness) and the field of consciousness (the stimuli available to consciousness), and that it is structural dividedness that separates non-dissociative experiences (e.g., absorption) from dissociation. "Structural dividedness" involves alternations between an apparently normal part of the personality and an emotional part (van der Hart et al., 2004).

For our purposes in this chapter, we focus on trauma-induced dissociation as pathological dissociation; that is, we do not address directly alterations in consciousness that are more typically distributed in the population (e.g., absorption) or that are not trauma-induced (e.g., neurologically based alterations in consciousness).

State-Trait

Inherent in continuum-taxon issues are also temporal issues. From the continuum view of dissociation, it is easy to imagine relatively transient periods of dissociation during a traumatic event. Reports of dissociation at the time of the event—called "peritraumatic dissociation"—have been made across a variety of traumas. Early reports of dissociation were noted by Myers during World War I, who described soldiers' dissociative responses as varying "from a slight, momentary, almost imperceptible dizziness or 'clouding' to profound and lasting unconsciousness" (cited in Brewin, 2003, p. 53). Peritraumatic dissociation predicts later posttraumatic stress disorder (PTSD; e.g., Gershuny, Cloitre, & Otto, 2003), leading theorists to question how adaptive dissociation is at the time of the event. Recent work suggests that peritraumatic dissociation may be a common response that is not necessarily associated with later psychopathology (e.g., Bryant & Harvey, 2000). Panasetis and Bryant (2003) argued that persistent rather than peritraumatic dissociation may actually predict later psychopathology, such as PTSD. In a sample of participants who entered the hospital following motor vehicle accidents or nonsexual assaults, Panasetis and Bryant found that "persistent" dissociation (defined as dissociation at the time of the assessment rather than the event) was associated more strongly with acute stress disorder (ASD) severity and intrusion symptoms than with peritraumatic dissociation. In other work, Gershuny and colleagues (2003) found that the relationship between peritraumatic dissociation and later PTSD was mediated by fears of death and loss of control during the event, which are central cognitive components of panic, raising the possibility that peritraumatic dissociation may be related to panic and not necessarily to pathological dissociation.

Outcome-Mechanism

Dissociation is referred to as both a psychological outcome of trauma and a mechanism of trauma-related problems (e.g., of memory problems) in the literature. For example, dissociative processes have been used to explain trauma-related memory impairment. It becomes difficult to distinguish whether dissociation is a static phenomenon that describes the status of integration of parts of a person's personality, or a process by which information is disintegrated. van der Hart and colleagues (2004) shed light on this issue, arguing that experiences such as depersonalization and derealization may be alterations in consciousness, but they are not necessarily dissociative symptoms. The authors argue that to qualify as a dissociative symptom, the experience must involve structural dissociation; for example, the experience must involve dissociation between an observing and an experiencing "ego" and not be the result of substance use.

Development of Dissociation: Motivation

The discrete behavioral states (DBS) model of dissociation argues that pathological dissociation is the result of developmental processes whereby children do not learn to integrate across behavioral states (Putnam, 1997). Putnam (1997) links the development of dissociation to early childhood abuse and notes three primary defensive functions of dissociation: automatization of behavior, compartmentalization of information and affect, and alteration of identity and estrangement from self.

Maldonado, Butler, and Spiegel (2002, p. 463) stated that dissociative symptoms "should be understood as failures in integration, defects in control systems, rather than the creation of multiple identities" that result in distress and dysfunction. This statement captures a common viewpoint: that dissociation is a deficit with negative consequences. An alternative viewpoint is that dissociation is a creative adaptation to external insult and may even be seen as a positive set of skills. For example, dissociative automatization of behavior may allow children to endure painful abuse without full awareness of what is happening and/or their own actions (Putnam, 1997). These two perspectives in their extremes may have profoundly differing implications for those who experience high levels of dissociation that necessitate treatment.

One issue implicit in distinguishing between dissociation as a deficit versus an adaptation is the origin or motivation for developing dissociation. Theorists have long argued that dissociation may serve a protective or defensive function at the time of the trauma, or later, to keep trauma-related information out of awareness. Some authors have observed, though, that dissociation at the time of an event predicts later distress, including PTSD (Ozer, Best, Lipsey, & Weiss, 2003), raising the question of how effectively dissociation protects the individual. The key to evaluating the adaptive-maladaptive nature of dissociation lies in thinking about the function of dissociation given the individual's context. Betrayal trauma theory (Freyd, 1996), discussed below in more detail, argues that dissociation enables victims who are dependent on abusive caregivers to maintain necessary attachments. Under conditions in which survival depends on structural dissociation—that is, lack of awareness of the trauma-related information by the part of the personality that must manage tasks necessary to survival, such as attachment with caregivers—dissociation may very well serve an adaptive function. By analogy one might consider the plight of a creature in a trap. In order to get out, the creature might have to sacrifice a limb. Without that sacrifice, the creature would likely perish, so it is adaptive to sacrifice the limb, but in the long run the missing limb will likely cause problems. Similarly, dissociation, in the long run, may

play different roles in later distress, perhaps mediating or moderating the relationship between some traumas (e.g., abuse) and later psychological symptoms. There may be contexts, too, in which so-called "pathological" dissociation puts individuals at a distinct disadvantage. For example, the dissociation of emotion information from the personality acting in day-to-day situations may result in individuals missing danger cues or otherwise increasing risk of problems, such as revictimization or HIV risk (DePrince, Freyd, & Malle, 2007; Zurbriggen & Freyd, 2004).

Seeing dissociation as a creative adaptation may have benefits for the dissociative client seeking treatment. Rather than pathologizing the trauma survivor, this viewpoint more likely empowers the client because of the implicit respect it offers. However, there is some danger in ignoring real suffering if dissociation is seen as a "normal" response. Some might conclude that because it is a normal response, there is no need for intervention. However, this may be a mistake. By analogy, if one were to experience an accident that involved an injury to the body, bleeding would likely be a normal response, yet intervention might be very much needed.

It is also possible that dissociation may be initially adaptive to the trauma survivor, then become maladaptive to that survivor's offspring due to the impact of (at least, unresolved) dissociation on parenting. Hulette, Kaehler, and Freyd (2011) investigated the intergenerational relationships between betrayal trauma and dissociation in a sample of 67 mother-child dyads. Consistent with other research, they found that experiences of high betrayal trauma were related to higher levels of dissociation in both children and mothers. In addition, they found that mothers who experienced high betrayal trauma in childhood and were subsequently interpersonally revictimized in adulthood had higher levels of dissociation than non-revictimized mothers. Furthermore, maternal revictimization status was associated with child interpersonal trauma history. These results suggest that dissociation from a history of childhood betrayal trauma may involve a persistent unawareness of future threats to both self and children. The possibility that unresolved dissociation in parents is dangerous to their children has important implications for intervention.

One more interesting aspect of this distinction between dissociation as a deficit or an adaptation is how one models individual differences in the tendency to respond to trauma with dissociation. If individuals do differ, perhaps due to heredity (Becker-Blease, Deater-Deckard, et al., 2004), in their tendency to dissociate, then this can be viewed in terms of a diathesis-stress model; that is, the underlying tendency may be a vulnerability that is provoked by trauma. An alternative would be to see the underlying tendency as a resilience factor that is awakened by trauma. In this view, dissociation protects the individual from greater harm. Additional research is needed to provide more evidence on these issues.

A dialectical view may help resolve issues of how adaptive or maladaptive dissociation is viewed. Specifically, dissociation may be both a creative adaptation to an environmental insult that threatens survival (e.g., child abuse by a caregiver) and a deficit that causes problems in other domains of life (e.g., difficulty in school). We have the classic problem of looking at "survivor data" when we examine adults who are high in dissociation and evaluating whether dissociation has been adaptive or maladaptive; that is, we are not able to see what these individuals would be like had they not dissociated. Perhaps consequences for some individuals would have been far worse had they not engaged in dissociation, so although dissociation is linked to negative consequences, we have no way of evaluating whether those consequences are better or worse than they would be if the individuals had not chronically dissociated. Furthermore, a dialectical view of dissociation as both adaptive and maladaptive invokes

the importance of examining context. In some contexts, dissociation may be the most helpful thing the person could do (e.g., under some conditions of child abuse); in others, it may increase potential harm (e.g., revictimization risk). By viewing dissociation dialectically, practitioners and researchers are likely to examine both the adaptation in the response (and seek to teach alternative skills given the person's current context) and the negative consequences that cause problems for the individual.

Observing Dissociation

Measuring Dissociation

Measuring dissociation requires thought about both the definition of dissociation (e.g., pathological vs. normative) and conditions under which it occurs. We have argued that trauma-induced dissociation should include pathological dissociation (as opposed to alterations in consciousness that are more normally distributed in the population). Several reliable and validated self-report measures of dissociative experiences in children, adolescents, and adults are available (see Table 12.1 for a listing of several widely used measures).

The vast majority of the literature has focused on negative symptoms of dissociation, such as amnesia, loss of skills, and loss of awareness (van der Hart et al., 2004). In recent years, theorists have argued that dissociation also includes positive symptoms, such as flashbacks and intrusions (e.g., van der Hart et al., 2004). Dissociative symptoms related to movement, sensation, and perception been noted. Using the Somatoform Dissociation Questionnaire (SDQ), researchers were able to discriminate between individuals diagnosed with dissociative disorders and those diagnosed with other psychiatric disorders (Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1998).

TABLE 12.1. Self-Report Measures of Dissociative Experiences

Measure name	Relevant references	Respondent	Comments
Adolescent Dissociative Experiences Scale (A-DES)	Armstrong, Putnam, Carlson, Libero, & Smith (1997); Putnam (1997)	Adolescent	Emphasis on dissociation of mental functions (vs. movement, sensation, and perception).
Child Dissociative Checklist (CDS)	Putnam (1997); Putnam, Helmers, & Trickett (1993)	Parent	Emphasis on dissociation of mental functions.
Dissociative Experiences Scale (DES)	Bernstein & Putnam (1986); Putnam (1997)	Adult	Emphasis on dissociation of mental functions.
Peritraumatic Dissociative Experiences Questionnaire (PDEQ)	Marmar, Weiss, & Metzler (1997); Marshall, Orlando, Jaycox, Foy, & Belzberg (2002)	Adult	Assesses retrospective reports of dissociative experiences at the time of the event.
Somatoform Dissociation Questionnaire (SDQ)	Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden (1998)	Adult	Emphasis on somatoform dissociation symptoms. Five- and 20-item measures available.
Multidimensional Inventory of Dissociation (MID)	Dell (2006)	Adult	Assesses 14 facets of dissociation and includes validity items.

Observing Dissociation Posttrauma

Trauma–dissociation correlations have frequently been interpreted as evidence that trauma is a causal factor in the development of dissociative symptoms, though some researchers have questioned the assumption of causality (e.g., Merckelbach, Horselenberg, & Schmidt, 2002). In a landmark review, Dalenberg and colleagues (2012) laid out specific predictions derived from two alternative models explaining dissociation–trauma links: (1) A trauma model posits that trauma plays a causal role in the development of pathological dissociation, and (2) a fantasy model posits that fantasy proneness overlaps with or leads to dissociation, which in turn contributes to false reports of abuse. Overall, the authors documented strong, consistent support for the trauma model. As part of the two models, the authors critically evaluated studies describing links between trauma exposure and dissociation. They identified 38 studies that met the following criteria: The effect size of the trauma–dissociation relationship was reported or could be calculated; samples included participants exposed to no trauma; sample size was greater than 50; and a community sample or clinical sample with diverse psychiatric diagnoses was used. This meta-analysis revealed a consistent, moderate relationship between trauma and dissociation. Among the 38 studies (which include child, adolescent, and adult participants), were some samples in which trauma history was documented independent of self-reports. For example, Putnam and Trickett (1997) compared 77 sexually abused girls referred by child protective service agencies to 72 control girls in a longitudinal study of the biological and psychological effects of sexual abuse. The control girls were matched on age, race, socioeconomic status, and family constellation. Putnam and Trickett found that, compared with the controls, the sexually abused girls had significantly elevated dissociation scores at three different testing times. Similarly, Ogawa, Sroufe, Weinfeld, Carlson, and Egeland (1997) reported that age of onset, chronicity, and severity of trauma predicted level of dissociation, as measured at four time points across 19 years.

Researchers have also examined dissociation in populations in which trauma is more easily documented or verified than in cases of child abuse or assault (e.g., Bremner, Southwick, & Brett, 1992; Carlson & Rosser-Hogan, 1991; Koopman, Classen, & Spiegel, 1996; Marmar, Weiss, & Metzler, 1997; Yehuda et al., 1996). In Carlson and Rosser-Hogan's (1991) study, for example, 50 Cambodian refugees who had settled in the United States participated in a study involving the administration of a series of questionnaires. DES scores in the sample were strikingly high (mean = 37.1); notably, only two of the 50 participants scored under 10 on the scale, which is considered to be within the range of normal adults.

Though converging evidence consistently points to trauma as a causal factor in the development of dissociation, how much societal and cultural expectations play a role in this relationship is still an open question. For instance, a trauma survivor may learn from others or from the culture at large to evidence dissociative symptoms as a socially accepted response to trauma. Might the correlation between dissociation and trauma be at least partially a result of suggestion by therapist or media exposure? If so, we should see lower correlations between trauma and dissociation in societal contexts in which individuals are less likely to be exposed to suggestive influences regarding this relationship. Dalenburg and Palesh (2004) evaluated the links between dissociative symptoms and trauma in a Russian population that was relatively unexposed to these suggestive sources: 301 Russian university students, who completed measures of dissociative symptoms, and history of violent trauma and child abuse. The usual positive relationship between trauma and dissociation was discovered in this sample and,

if anything, rates of dissociation were higher than in comparable American samples, indicating that suggestive influences may not explain the correlation.

Observing Dissociation in Other Psychiatric Contexts

Dissociative symptoms have been observed in conjunction with a range of diagnostic categories, including ASD (e.g., Bryant & Harvey, 2000), PTSD (e.g., Brewin, 2003), complex PTSD (Herman, 1992), eating disorders (see Putnam, 1997), and the dissociative disorders (Putnam, 1997). For our purposes in this chapter, we focus on the co-occurrence of PTSD and trauma-induced dissociation.

The co-occurrence of dissociation and PTSD has received attention in terms of both describing the phenomenon of co-occurrence and what that co-occurrence may mean conceptually for understanding posttraumatic responses. Several studies have observed relations between PTSD and dissociation; for example, people who meet criteria for PTSD score higher on the DES than those who do not (e.g., Carlier, Lamberts, Fouwels, & Gersons, 1996; Maldonado & Spiegel, 1998; Putnam, 1997; Yehuda et al., 1996).

Some researchers have suggested that, conceptually, dissociation may play a central role in the onset and/or maintenance of PTSD. For example, van der Kolk and Fisler (1995) suggested that dissociation is at the core of the development of PTSD. In addition, Braun (1988) and van der Hart (2000) suggested that intrusive symptoms may in fact be dissociative phenomena. Van der Hart likened intrusive PTSD symptoms to positive dissociation symptoms (e.g., presence of intrusive memories), whereas avoidance symptoms reflect negative dissociation symptoms (e.g., feeling detached from others). Indeed, the experience of a flashback fits many definitions of dissociation, in which normally integrated aspects of consciousness are not integrated (one's mental experience may not be integrated with conscious awareness of current surroundings, passage of time, etc.).

With interest in dissociation, some speculation about PTSD as a dissociative disorder can be found in the literature. Support for such a move is drawn from the observation that both PTSD and dissociative disorders are reactions to extreme stress and therefore have similar etiologies (Brett, 1993). Furthermore, both PTSD and dissociative disorders include alterations in memory among their criteria. In spite of this support, researchers have argued that PTSD includes anxiety that is more consistent with other anxiety disorders than with the dissociative disorders; in addition, some people with PTSD do not experience amnesia or dissociative episodes (Brett, 1993). Taken together, these observations raise the question of whether there may be subtypes of PTSD that vary in their involvement of dissociative processes. Indeed, Lanius and colleagues (Chapter 13, this volume) describe converging evidence for a dissociative subtype of PTSD, drawing on data from civilian and military samples.

Dissociation and Information Processing

As research has progressed to the point that factors associated with dissociation have been observed repeatedly (e.g., history of child abuse), the literature has moved in exciting directions to focus on identifying both the motivation for and mechanisms underlying the relationship among trauma, dissociation, and associated outcomes (e.g., memory impairment). Such basic research that identifies and tests mechanisms—emotional, cognitive, and social—that may underlie dissociation and related outcomes is necessary to advancing treatment approaches. To the extent that the mechanisms underlying

dissociative problems are better understood, interventions can be fine-tuned to target particular mechanisms. We now highlight some information-processing approaches to dissociation.

Dissociation, Forgetting, and Betrayal Trauma Theory

Dissociation has long been implicated in trauma-related memory disruption. Betrayal trauma theory (BTT) predicts that dissociating information from awareness is mediated by the threat that the information poses to the individual's system of attachment (Freyd, 1996). Consistent with this premise, betrayal effects on memorability of abuse have been documented in multiple, diverse datasets across researchers, including cross-cultural samples, as well as undergraduate and community samples (for reviews, see DePrince et al., 2012; Freyd, 1996; Freyd, DePrince, & Gleaves, 2007; see also, Freyd, DePrince, & Zurbriggen, 2000; Goldberg & Freyd, 2006; Schultz, Passmore, & Yoder, 2003; Sheiman, 1999). Furthermore, betrayal and dissociation have also been linked across datasets. For example, Chu and Dill (1990) reported that childhood abuse by family members (both physical and sexual) is significantly related to increased DES scores in psychiatric inpatients, whereas abuse by nonfamily members is not. Similarly, Plattner and colleagues (2003) reported that they found significant correlations between symptoms of pathological dissociation and intrafamilial (but not extrafamilial) trauma in a sample of delinquent juveniles. DePrince (2005) found that the presence of betrayal trauma before age 18 is associated with pathological dissociation and with revictimization after age 18. DePrince, Chu, and Pineda (2011) found, consistent with BTT, that less awareness of betrayal was associated with higher dissociation for recent abuse in the context of intimate partner abuse.

DePrince (2001) found that self-reported betrayal predicted dissociation (across multiple self-report measures) above and beyond self-reported fear in a sample of trauma survivors, the vast majority of whom reported childhood physical, sexual, and/or emotional abuse. Freyd, Klest, and Allard (2005) found that a history of betrayal trauma was strongly associated with physical and mental health symptoms, including dissociative symptoms, in a sample of ill individuals. Goldsmith, Freyd, and DePrince (2004) reported similar results in a sample of college students.

Some researchers have failed to find a statistically significant relationship between betrayal trauma and memory impairment. For instance, Goodman and colleagues (2003) reported that "relationship betrayal" was not a statistically significant predictor for forgetting in their unusual sample of adults who as children had been involved in child abuse prosecution cases. It is not clear whether the relationship truly does not exist in this sample (which is possible given how unusual a sample it is) or whether there was simply insufficient statistical power to detect the relationship (see Zurbriggen & Becker-Blease, 2003). Future research will need to clarify these issues.

Dissociation and Cognitive Mechanisms

Phenomenologically, dissociation involves alterations in attention and memory; thus, basic cognitive processes involved in attention and memory may play a role in dissociating explicit awareness of traumas (see Brewin, Chapter 11, this volume), including betrayal traumas. As reviewed by DePrince and colleagues (2012), dissociation has been repeatedly linked with alterations in basic cognitive processing in laboratory tasks, particularly those that require focused (or selective) attention. In a community sample of school-age children, DePrince, Weinzierl, and Combs (2009) found that dissociation

was negatively related to executive function performance that required children to focus their attention, even after they controlled for trauma exposure. In adults, Freyd, Martorello, Alvarado, Hayes, and Christman (1998) documented a basic relationship between selective attention and dissociative tendencies, such that higher levels of dissociation were linked with great interference (i.e., worse performance) on a selective attention Stroop task. In a follow-up study, DePrince and Freyd (1999) found that high-scoring DES participants' reaction times were worse (slower) in a selective attention task than in a divided attention task compared to low-scoring dissociators' performance (replication and extension of Freyd et al., 1998); this interaction has been replicated in children (DePrince, Weinzierl, & Combs, 2008), suggesting potentially complex relations between dissociation and attention. In the adult sample, DePrince and Freyd also found that when they tested participants' memory for words viewed during the task, a significant interaction of dissociation by word category revealed that high-scoring DES participants recalled more neutral and fewer trauma-related words than did low-scoring DES participants, who showed the opposite pattern. Consistent with betrayal trauma theory, the free recall finding supports the argument that dissociation may help to keep threatening information from awareness.

The interaction between attention and dissociation in memory for threatening information was further considered in two studies that used a directed forgetting paradigm. This laboratory task (in which participants were presented with items and told after each item, or a list of items, whether to remember or forget the material) revealed that high-scoring DES participants recalled fewer charged and more neutral words relative to low-scoring DES participants, who showed the opposite pattern for items they were instructed to remember when divided attention was required (item method: DePrince & Freyd, 2001; list method: DePrince & Freyd, 2004). The high-scoring participants report significantly more trauma history (Freyd & DePrince, 2001) and betrayal trauma (DePrince & Freyd, 2004). Two additional studies have replicated this pattern in undergraduate samples, revealing an average effect size for the interaction across studies of $d = 0.67$ (DePrince et al., 2007). Similar findings have been found in children by researchers using pictures instead of words as stimuli. Children who had trauma histories and were highly dissociative recognized fewer charged pictures relative to nontraumatized children under divided attention conditions; no group differences were found under selective attention conditions (Becker-Blease, Freyd, & Pears, 2004). Research using the standard (selective attention) directed forgetting paradigm converges on these findings. Moulds and Bryant (2002) compared participants diagnosed with ASD and nontraumatized controls on a directed forgetting task. ASD includes dissociation among the diagnostic criteria. All participants with ASD had been exposed to some form of physical threat. The ASD group showed poorer recall of to-be-forgotten trauma-related words than did the nontraumatized group.

As exemplified by this research, dissociation (when understood as a mechanism) is one theoretically viable route to memory impairment, though many routes exist. For example, memories may be impaired due to incomplete or fragmented encoding; such routes would be consistent with the concept of dissociative amnesia. Alternatively, forgetting can occur due to retrieval blockage. This sort of forgetting (Anderson et al., 2004) may not involve dissociative processes, as currently conceptualized. In future research, it will be important to examine dissociative-related and -unrelated routes to memory disruption for trauma.

In addition to the research reviewed here, several other studies have focused on memory in individuals diagnosed with dissociative identity disorder (DID) and other

dissociative disorders. This work has included examinations of working memory (e.g., Dorahy, Irwin, & Middleton, 2003; Dorahy, Middleton, & Irwin, 2004), as well as interidentity memory in DID (e.g., Elzinga, Phaf, Ardon, & van Dyck, 2003; Huntjens, Postma, Peters, Woertman, & van der Hart, 2003). Taken together, the advancement of the use of cognitive methods to examine dissociation, memory, and attention points to exciting discoveries that we hope will add to the growing literature on intervention for trauma-induced dissociation.

Current State of the Art

Research to date has examined dissociative responses across a broad range of traumas (e.g., Bremner et al., 1992; Bryant & Harvey, 2000; Carlson & Rosser-Hogan, 1991; Freyd, 1996), developmental stages (e.g., Putnam, 1997), and cultures (e.g., Carlson & Rosser-Hogan, 1991; Dorahy & Paterson, 2005). Although culture-specific dissociative reactions exist, the core components of pathological dissociation appear similar across cultures (see Putnam, 1997). Related to this, possession states and certain other culture-bound syndromes appear to be fundamentally dissociative in nature (Ross, Schroeder, & Ness, 2013). The generalizability of findings at any given time is tied to the field's ongoing struggle to define better the construct of dissociation. Findings based on a continuum view of dissociation, for example, may or may not fully generalize to our knowledge of pathological dissociation. We are hopeful that as we more precisely define dissociative symptoms, we reduce the risk of pathologizing experiences that include alterations in consciousness that do not involve structural dissociation. For example, trance experiences, or certain religious experiences, in other cultures are not viewed as pathological dissociation with our advances in defining dissociative symptoms. Furthermore, normally distributed attributes, such as absorption, are at less risk of being defined as pathological. For example, imaginary play has, at times, been suspected of correlating with problematic outcomes in children. Play involves absorption. Taylor, Carlson, Maring, Gerow, and Charley (2004) found that imaginary friends are very common in children (65% of children up to 7 years of age had an imaginary companion at one point in their lives) and the lack of impersonation of imaginary characters was associated with poorer emotion understanding.

Challenges for the Future

Types of Dissociation

We applaud recent work that has involved stepping back from the past three decades of observation to reevaluate the definition of dissociation. Continued work is needed to fine-tune what experiences we include in the category of trauma-induced dissociation. With conceptual clarity about the operationalization of dissociation comes the promise of increased capacity to identify dissociative developmental pathways and mechanisms.

The Evolving Definition of Dissociation

Several challenges remain in the quest to specify further the operationalization of dissociation, including continued work to examine differences in pathological versus nonpathological views of dissociation. As researchers work to exclude normative

phenomena (e.g., absorption), we must ensure that we do not exclude relevant phenomena. For example, much of the contemporary literature on dissociation has focused on dissociation of mental functions (e.g., memory, attention). Work by Nijenhuis and colleagues (1998) points to the importance of including dissociation of perceptual, movement, and sensory information. In addition, constructs that may be dissociative in nature, such as alexithymia, have not yet been included routinely in analyses. "Alexithymia" is the inability to label emotions, a phenomenon that may be consistent with the lack of integration observed in dissociation.

As researchers and clinicians improve on the scope of definitions of dissociation, we will be in a better position to evaluate the relationship between dissociation and other psychiatric phenomena. With more precise definitions and measurement of dissociation, researchers can begin to untangle the complicated picture of comorbidity between dissociation and other forms of trauma-related distress. For example, PTSD and dissociation have long been observed as frequently co-occurring phenomena. There are several reasons that this overlap might be observed; for example, the comorbidity could be due to symptom overlap, common underlying mechanisms, and/or a dissociative subtype of PTSD (see Lanius et al., Chapter 13, this volume).

REFERENCES

- Anderson, M. C., Ochsner, K. N., Kuhl, B., Cooper, J., Robertson, E., Gabrieli, S. W., et al. (2004). Neural systems underlying the suppression of unwanted memories. *Science*, *303*, 232-235.
- Armstrong, J. G., Putnam, F. W., Carlson, E. B., Libero, D. Z., & Smith, S. R. (1997). Development and validation of a measure of adolescent dissociation: The adolescent dissociative experiences scale. *Journal of Nervous and Mental Disease*, *185*, 491-497.
- Becker-Blease, K. A., Deater-Deckard, K., Eiley, T., Freyd, J. J., Stevenson, J., & Plomin, R. (2004). A genetic analysis of individual differences in dissociative behaviors in childhood and adolescence. *Journal of Child Psychology and Psychiatry*, *45*, 522-532.
- Becker-Blease, K. A., Freyd, J. J., & Pears, K. C. (2004). Preschoolers' memory for threatening information depends on trauma history and attentional context: Implications for the development of dissociation. *Journal of Trauma and Dissociation*, *5*, 113-131.
- Bernstein, E., & Putnam, F. W. (1986). Development, reliability and validity of a dissociation scale. *Journal of Nervous and Mental Disease*, *174*, 727-735.
- Braun, B. G. (1988). The BASK model of dissociation. *Dissociation*, *1*, 4-21.
- Bremner, J. D., Southwick, S., & Brett, E. (1992). Dissociation and posttraumatic stress disorder in Vietnam combat veterans. *American Journal of Psychiatry*, *149*, 328-332.
- Brett, E. A. (1993). Classifications of posttraumatic stress disorder in DSM-IV: Anxiety disorder, dissociative disorder, or stress disorder? In J. R. T. Davidson & E. B. Foa (Eds.), *Posttraumatic stress disorder: DSM-IV and beyond* (pp. 191-206). Washington, DC: American Psychiatric Press.
- Brewin, C. (2003). *Post-traumatic stress disorder: Malady or myth?* New Haven, CT: Yale University Press.
- Bryant, R. A., & Harvey, A. G. (2000). *Acute stress disorder: A handbook of theory, assessment, and treatment*. Washington, DC: American Psychological Association.
- Cardeña, E., & Carlson, E. (2011). Acute stress disorder revisited. *Annual Review of Clinical Psychology*, *7*, 245-267.
- Carlier, I. V. E., Lamberts, R. D., Fouwels, A. J., & Gersons, B. P. R. (1996). PTSD in relation to dissociation in traumatized police officers. *American Journal of Psychiatry*, *153*, 1325-1328.
- Carlson, E. B., & Rosser-Hogan, R. (1991). Trauma experiences, posttraumatic stress, dissociation and depression in Cambodian refugees. *American Journal of Psychiatry*, *148*, 1548-1551.

- Chu, J. A., & Dill, D. L. (1990). Dissociative symptoms in relation to childhood physical and sexual abuse. *American Journal of Psychiatry*, *147*, 887-892.
- Dalenberg, C. J., Brand, B. L., Gleaves, D. H., Dorahy, M. J., Lowenstein, R. J., Cardena, E., et al. (2012). Evaluation of the evidence for the trauma and fantasy models of dissociation. *Psychological Bulletin*, *138*, 550-588.
- Dalenberg, C. J., & Palesh, O. G. (2004). Relationship between child abuse history, trauma, and dissociation in Russian college students. *Child Abuse and Neglect*, *28*, 461-474.
- Dell, P. F. (2006). The Multidimensionality Inventory of Dissociation (MID): A comprehensive measure of pathological dissociation. *Journal of Trauma and Dissociation*, *7*(2), 77-106.
- DePrince, A. P. (2001). *Trauma and posttraumatic responses: An examination of fear and betrayal*. Unpublished doctoral dissertation, University of Oregon.
- DePrince, A. P. (2005). Social cognition and revictimization risk. *Journal of Trauma and Dissociation*, *6*, 125-141.
- DePrince, A. P., Brown, L. S., Cheit, R. E., Freyd, J. J., Gold, S. N., Pezdek, K., et al. (2012). Motivated forgetting and misremembering: Perspectives from betrayal trauma theory. In R. F. Belli (Ed.), *True and false recovered memories: Toward a reconciliation of the debate: Nebraska Symposium on Motivation* (Vol. 58, pp. 193-243). New York: Springer.
- DePrince, A. P., Chu, A. T., & Pineda, A. S. (2011). Links between specific posttrauma appraisals and three forms of trauma-related distress. *Psychological Trauma: Theory, Research, Practice, and Policy*, *3*, 430-441.
- DePrince, A. P., & Freyd, J. J. (1999). Dissociative tendencies, attention, and memory. *Psychological Science*, *10*, 449-452.
- DePrince, A. P., & Freyd, J. J. (2001). Memory and dissociative tendencies: The roles of attentional context and word meaning in a directed forgetting task. *Journal of Trauma and Dissociation*, *2*(2), 67-82.
- DePrince, A. P., & Freyd, J. J. (2004). Forgetting trauma stimuli. *Psychological Science*, *15*, 488-492.
- DePrince, A. P., Freyd, J. J., & Malle, B. (2007). A replication by another name: A response to Devilly et al. (2007). *Psychological Science*, *18*, 218-219.
- DePrince, A. P., Weinzierl, K. M., & Combs, M. D. (2008). Stroop performance, dissociation, and trauma exposure in a community sample of children. *Journal of Trauma and Dissociation*, *9*(2), 209-223.
- DePrince, A. P., Weinzierl, K. M., & Combs, M. D. (2009). Executive function performance and trauma exposure in a community sample of children. *Child Abuse and Neglect*, *33*, 353-361.
- Dorahy, M. J., Irwin, H. J., & Middleton, W. (2003). Assessing markers of working memory function in dissociative identity disorder using neutral stimuli: A comparison with clinical and general population samples. *Australian and New Zealand Journal of Psychiatry*, *38*, 47-55.
- Dorahy, M. J., Middleton, W., & Irwin, H. J. (2004). Investigating cognitive inhibition in dissociative identity disorder compared to depression, posttraumatic stress disorder and psychosis. *Journal of Trauma and Dissociation*, *5*, 93-110.
- Dorahy, M. J., & Paterson, M. D. (2005). Trauma and dissociation in Northern Ireland. *Journal of Trauma Practice*, *4*, 221-243.
- Elzinga, B. M., Phaf, R. H., Ardon, A. M., & van Dyck, R. (2003). Directed forgetting between, but not within, dissociative personality states. *Journal of Abnormal Psychology*, *112*, 237-243.
- Feldman-Summers, S., & Pope, K. S. (1994). The experience of "forgetting" childhood abuse: A national survey of psychologists. *Journal of Consulting and Clinical Psychology*, *62*, 636-639.
- Freyd, J. J. (1996). Blind to betrayal: New perspectives on memory for trauma. *Harvard Mental Health Letter*, *15*, 4-6.
- Freyd, J. J., DePrince, A. P., Gleaves, D. (2007). The state of betrayal trauma theory: Reply to McNally—conceptualizations and future directions. *Memory*, *15*, 295-311.
- Freyd, J. J., DePrince, A. P., & Zurbriggen, E. L. (2001). Self-reported memory for abuse depends upon victim-perpetrator relationship. *Journal of Trauma and Dissociation*, *2*, 5-17.
- Freyd, J. J., Klest, B., & Allard, C. B. (2005). Betrayal trauma: Relationship to physical health, psychological distress, and a written disclosure intervention. *Journal of Trauma and Dissociation*, *6*(3), 83-104.

- Freyd, J. J., Martorello, S. R., Alvarado, J. S., Hayes, A. E., & Christman, J. C. (1998). Cognitive environments and dissociative tendencies: Performance on the standard Stroop task for high versus low dissociators. *Applied Cognitive Psychology, 12*, S91-S103.
- Gershuny, B. S., Cloitre, M., & Otto, M. W. (2003). Peritraumatic dissociation and PTSD severity: Do event-related fears about death and control mediate their relation? *Behaviour Research and Therapy, 41*, 157-166.
- Goldberg, L. R., & Freyd, J. J. (2006). Self-reports of potentially traumatic experiences in an adult community sample: Gender differences and test-retest stabilities of the items in a Brief Betrayal-Trauma Survey. *Journal of Trauma and Dissociation, 7*(3), 39-63.
- Goldsmith, R. E., Freyd, J. J., & DePrince, A. P. (2004, February). *Health correlates of exposure to betrayal trauma*. Poster presented at the annual meeting of the American Association for the Advancement of Science, Seattle, WA.
- Goodman, G. S., Ghetti, S., Quas, J. A., Edelstein, R. S., Alexander, K. W., Redlich, A. D., et al. (2003). A Prospective study of memory for child sexual abuse: New findings relevant to the repressed-memory debate. *Psychological Science, 14*, 113-118.
- Herman, J. L. (1992). *Trauma and recovery*. New York: Basic Books.
- Hilgard, E. R. (1986). *Divided consciousness: Multiple controls in human thought and action*. New York: Wiley.
- Hulette, A. C., Kaehler, L. A., & Freyd, J. J. (2011). Intergenerational associations between trauma and dissociation. *Journal of Family Violence, 26*, 217-225.
- Huntjens, R. J. C., Postma, A., Peters, M. L., Woertman, L., & van der Hart, O. (2003). Inter-identity amnesia for neutral, episodic information in dissociative identity disorder. *Journal of Abnormal Psychology, 112*, 290-297.
- Koopman, C., Classen, C., & Spiegel, D. (1996). Predictors of posttraumatic stress symptoms among survivors of the Oakland/Berkeley, Calif., firestorm. *American Journal of Psychiatry, 151*, 888-894.
- Maldonado, J. R., Butler, L. D., & Spiegel, D. (2002). Treatments for dissociative disorders. In P. E. Nathan & J. M. Gordon (Eds.), *A guide to treatments that work* (2nd ed., pp. 463-496). New York: Oxford University Press.
- Maldonado, J. R., & Spiegel, D. (1998). Trauma, dissociation, and hypnotizability. In J. D. Bremner & C. R. Marmar (Eds.), *Trauma, memory and dissociation* (pp. 57-106). Washington, DC: American Psychiatric Press.
- Marmar, C. R., Weiss, D. S., & Metzler, T. J. (1997). The Peritraumatic Dissociative Experiences Questionnaire. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 412-428). New York: Guilford Press.
- Marshall, G. N., Orlando, M., Jaycox, L. H., Foy, D. W., & Belzberg, H. (2002). Development and validation of a modified version of the Peritraumatic Dissociative Experiences Questionnaire. *Psychological Assessment, 14*(2), 123-134.
- Merckelbach, H., Horselenberg, R., & Schmidt, H. (2002). Modeling the connection between self-reported trauma and dissociation in a student sample. *Personality and Individual Differences, 32*(4), 695-705.
- Moulds, M. L., & Bryant, R. A. (2002). Directed forgetting in acute stress disorder. *Journal of Abnormal Psychology, 111*, 175-179.
- Myers, C. S. (1940). *Shell shock in France 1914-18*. Cambridge, UK: Cambridge University Press.
- Nijenhuis, E. R. S., Spinhoven, P., van Dyck, R., van der Hart, O., & Vanderlinden, J. (1998). Psychometric characteristics of the Somatoform Dissociation Questionnaire: A replication study. *Psychotherapy and Psychosomatics, 67*, 17-23.
- Ogawa, J. R., Sroufe, L. A., Weinfield, N. S., Carlson, E. A., & Egeland, B. (1997). Development and the fragmented self: Longitudinal study of dissociative symptomatology in a nonclinical sample. *Development and Psychopathology, 9*, 855-879.
- Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin, 129*, 52-73.
- Panasetis, P., & Bryant, R. A. (2003). Peritraumatic versus persistent dissociation in acute stress disorder. *Journal of Traumatic Stress, 16*, 563-566.

- Plattner, B., Silvermann, M. A., Redlich, A. D., Carrion, V. G., Feucht, M., Friedrich, M. H., et al. (2003). Pathways to dissociation: Intrafamilial versus extrafamilial trauma in juvenile delinquents. *Journal of Nervous and Mental Disease, 191*, 781-788.
- Putnam, F. W. (1989). Pierre Janet and modern views of dissociation. *Journal of Traumatic Stress, 2*, 413-428.
- Putnam, F. W. (1997). *Dissociation in children and adolescents: A developmental perspective*. New York: Guilford Press.
- Putnam, F. W., Helmers, K., & Trickett, P. K. (1993). Development, reliability, and validity of a child dissociation scale. *Child Abuse and Neglect, 17*, 731-741.
- Putnam, F. W., & Trickett, P. K. (1997). The psychobiological effects of sexual abuse: A longitudinal study. *Annals of the New York Academy of Sciences, 821*, 150-159.
- Ross, C. A., Ellason, J. W., & Anderson, G. (1995). A factor analysis of the Dissociative Experiences Scale (DES) in dissociative identity disorder. *Dissociation: Progress in the Dissociative Disorders, 8*, 229-235.
- Ross, C. A., Schroeder, B. A. & Ness, L. (2013) Dissociation and symptoms of culture-bound syndromes in North America: A preliminary study. *Journal of Trauma and Dissociation, 14*, 224-235.
- Sanders, B., & Green, J. A. (1994). The factor structure of the Dissociative Experiences Scale in college students. *Dissociation: Progress in the Dissociative Disorders, 7*, 23-27.
- Schultz, T. M., Passmore, J., & Yoder, C. Y. (2003). Emotional closeness with perpetrators and amnesia for child sexual abuse. *Journal of Child Sexual Abuse, 12*, 67-88.
- Sheiman, J. A. (1999). Sexual abuse history with and without self-report of memory loss: Differences in psychopathology, personality, and dissociation. In L. M. Williams & V. L. Banyard (Eds.), *Trauma and memory* (pp. 139-148). Thousand Oaks, CA: Sage.
- Taylor, M., Carlson, S. M., Maring, B. L., Gerow, L., & Charley, C. M. (2004). The characteristics and correlates of fantasy in school-age children: Imaginary companions, impersonation, and social understanding. *Developmental Psychology, 40*, 1173-1187.
- van der Hart, O. (2000, November). *Dissociation: Toward a resolution of 150 years of confusion*. Plenary presented at the annual meeting of the International Society for the Study of Dissociation, San Antonio, TX.
- van der Hart, O., Nijenhuis, E., Steele, K., & Brown, D. (2004). Trauma-related dissociation: Conceptual clarity lost and found. *Australian and New Zealand Journal of Psychiatry, 38*, 906-914.
- van der Kolk, B. A., & Fisler, R. (1995). Dissociation and the fragmentary nature of traumatic memories: Overview and exploratory study. *Journal of Traumatic Stress, 8*, 505-525.
- van der Kolk, B. A., Weisaeth, L., & van der Hart, O. (1996). History of trauma in psychiatry. In B. A. van der Kolk, A. C. McFarlane, & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society* (pp. 47-76). New York: Guilford Press.
- Waller, N. G., Putnam, F. W., & Carlson, E. B. (1996). Types of dissociation and dissociative types: A taxometric analysis of dissociative experiences. *Psychological Methods, 1*, 300-321.
- Yehuda, R., Elkin, A., Binder-Brynes, K., Kahana, B., Southwick, S. M., Schmeidler, J., et al. (1996). Dissociation in aging Holocaust survivors. *American Journal of Psychiatry, 153*, 935-940.
- Zurbriggen, E. L., & Becker-Blease, K. (2003). Predicting memory for childhood sexual abuse: "Non-significant" findings with the potential for significant harm. *Journal of Child Sexual Abuse, 12*, 113-121.
- Zurbriggen, E. L., & Freyd, J. J. (2004). The link between childhood sexual abuse and risky sexual behavior: The role of dissociative tendencies, information-processing effects, and consensual sex decision mechanisms. In L. J. Koenig, L. S. Doll, A. O'Leary, & W. Pequegnat (Eds.), *From child sexual abuse to adult sexual risk: Trauma, revictimization, and intervention* (pp. 135-158). Washington, DC: American Psychological Association.