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Dissociative Disorders

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From Jekyll and Hyde like shifts of feelings and behaviors to feelings of unreality, like “all the world’s a stage” for actors seemingly playing a part, to amnesia for events that one should, by all rights remember, the symptoms of dissociative disorders have proven to be as fascinating as they are perplexing and controversial. Janet (1973) was perhaps the first to claim, in 1889, that dissociation (or “desagregation” as he termed it) originated in a defensive response to traumatic events and to appreciate the importance of studying dissociation in order to comprehend the full range of everyday and anomalous experiences (Cardena, Lynn, & Krippner, 2014). Janet’s contention that dissociation represents a coping strategy in response to highly aversive events continues to provoke vigorous debate, just as the notion of multiple personality disorder (now termed dissociative identity disorder) sparked Freud’s skepticism in Janet’s time. In this chapter, we examine the three major dissociative disorders—dissociation/derealization disorder, dissociative amnesia, and dissociative identity disorder, in turn. More specifically, we describe their symptoms, prevalence, and assessment, as well as current controversies regarding the genesis of dissociation and competing theories of their nature and origin and efforts to treat their vexing symptoms.

Dissociation and Dissociative Disorders

As described in the DSM-5 (American Psychiatric Association, 2013), dissociation can be defined as a “disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behavior” (p. 291). Dissociative experiences range from the mundane, such as occasional lapses or divisions in attention and memory, to fantasizing, daydreaming, becoming absorbed

in movies and what is commonly referred to as “highway hypnosis” (“losing” lengthy periods of time while driving), to the profound and sometimes unpredictable shifts in consciousness that mark dissociative disorders. In some cases, it is difficult to distinguish pathological from non-pathological dissociation (Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008; Modestin & Erni, 2004; Waller, Putnam, & Carlson, 1996; Waller & Ross, 1997), and it is not altogether clear whether milder manifestations of dissociation share biological and etiological roots with more dysfunctional manifestations of dissociation (see Cardena, 1994; Lynn et al., 2014).

Although controversy persists regarding the origins of both mild and more pathological dissociation, there is little dispute that some individuals present with symptoms that fall under the rubric of “dissociation,” as codified in DSM-5. In brief, the three major disorders in DSM-5 are:

1. *Depersonalization/derealization disorder* (with depersonalization being experiences of unreality, detachment, outside observer of one’s thoughts, feelings, sensations or actions, and derealization being experiences of unreality or detachment with respect to surroundings);
2. *Dissociative amnesia*, the inability to recall important autobiographical information, usually of a traumatic or stressful nature, inconsistent with ordinary forgetting; and
3. *Dissociative identity disorder* (DID; formerly called multiple personality disorder), a striking disruption of identity characterized by two or more distinct personality states and recurrent gaps in the recall of everyday events.

To merit a diagnosis of a dissociative disorder, dissociative experiences or symptoms must (a) interfere with important areas of functioning, such as work and social relationships, (b) engender subjective distress, or both. Spiegel and colleagues (2011) classified pathological dissociative symptoms as “positive” or “negative,” with positive symptoms comprising flashbacks and intrusions of an “aspect of identity” into awareness, and negative symptoms comprising “deficits in memory, sense of self, and/or the ability to sense or control different parts of the body” (p. 826).

Some researchers have suggested that a dissociative subtype of schizophrenia can be identified with prominent dissociative features, including amnesia and depersonalization/derealization (see Ross, 2008; Vogel, Braungardt, Grabe, Schneider, & Klauer, 2013). However, it is not clear to what extent dissociative symptoms merely reflect nonspecific symptoms associated with substantial comorbidity due to a psychotic disorder (Laferrière-Simard, Lecomte, & Ahoundova, 2014), or whether a dissociative subtype of schizophrenia will emerge as a valid entity pending future research.

Prevalence of Pathological Dissociation: Nonclinical and Clinical Samples Studies of the prevalence of people in nonclinical populations who report clinically significant symptoms of dissociation using well-validated measures of dissociation or structured interviews provide variable estimates of often non-trivial rates of dissociation. More specifically, the rates of pathological dissociation generally range from 0.3% (Spitzer, Barnow, Freyberger, & Grabe, 2006) to 2–3% in the general population (Seedat et al., 2003; Vanderlinden, Van Dyck, Vandereycken, & Vertommen, 1991; Waller & Ross, 1997), although Sar, Akyüz, and Dogan (2007) reported an “outlier” estimate of 18.3% lifetime prevalence of dissociative disorders among Turkish women sampled in the community, a rate perhaps attributable to unknown cultural factors.

Waller and Ross (1997) conducted an analysis of pathological dissociation in the general population in two North American samples and used biometric and taxonomic statistical procedures to determine that approximately 3.3% of the population belongs to a pathological dissociative taxon, as measured by an 8-item scale (DES-T) derived from the Dissociative Experience Scale (DES; Bernstein-Carlson & Putnam, 1986). In psychopathology, a taxon is a natural class; that is, a group that differs in kind rather than in degree from normality. Nevertheless, Watson (2003) found the taxon scores to be only modestly stable (test re-test correlation $r = 0.34$ after approximately 2 months), and most individuals identified as taxon members on one occasion failed to be so classified at re-test. Generally speaking, little is known about the test-re-test reliability of diagnoses of dissociative disorders and the impact of potential low reliability on prevalence estimates.

Few studies have examined the rates of dissociative disorders in college students. Sandberg and Lynn (1992)

identified 33 female college students who scored in the upper 15% on the DES, a widely used self-report measure of dissociation (Bernstein-Carlson & Putnam, 1986). Two of these students met criteria for a dissociative disorder (i.e., psychogenic amnesia, or what would today be called dissociative amnesia; multiple personality disorder, or what would today be called dissociative identity disorder), although none of the 33 students who scored below the mean on the DES met criteria for a dissociative disorder. Eight participants who scored in the upper 2% on the DES did not meet criteria for a dissociative disorder.

The prevalence of dissociation in clinical populations tends to be much higher than in nonclinical populations, although significant variability is also evident in the former samples, ranging from lows of 12–17% (Lipsanen et al., 2004; Sar, Tutkun, Alyanak, Bakim, & Barai, 2000; Saxe et al., 1993) to higher estimates of lifetime prevalence of 28–40.9% in an inpatient setting (Ross, Duffy, & Ellason, 2002) to the highest estimate 34.9% in a psychiatric emergency facility (Sar, Akyüz, & Dogan, 2007). Prevalence rates of dissociative disorders also run high in special populations, with rates reported of all dissociative disorders of 80% (35% diagnosed with DID) in exotic dancers and 55% in prostitutes (Ross, Anderson, Heber, & Norton, 1990), and 17–39% in individuals with substance use disorders (for a review, see Sar, 2011). Overall, the findings regarding gender differences in dissociative diagnoses are mixed, with some studies finding a higher prevalence among women, and other studies finding no differences (Sar, 2011).

Suicide and self-mutilatory behaviors tend to be higher (completed suicide 1–2%) among patients with dissociative disorder, although the interpretation of such elevated rates is often complicated by substantial “comorbidity” (co-occurrence) of dissociative disorders with borderline personality disorder and other serious manifestations of psychopathology, including other personality disorders, anxiety disorders, and depressive disorders (Johnson, Cohen, Kasen, & Brook, 2006; Lynn et al., 2014). Sar Akyüz, Öztürk, and Alio lu (2013) sampled 628 women in a Turkish community and identified “dissociative depression” among 40% of depressed women, a condition marked by symptoms of depression, increased suicidality and self-mutilation, and reports of childhood trauma. Most of the women did not meet diagnostic criteria for borderline personality or posttraumatic stress disorder (PTSD).

Reasons for the disparities of prevalence rates among studies are not clear, although such rates almost certainly vary as a function of the assessment instrument used, diagnostic base rates at different facilities, the presence and nature of comorbid symptoms, and examiner beliefs and biases regarding dissociation. Generally speaking, experimenter blindness regarding patient characteristics lowers the rate of diagnoses of dissociative disorders (Friedl, Draijer, & de Jonge, 2000).

Genetics and Dissociation Research supports a genetic substrate for the propensity toward dissociation, although

the evidence is not consistent. Jang, Paris, Zweig-Frank, and Livesley (1998) reported that 48% of the variability in DES-T scores is attributable to genetic influences, and that the remainder of the variance (52%) can be attributed to nonshared environments; that is, environmental experiences that make members of the same family different from one another. When the researchers excluded taxon items and considered nonpathological dissociation scores, genetic influences accounted for 55% of the variance, whereas nonshared environmental influences accounted for 45% of the variance. In a study of children and adolescents, Becker-Blease and colleagues (2004) found a substantial genetic (59% genes, 41% nonshared environment) contribution to dissociation scores, although Waller and Ross (1997) found no evidence for genetic influences based on their research with 280 identical twins and 148 fraternal twins. Unfortunately, no genetic studies of diagnosed patients with dissociative disorders have been conducted. Twin and adoption studies would help to clarify the extent to which the familial clustering of dissociative disorders is due to genes, shared environment (environmental factors that boost family resemblance), or both.

Physiological and Neuroimaging Findings Research has not produced definitive conclusions regarding (a) the relation between dissociation and cortisol response, a commonly used measure of stress reactivity, and (b) the relations among dissociation, cardiovascular (heart rate), and autonomic (e.g., skin conductance response) reactions in response to trauma reminders (Dalenberg et al., 2012). Similar inconsistencies are present in neuroimaging studies in which “either increased or decreased response in medial prefrontal cortex and limbic regions accompanying dissociative symptoms” has been observed (p. 579). Moreover, individuals who score highly on measures of dissociation usually fall within the normative range on standard neuropsychological tests and tests of intellectual ability (Giesbrecht et al., 2008; Schurle, Ray, Bruce, Arnett, & Carlson, 2007). Although trait dissociation, in contrast to PTSD, is associated with increases in gray matter volume in prefrontal, paralimbic, and parietal cortices, as determined by magnetic resonance imaging (MRI), the meaning of these findings is unclear (Nardo et al., 2013). In many studies in which differences in physiological responses vary as a function of dissociation, researchers have neglected to control for general distress and openness to experience, which are both moderately associated with dissociation, making it difficult to interpret the findings (Lynn et al., 2014). Nevertheless, as our discussion proceeds, we see that different dissociative disorders are related to different cognitive deficits and physiological responses.

Depersonalization/Derealization Disorder

We begin our discussion of the three major dissociative disorders with depersonalization/derealization disorder

(hereafter referred to as DPD), the most common and least controversial of the dissociative disorders. Unlike earlier versions of the DSM, in which depersonalization and derealization were catalogued as separate disorders, DSM-5 groups depersonalization and derealization experiences together as DPD. The conjoining of depersonalization and derealization appears to be warranted, as they share similar features with respect to demographics, comorbidity with other disorders, and course (Simeon, 2009).

Description Ludovic Dugas is often credited with first using the term “depersonalization” in the late 1890s (Simeon & Aubugel, 2006). The hallmark of depersonalization is an altered sense of selfhood. Depersonalization symptoms are varied and span feeling as though one is outside of or observing one’s body, feelings, sensations, and actions; emotional or physical numbing; time distortion; and an absent or unreal sense of self. In contrast, derealization pertains to feelings of unreality with regard to one’s surroundings, in which objects or people may appear to be visually distorted or experienced as foggy, dreamlike, robotic, or lifeless. Understandably, such strange, unusual, and often unexpected experiences of depersonalization/derealization can evoke considerable anxiety, even to the extent of fearing losing control or becoming psychotic. Simeon and colleagues (2008) conducted a factor analysis which revealed that depersonalization could be described in terms of five symptom dimensions: Numbing, unreality of self, perceptual alterations, temporal disintegration, and unreality of surroundings, providing further support for combining depersonalization and derealization symptoms. Individuals with DPD may experience not only alexithymia (i.e., difficulty identifying feelings; Simeon, Giesbrecht, Knutelska, Smith, R. J., & Smith, L. M., 2009), but also feelings of unreality produced by difficulties in discriminating emotional from neutral stimuli (Quadflieg et al. 2013) and a dampening, numbing, or shutting out of emotional responses (Medford, 2012).

Diagnosis The onset of DPD varies from gradual to sudden and from chronic to episodic, and may last from hours to weeks or months and extend to years or even decades in rare cases (Simeon, 2009). Freud described experiencing transient depersonalization/derealization during a visit to the Athens Acropolis in 1904, which he found difficult to experience as real (Simeon & Aubugel, p. 11). Freud’s experience is not atypical: Episodes of depersonalization/derealization are commonly brief and may occur only a few times in a person’s lifetime. Estimates suggest that the annual prevalence of transient depersonalization/derealization is 23% (Aderibigbe, Bloch, & Waler, 2001), with a lifetime prevalence between 26% and 74% (Hunter, Sierra, & David, 2004).

DPD often occurs in the context of highly stressful events, unfamiliar environments, threatening social interactions, or the use of drugs such as marijuana, ketamine,

and other hallucinogens. DPD has been associated with childhood parental rejection and punishment, controlling for age and severity of depression and anxiety (Michal et al., 2009), and with emotional abuse in childhood in clinical and nonclinical samples (Michal et al., 2009; Simeon, Guralnik, Schmeidler, Sirof, & Knutelska, 2001).

However, when DPD symptoms are persistent, recurrent (at least once a month), disturbing, and/or interfere with daily functioning, and do not occur exclusively in the context of another disorder, such as an anxiety disorder or a medical condition (e.g., seizures), they qualify for a diagnosis of DPD. The first episode of depersonalization/derealization is likely to occur between adolescence (age 16; Simeon et al., 1997) and young adulthood (age 22; Baker, Hunter, & Lawrence, 2003), although treatment may not be sought until late adulthood. In approximately two-thirds of cases, the course of DPD is chronic, with symptoms present most or all of the time (Simeon, 2009). To rule out a diagnosis of schizophrenia or another psychotic condition, for a diagnosis of DPD, reality testing must remain intact during episodes of depersonalization/derealization. Moreover, DPD should not be diagnosed when symptoms are restricted to meditative or trance practices.

Prevalence and Comorbidity Estimates of the prevalence of diagnosed DPD in the general population converge in the range of 1–3% (Lynn et al., 2014). In inpatient samples, the rates of depersonalization and derealization diagnoses run as high as 16% (Hunter et al., 2004).

DPD often occurs in the presence of other disorders. For example, DPD is especially common in panic disorder, with prevalence as high as 82%. The relation between DPD and anxiety has compelled some European authors to classify DPD as an anxiety disorder (Lynn, Merckelbach et al., 2015). Moreover, depersonalization/derealization is included among the diagnostic criteria for panic disorder in DSM-5. Nevertheless, the lumping of anxiety and depersonalization/derealization has been questioned. Although one study found that the only childhood risk factor identified for adult DPD is a history of anxiety (Lee, Kwok, Hunter, Richards, & David, 2012), another found that the correlation between measures of anxiety and depersonalization in adulthood is statistically significant but low (Sierra, Medford, Wyatt, & David, 2012). Moreover, mood-stabilizing medications typically used to treat anxiety conditions have little therapeutic effect on DPD (Simeon, 2009). Additionally, DPD occurs commonly in many conditions, not identified solely with anxiety, including major depression, somatoform disorders, substance use disorders, and various personality disorders (e.g., borderline, avoidant; Belli, Ural, Vardar, Yesilyurt, & Oncu, 2012; Lynn et al., 2014). For example, the rate of depersonalization/derealization symptoms in major depression has been reported to be as high as 60% (Noyes, Hoenk, Kuperman, & Slymen, 1977). Finally,

although hyperarousal may trigger episodes of depersonalization/derealization (Sterlini & Bryant, 2002), depersonalization/derealization itself may engender anxiety, as mentioned earlier, and hyperventilation may bring about symptoms of both anxiety and depersonalization/derealization (Lickel, Nelson, Hayes, Lickel, & Deacon, 2008). In sum, anxiety and depersonalization appear to be related to some extent, but are largely distinguishable (Sierra et al., 2012).

In acute stress disorder, which often precedes PTSD, depersonalization/derealization is one of 14 symptoms listed in DSM-5, and is present in as many as 30% of cases of PTSD (Michal et al., 2009). Moreover, in DSM-5, it is possible to specify whether depersonalization and derealization accompany PTSD (American Psychiatric Association, p. 274). The dissociative subtype of PTSD can be identified in civilian and noncivilian populations (Lanius et al., 2012), with the prevalence of the subtype ranging from 14% (Stein et al., 2013) to 25% (Steuwe, Lanius, & Frewen, 2012), to 30% (females; Wolf et al., 2012). The fact that dissociative symptoms follow in the wake of trauma in only a minority of cases implies that exposure to highly aversive events is but one of a number of potential variables associated with dissociation, a contention that figures in our discussion below of theories of dissociation.

Physiological and Neuroimaging Findings Although trauma exposure may be a distal cause of depersonalization, researchers have implicated a mismatch in perceptual/sensory signals and alterations in body schemas as culprits in engendering DPD. For example, investigators (Simeon et al., 2009) have used MRI and positron emission tomography of the brain to reveal that DPD patients, compared with healthy controls, exhibit abnormalities in areas of the sensory cortex related to somatosensory, visual, and auditory experiences and areas of the cortex that subserve the integration of body schemas. Simeon et al. (2009) suggested that these findings imply that DPD involves a dissociation of perceptions that give rise to the symptoms of DPD. Additionally, vestibular stimulation produced by caloric irrigation of the ear labyrinths produces feelings of depersonalization in healthy participants, including strange bodily feelings, feeling “spaced out,” and not in control of the self (Jáuregui-Renaud, Green, Bronstein, & Gresty, 2006). Moreover, patients experiencing peripheral vestibular disease (Jáuregui-Renaud, Sang, Gresty, Green, & Bronstein, 2008) and patients with retinal disease (Jáuregui-Renaud, Ramos-Toledo, Bolaños, Montaña-Velazquez, & Pliego-Maldonado, 2008) are more likely to experience depersonalization/derealization compared with healthy controls. Accordingly, DPD symptoms may ensue when there is a lack of integration or mismatch between multisensory inputs (e.g., vestibular, visual proprioceptive) that impairs neural representations that generate an altered sense of reality and the self

(Aspell & Blanke, 2009; Lynn et al., 2014). Alternatively, among predisposed individuals, DPD symptoms may tend to arise whenever there are markedly unexpected bodily or perceptual experiences.

Additional evidence of a link between DPD symptoms and physiology comes from studies of out-of-body experiences—a sense of physical separation from the self—sometimes reported by people with DPD. Researchers have shown that out-of-body experiences stem from a mixing or scrambling of the senses (e.g., vision and touch) when the sense of the physical body is disrupted. When physical sensations and visual impressions combine in atypical ways and there is a disruption in somatosensory signals, it can create the experience of feeling outside of one's body (Cheyne & Girard, 2009; Terhune, 2009). Ehrsson (2007) generated an out-of-body experience in the laboratory by creating the illusion that participants' bodies were standing in front of them. This was accomplished by participants donning goggles that displayed a video image of themselves provided by a camera behind them. Participants reported that they could experience themselves being touched in a location outside their physical bodies when they were touched with a rod on the chest at the same time the experimenters used the camera set-up to make it appear that their visual image was touched (see also Aspell, Lenggenhager, & Blanke, 2009; Lenggenhager et al., 2007). Additionally, investigators have produced out-of-body-like experiences by stimulating where the brain's parietal and right temporal lobes join, the vestibular cortex, and the superior temporal gyrus (see Lynn et al., 2014). Perhaps not coincidentally, Sierra, and colleagues (2014) compared DPD patients with controls and reported gray matter changes in the frontal, temporal, and parietal lobes associated with DPD based on MRI findings. The authors note that additional research is necessary to determine whether these changes are vulnerability or disease markers.

Transcranial magnetic stimulation (TMS)—a method of inducing an electrical field in select portions of the cortex by passing a magnetic field through the skull (Barker, Jalinous, & Freeston, 1985; O'Shea & Walsh, 2007)—has shown promise in elucidating pathological variations in cortical excitability associated with depersonalization (e.g., Sierra & Berrios, 1998). Jay, Sierra, Van den Eynde, Rothwell, and David (2014) used repetitive TMS (rTMS) to evaluate a neurobiological model of depersonalization proposed by Sierra and Berrios (1998) in which the ventrolateral prefrontal cortex (vlPFC) inhibition of the insula (a brain area involved in the processing of bodily sensations) contributes to the emotional numbing and altered sense of self associated with depersonalization. Jay and colleagues hypothesized that inhibition of the vlPFC engendered by rTMS would disinhibit insula activity and would allow for increased arousal and reduced depersonalization symptoms. Among patients with medication-resistant depersonalization disorder, a single session of rTMS produced reductions in depersonalization symptoms. However,

although rTMS inhibited vlPFC activity and increased insula activity as hypothesized, symptom reductions also occurred after patients received rTMS targeting the temporal parietal junction, a known neural substrate of out-of-body experiences. The authors concluded that their findings support the neurobiological model proposed by Sierra and Berrios (2000). Nevertheless, they observed that, in their uncontrolled trial, the therapeutic effects of rTMS were independent of increased arousal (i.e., insula activity) and thus nonspecific and potentially attributable to placebo effects.

Other investigations of the effects of TMS and rTMS on depersonalization symptoms include two case studies and one clinical trial. Keenan, Freund, and Pascual-Leone (1999) treated a female patient with comorbid major depression and depersonalization disorder with rTMS and reported decreases in depersonalization symptoms in tandem with increases in self-awareness. In this case, rTMS targeted the patient's right frontal lobe, which showed hyperactivity in a single PET scan. A second case study (Jiménez-Genchi, 2004) of a male patient with comorbid medication-resistant DPD and major depressive disorder showed a 28% reduction in depersonalization symptoms after six sessions of rTMS delivered to the dorsolateral prefrontal cortex. Finally, Mantovani and colleagues (2011) conducted the first uncontrolled open clinical trial examining effects of inhibitory rTMS delivered to the temporal parietal junction in patients with depersonalization disorder. The authors observed that 6 of 12 patients demonstrated symptom improvement after 3 weeks, and 5 of the 6 responders showed 68% improvement in DPD symptoms after an additional 3 weeks of treatment (see also Christopheit, Simeon, & Mantovani, 2013). Randomized and placebo controlled trials are essential to further evaluate the specific and nonspecific effects of rTMS.

Dissociative Amnesia

As mentioned earlier, in DSM-5, dissociative amnesia (formerly called psychogenic amnesia) is diagnosed when there is substantial memory loss for important autobiographical information that is not the product of a neurological or other medical condition (e.g., seizures, memory loss associated with age, or brain injury) or substance abuse. Forgetting can pertain to everyday circumstances and is not limited to amnesia for traumatic or highly stressful events. Moreover, the symptoms of dissociative amnesia cannot be attributable to another disorder, such as acute stress disorder or PTSD, somatic symptom disorder, a neurocognitive disorder, or DID. It is believed to frequently follow a traumatic event and may be classified in terms of localized amnesia related to a specific time period (e.g., a vacation), selective amnesia for some but not all events from a specific time period, generalized amnesia for all life events, continuous amnesia for new events, and systematized amnesia for specific categories

of information, such as childhood sexual abuse. Based on an analysis of 42 memory and amnesia items from the Multidimensional Inventory of Dissociation, Dell (2013) identified three amnesia factors: discovering dissociated actions, lapses of recent memory and skills, and gaps in remote memory.

Despite failure to recall important events, people with dissociative amnesia typically retain implicit memories and habits related to these events, and some people with dissociative amnesia continue to experience a sense of familiarity with respect to previously known people, objects, and places. Moreover, in cases of dissociative amnesia, perception and immediate memory are preserved, although disorientation in time and impairment in new learning may occur (Staniloiu & Markowitsch, 2012).

Dissociative amnesia varies in terms of whether (a) it is experienced in childhood or adulthood (even young children may experience significant memory losses); (b) amnesic episodes last only minutes or persist for years and range from an isolated episode to recurrent episodes; and (c) significant or minimal functional impairment occurs before, during, or after the amnesic episode. Most cases of dissociative amnesia occur in the 30s and 40s, last between 1 and 5 days, and are equally common among females and males (American Psychiatric Association, 2013; Lynn et al., 2014). In two classic studies, in 63 cases, 94% (59/63) resolved within a week, and only 6% (4/59) of people took 3 weeks or more to recover (Ables & Childer, 1935; Herman, 1938). Because of differences in symptom presentation, age of onset, and functional impairment, it is likely that dissociative amnesia comprises a heterogeneous set of conditions with different etiologies.

Prevalence and Comorbidity The prevalence rates for dissociative amnesia range from 0.2% (China), to 3.0% (Canada), to 7.3% (Turkey), with unspecified cultural factors and differences in criteria for evaluating amnesia across studies probably playing a role in disparate diagnostic base-rates across samples (Dell, 2009; Lynn et al., 2014). Ross (2009) reported that among 3000 trauma patients he treated, only one exhibited dissociative amnesia. Still, individuals in the general population often report significant forgetting of events. In one study, 20.6% of college students reported some degree of impairment associated with one or more symptoms of dissociative amnesia based on their responses to a questionnaire (Sar, Alio lu, Akyüz, & Karabulut, 2014). Researchers have reported that dissociative amnesia often occurs in response to multiple stressors and in the presence of mood, somatoform, eating, and personality disorders (Maldonado & Spiegel, 2008).

Controversy Dissociative amnesia has attracted considerable controversy, spurred in recent decades by Loftus's (1993) critique that questioned whether memories of

traumatic events are repressed or dissociated from consciousness. Spiegel (1997) contended that dissociative amnesia is “more, rather than less common after repeated episodes; involves strong affect; and is resistant to retrieval through salient cues” (p. 6). Yet intense affect and repetition ordinarily improve memory, increasing access of memory through salient cues (McNally, 2003). Traumatic or stressful memories are often better remembered than less stressful memories (Berntsen & Rubin, 2014; Lynn et al., 2014; McNally, 2004), as is the case in PTSD, when patients experience intrusive and distressing memories (Lynn et al., 2014; Porter & Peace, 2007). Studies of concentration camp survivors, witnesses of homicide, and children who have been kidnapped indicate that memories of such highly aversive events are typically remembered vividly with little or no hint of amnesia (Merckelbach, Dekkers, Wessel, & Roefs, 2003). Memories of traumatic events may be better remembered for their salience, enhanced by attendant physiological arousal (e.g., Jelicic, Geraerts, Merckelbach, & Guerrieri, 2004).

Findings of facilitated recall for emotionally charged memories render implausible many claims of crime-related amnesia—reported in 25–40% of homicide cases and severe sex offenses—in which perpetrators claim they have little or no recall of crimes they committed (Moskowitz, 2004). Van Oorsouw and Merckelbach (2010) contend that malingering probably accounts for most claims of crime-related amnesia.

Although Brown, Schefflin, and Hammond (1998) argued that the empirical case for dissociative amnesia is compelling, Kihlstrom (2005) asserted that supportive studies lack methodological rigor and that longitudinal studies are both scant and do not rule out alternate explanations for amnesia, such as seizures and traumatic brain injury (see also Piper, Pope, & Borowiecki, 2000). Additionally, researchers have suggested that it is problematic to assume that the failure to report memories associated with highly aversive events, such as childhood abuse, is produced by dissociation and have asserted that studies of corroborated traumatic events have failed to uncover evidence that people “encode trauma, yet become incapable of recalling it through the mechanism of dissociative amnesia” (Lynn et al., 2014, p. 906; see also McNally, 2004; Pope, Oliva, & Hudson, 1999).

Specifically, the failure to report memories of events such as childhood sexual abuse may occur for reasons entirely unrelated to a special dissociative mechanism. For example, individuals may not have labeled the physical contact as “abuse” at the time it occurred, and not have thought about the event for some time, or they may presently be reluctant to disclose the abuse to a particular interviewer (Loftus, Polonsky, & Fulliove, 1994; McNally, 2004). Ordinary memory mechanisms, such as motivated forgetting or memory suppression, could account for failure to recall or report important autobiographical information, particularly when the information to be recalled or reported produces anxiety, shame,

DSM-IV view of DID as involving the invasion or intrusion of identities or personalities (sometimes called alters) that “recurrently take control of the individual’s behavior” (p. 519). The latest diagnostic scheme also specifies that the “signs and symptoms may be observed by or reported by the individual” (p. 292), and that a person is eligible for a diagnosis when there are “sudden alterations or discontinuities in sense of self or agency and recurrent dissociative amnesias” (p. 293). Given the widespread use of the terms “personalities” and “identities,” and the fact that these terms encompass “personality states,” we continue to use all three terms in this chapter (see also Lynn et al., 2014).

DSM-5 notes that, in some cultures, personality states may be described as an experience of possession by a spirit, supernatural entity, or outside person taking control, such that the individual begins speaking or acting in a distinctly different manner (American Psychiatric Association, 2013, p. 293). In cases of possession, the personality states must be unwanted, involuntary, recurrent, distressing or impairing, and not be a part of accepted cultural/religious practices. According to DSM-5, discontinuities supposedly associated with different personality states may involve rapid and unusual shifts in attitudes, food preferences, perceptions of the body as a small child or member of the opposite gender, perceptions of internal voices, crying, and a sense of loss of self. Still, in only a “small proportion of non-possession-form cases, manifestations of alternate identities are highly overt” (p. 292) and individuals may “often conceal, or are not fully aware of . . . amnesia or other dissociative symptoms” (p. 294).

Although DID symptoms are typically more florid (e.g., flashbacks, amnesia, fugue, neurological symptoms) in women compared with men, men exhibit more criminal or violent behavior. DSM-5 specifies that the symptoms that qualify for a diagnosis of DID “are not attributable to the physiological effects of a substance (e.g., blackouts or chaotic behavior during alcohol intoxication) or another medical condition (e.g., complex partial seizures)” (p. 292) and that “the disturbance is not a normal part of a broadly accepted cultural or religious practice” (American Psychiatric Association, 2013; p. 292).

The shifts in diagnostic criteria over the years pose significant problems for diagnosticians and will probably increase the prevalence rates of DID for the following five reasons:

1. The criteria leave open to interpretation: (a) What is a “personality state,” especially when it typically is not “overt,” and (b) alterations or discontinuities in the sense of self or agency may be difficult to specify because behaviors and emotions are often highly variable and experienced with little sense of personal agency in everyday life (Kirsch & Lynn, 1998).
2. Relatedly, in cases of possession, the judgment of whether personality states are “involuntary” is highly subjective.
3. In some cases, it may be difficult to differentiate “ordinary forgetting” and “memory gaps” from clinically significant amnesia.
4. Including both individuals’ and outside observers’ evaluation of shifts in personality states as diagnostic indicators further liberalizes the criteria for diagnosing DID.
5. Because some individuals purportedly conceal amnesia or other dissociative symptoms, the diagnosis may be highly dependent on the evaluator’s impressions, judgments, and beliefs about dissociation.

Prevalence and Comorbidity The prevalence rates of DID vary widely in terms of general versus clinical populations. General population studies of participants in Turkey (Akyüz Do an, Sar, Yargic, & Tukun, 1999), Canada (Ross, 1991), and North America (Loewenstein, 1994) converge on a prevalence rate of approximately 1% for DID, with approximately equal rates among males and females (American Psychiatric Association, 2013). In contrast, in inpatient settings, with the exception of a study by Rifkin, Ghisalbert, Dimatou, Jin, and Sethi (1998), the reported prevalence rates equal (Bliss & Jeppsen, 1985) or exceed (Latz, Kramer, & Hughes, 1995; Ross et al., 2002) 10%, with Ross and colleagues (1992) reporting a 14% lifetime prevalence of DID in 100 chemically dependent patients. In adult clinical settings, females predominate, although gender equality in prevalence rate is common in child clinical settings (DSM-5). Selection and referral biases may account for the imbalanced sex ratio among adults in inpatient settings: A large proportion of males with DID are treated in forensic settings or incarcerated (Lilienfeld & Lynn, 2015; Putnam & Loewenstein, 2000).

The prevalence of DID has generated much controversy, sparked by literature reviews contending that the rates of adult and childhood DID are inflated and limited to a small number of practitioners in only a few countries (Boysen, 2011; Boysen & VanBergen, 2013; see also Piper & Merskey, 2004). For example, Boysen (2011) reported that four research groups in the United States accounted for two-thirds of all 255 child cases reported since 1980, which prompted his conclusion that childhood DID is extremely rare.

The number of reported cases of DID has increased dramatically over the years. From 1970, in which approximately 80 cases were reported, the number had skyrocketed to approximately 6,000 by 1986. Over roughly the same time period, the number of alters per patient also dramatically increased from 2 to 3 to approximately 16 (Lynn et al., 2014). Paris (2012) claimed that the diagnosis of DID is little more than a fad. Nevertheless, other researchers have vigorously challenged the rarity of DID, counterpunching that DID is massively underdiagnosed (Brand, Loewenstein, & Spiegel, 2013; Ross, 2013). Studies that implement standardized assessment of DID using structured interviews with evaluators trained to a high degree of reliability and blind to symptom status and patient history are imperative to securing more accurate

identifiable medical basis and has demonstrated success in distinguishing outpatients with dissociative disorders from nondissociative psychiatric outpatients. A five-item scale derived from the SDQ-20 is available to screen for dissociative disorders (SDQ-5, 1997) with a high degree of sensitivity (94%) and specificity (98%) among psychiatric patients (Nijenhuis, Spinhoven, Van Dyck, Van der Hart, & Vanderlinden, 1998).

Researchers have devised so-called “state” measures to evaluate relatively transient dissociative experiences. The Clinician Administered Dissociative States Scale (CADSS; Bremner et al., 1998; $\alpha = .94$; Condon & Lynn, 2014; $\alpha = .80$) is composed of 19 self-report items and eight observer-rated items. The self-report items are grouped into three subscales: amnesia, depersonalization, and derealization. The CADSS is sensitive to experimental manipulations intended to increase levels of dissociation (e.g., staring at a dot). Moreover, research has garnered evidence of construct validity, including high correlations with the DES ($r = .56$, Condon & Lynn, 2014) and discriminative validity, including the ability to distinguish among patients with PTSD, healthy adults, and patients with schizophrenia and mood disorders (Bremner et al., 1998).

The 56-item State Scale of Dissociation (SSD; Krüger & Mace, 2002; $\alpha = .97$) comprises seven subscales: derealization, depersonalization, identity alteration, identity confusion, conversion, amnesia, and hypermnesia. The SSC and the DES correlate at $r = .81$ among people with a dissociative disorder and $r = .57$ among healthy adults.

Structured interviews provide a more fine-grained analysis of dissociative symptoms in terms of psychological diagnoses, with the 250-item Structured Clinical Interview for DSM-IV Dissociative Disorders-Revised (SCID-DR; Steinberg, 1994) and the 131-item Dissociative Disorders Interview Schedule (DDIS; Ross, Heber, Norton, & Anderson, G., 1989) the most widely used to discriminate dissociative disorders from other disorders. Interrater reliability for both measures is adequate to excellent, with interrater reliability ranging from $r = .68$ (Ross, Heber, Norton, Anderson, D. et al., 1989) to $.72-.86$ (weighted κ , SCID-D; Steinberg, 1994), with the exception of lower interrater reliability ($r = .56$) for depersonalization disorder on the DDIS, which cannot be reliably diagnosed in this context (Ross, Anderson, Fraser, Bjornson, Miller, & Reagor, 1992). Both structured interviews have demonstrated success in distinguishing among patients with dissociative disorders and nondissociative disorders, and healthy participants. Nevertheless, the SCID poses some difficulties in discriminating among dissociative disorders, bipolar disorder, borderline personality disorder, and schizophrenia (Kihlstrom, 2005).

Models of Dissociative Disorders

No discussion of dissociation and dissociative disorders would be complete without consideration of the controversies that have riven the field of dissociative disorders.

In this section, we describe the two major accounts of dissociation that vie for empirical attention and support: the posttraumatic model (PTM) and the sociocognitive model (SCM), the latter called by some the fantasy model (Dalenberg et al., 2012). We suggest that a multifactorial perspective, which provides a modicum of integration of these models, provides the most comprehensive, balanced, and accurate account of dissociative experiences and disorders.

The PTM (Dalenberg et al., 2012, 2014; Gleaves, 1996; Ross, 1997) holds that dissociation is a defensive response to severe physical, sexual, or emotional abuse and/or other highly aversive events that often date to childhood. More specifically, to ward off negative emotions that would engender or intensify anxiety and suffering, or to escape the implications of abuse (e.g., “I am unlovable, bad, and so forth”), the individual either distances him or herself from reality or a sense of selfhood, as in DPD, or develops what are variously called separate selves, identities, personality states, ego states, personalities, or alters to contain, manage, and delimit threatening memories and affect, as in DID. In the latter case, the sense of self essentially fragments, with different aspects of experience and identity somehow splitting off from consciousness, disrupting the ordinary sense of continuity of experience, behaviors, and identity, thereby engendering dissociative experiences and symptoms.

The most persuasive evidence for the PTM comes from many studies that provide evidence for positive correlations between a history of highly aversive experiences and reports of dissociative symptoms and experiences. For example, in their meta-analysis, Dalenberg and colleagues (2012) reported that after excluding studies using college samples, and studies using subscales of the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), they obtained an overall weighted r effect-size estimate of $.32$ (a medium-sized effect; Cohen, 1992). Moreover, Dalenberg et al. (2012) claimed that prospective studies of trauma, using objective measures, have yielded positive correlations between highly aversive events and later dissociation.

The SCM has challenged the central assumption of the PTM of a close link between highly aversive events and dissociation. According to this account, sociocognitive and other variables must be considered in a comprehensive account of dissociation. SCM theorists (Spanos, 1994, 1996; Lilienfeld et al., 1999; Lynn et al., 2014) have claimed that the following nine points cast doubt on the existence of a reliable link between highly aversive events and dissociation:

1. Many studies of the link between trauma and dissociation lack strong corroboration of child abuse or the index event and do not permit causal inferences, as they are based on cross-sectional designs that are subject to memory biases. In contrast, prospective studies with well-corroborated cases of abuse often, but not

- always, find little or no statistical association between childhood abuse and dissociation in adolescence and adulthood (see Lynn et al., 2014, for a review).
2. As noted earlier, dissociative disorders often co-occur with manifestations of mild to severe psychopathology and negative emotionality. Nevertheless, the role of comorbid conditions is rarely examined in studies of dissociation and trauma, despite the fact that such conditions may contribute substantially to dissociation (Kwapil, Wrobel, & Pope, 2002; Muris et al., 2003) and render it difficult to isolate abuse as the central causal agent of dissociation (Lynn et al., 2014).
 3. Selection and referral biases common in psychiatric samples may account for high levels of child abuse among DID patients. For example, patients who are abused are more likely than other patients to seek treatment (Pope & Hudson, 1995).
 4. Reports of abuse often arise in the context of a stressful or pathogenic family environment. When perceptions of family pathology are controlled statistically, the correlations between abuse and psychopathology decrease appreciably or disappear entirely (Nash, Hulse, Sexton, Haralson, & Lambert, 1993).
 5. Correlations between highly aversive events and dissociative experiences and symptoms are highly variable and range between $r = .06$ (NS) to $r = .44$ ($P < 0.001$) in nonclinical samples, and from $r = .14$ (NS) to $r = .63$ ($P < 0.001$) in clinical samples (see Dalenberg et al., 2012). Moreover, 40% of the correlations Dalenberg et al. (2012) reported were below .30, and only 6% of the correlations equaled or exceeded .50, signifying a large effect (Lynn et al., 2014). The reasons for the differences observed among correlations are unknown.
 6. Highly aversive events do not necessarily precede the onset of dissociative disorders. For example, in two studies, 39.1% (Sar et al., 2007) and 24.4% (Duffy, 2000) of DID patients reported no trauma or neglect of any kind (Lynn et al., 2014).
 7. Some studies that purport to find a link between a history of trauma and dissociation (see Dalenberg et al., 2012) are compromised by a lack of blindness. More specifically, diagnoses of DID were not made blindly of trauma reports, made only after records were thoroughly reviewed, and made when standardized diagnostic interviews were not completed (Lynn et al., 2014).
 8. Drugs such as ketamine and other hallucinogens produce dissociative reactions (e.g., depersonalization/derealization), implying that pathways to dissociation exist independent of exposure to highly aversive events.
 9. Highly dissociative individuals tend to score highly on measures of symptom exaggeration, raising suspicions about the authenticity of some of these individuals' memories and symptoms (Lynn et al., 2014).

In sharp contrast to the PTM, the SCM requires no special "dissociative mechanism" to explain dissociative symptoms (Lynn, Knox, Fassler, Lilienfeld, & Loftus, 2004). Instead, the SCM posits that DID is largely a socially constructed or reinforced condition that occurs when people are exposed to media influences (e.g., books, film, television), broader sociocultural expectations (e.g., people cope with abuse by developing "multiple personalities"), and suggestive procedures in psychotherapy (e.g., leading questions, hypnosis, repeated questioning about abuse; Lynn, Krackow et al., 2015) that cue the presentation of DID. For example, mainstream techniques for treating DID often shape or reinforce patients' displays of "separate selves" by (a) posing questions such as, "To which part am I speaking now?" or "Is there another part of you that holds your anger?", (b) conversing with different alters, and (c) employing suggestive devices, such as charts and bulletin boards, to "map the personality system" (Putnam, 1989). Moreover, the SCM contends that certain vulnerabilities increase the likelihood of a DID diagnosis, including serious coexisting psychopathology (e.g., major depression, borderline personality disorder), ambiguous or puzzling psychological symptoms, as well as high suggestibility, fantasy proneness, cognitive failures (e.g., absent-mindedness), a disrupted sleep cycle, and negative emotionality (Giesbrecht et al., 2008, 2010; Lynn et al., 2014). The SCM draws on the following findings to support the hypothesis that sociocultural and cognitive variables provide an account of dissociation and to challenge key tenets of the PTM:

1. Over the past several decades, the media in the United States accorded prominent attention to DID (e.g., movies: *The Three Faces of Eve*, television programs: *Sybil*, *The United States of Tara*), promoting awareness of DID among clinicians and patients regarding the features of DID and its purported link with abuse. These developments coincided with greatly increased numbers of patients diagnosed with DID (Elzinga, van Dyck, & Spinhoven, 1998), as well as sharp increases in the number of alters per patient (Ross, Norton, & Wozney, 1989). In most cases of DID prior to the 1970s, only one or two personalities was the norm; yet not many years later, Ross, Heber, Norton, and Anderson (1989) observed that the mean number increased to 16 personalities.

Curiously, that number was the same number reported by the woman who went by the pseudonym of Sybil (Acocella, 1999), whose treatment was memorialized in the bestselling book (Schreiber, 1973) by the same name and the Emmy-award winning television film starring Sally Fields. Yet the case of Sybil, which monumentally shaped the cultural narrative regarding the purported tie between dissociation and abuse, has come under critical fire, with serious and credible doubts expressed regarding whether claims of abuse in her case are genuine

- and the diagnosis of DID is accurate (Nathan, 2002; Rieber, 2006).
2. The possibility that DID is co-created by patient-therapist interactions is supported by findings that (a) most DID patients show few or no clear-cut signs of this condition (alters) prior to psychotherapy (Kluft, 1984), and (b) the number of alters at the time of initial diagnosis appears to have remained stable while the number of alters has increased following psychotherapy (Lynn et al., 2014; Ross, Heber et al., 1989). Moreover, a small number of therapists distributed over only a few countries, many of whom specialize in treating DID, account for the majority of cases in the published literature and probably patients seen in clinical practice (Boysen & VanBergen, 2013; Mai, 1995). Finally, the diagnosis of DID has proliferated in other countries, such as the Netherlands, where it has been the focus of extensive media and professional attention and publicity.
 3. The entrenched cultural narrative enfolding DID is captured in laboratory research demonstrating that nonclinical participants who are provided with appropriate cues and prompts can reproduce many of the overt symptoms of DID (e.g., alter personalities that respond differently to psychological tests; Spanos, Weekes, & Bertrand, 1995). Moreover, persons in laboratory studies instructed to role-play the symptoms of DID report serious and implausible abuse (e.g., satanic ritual abuse) when interviewed about their childhood, consistent with clinical and media reports regarding DID (Stafford & Lynn, 2002). Across most comparisons between people instructed to simulate or role-play DID and patients with DID, few or no significant differences have emerged on measures of self-reported dissociative experiences, memory, and event-related potentials (Boysen & van Bergen, 2014).
 4. Some researchers have claimed to find striking differences among alters or personality states, including differences in pain tolerance, eyeglasses prescriptions, handedness, handwriting, allergies, and heart rates (Lilienfeld & Lynn, 2015). Yet such disparities may be attributable to mundane fluctuations in mood, differences related to conscious or unconscious enactment or role-playing of different identities, or both (Lilienfeld & Lynn, 2015). Indeed, similar intra-individual differences may arise when healthy participants (e.g., actors) are instructed to role-play alters (Boysen & Van Bergen, 2014; Merckelbach, Devilly, & Rassin, 2002) or may arise on the basis of chance (type I errors), given the many psychophysiological variables considered in many studies (Allen & Movius, 2000).
 5. The SCM holds that at least some reports of childhood abuse may be exaggerated or based on inaccurate memories prompted by suggestive techniques in psychotherapy. Researchers have demonstrated that in a sizable minority or even majority of participants (25–75%; Garry, 2013), it is possible to implant false memories of events such as riding in a hot-air balloon, being the victim of bullying, and being subject to a vicious animal attack (Lynn et al., 2014), implying that false memory formation is possible in more intensive psychotherapy contexts that may extend for months, years, and even decades (Lynn et al., 2014). Moreover, psychotherapists who use hypnosis tend to consult with more DID patients compared with psychotherapists who do not use hypnosis (Powell & Gee, 1999), a finding of considerable interest as hypnosis is associated with higher rates of inaccurate memories and unwarranted recall confidence compared with nonhypnotically enhanced recall (Lynn, Boycheva, Deming, Lilienfeld, & Hallquist, 2009).
 6. The propensity for pseudomemories and memory commission errors associated with dissociation may be mediated by heightened levels of fantasy proneness, suggestibility, and cognitive failures, although the findings pertaining to trait dissociation and memory errors are mixed and not consistently strong in magnitude (see Dalenberg et al., 2012).
 7. Contrary to the PTM, researchers have not found consistent support for an amnesic barrier that separates identities or personality states (Dalenberg et al., 2012). When objective measures, such as event-related potentials or behavioral tasks are used, studies typically find clear evidence of transfer of information across identities or alters (see Giesbrecht et al., 2010; Lynn, Lilienfeld et al., 2015).
 8. Highly dissociative individuals typically experience a breakdown in cognitive inhibition (Giesbrecht et al., 2009, 2010) and, compared with other individuals, exhibit better memory for to-be-forgotten sexual words in directed-forgetting tasks (Elzinga, De Beurs, Sergeant, Van Dyck, & Phaf, 2000). These findings constitute a strong challenge to the idea that amnesia and avoidance of threat-related information are core features of dissociation.
- Objections to the PTM have not gone unchallenged by adherents of the model. Specifically, proponents of the PTM (e.g., Dalenberg et al., 2012, 2014; Gleaves, 1996) have (a) criticized the SCM as failing to provide evidence for a strong link between dissociation and fantasy and suggestibility/false memories; (b) contended that trauma accounts for variance in dissociation beyond that predicted by fantasy proneness, but not vice versa; (c) argued that some studies provide evidence of a link between trauma and dissociation, even when objective measures of trauma are used; and (d) suggested that findings from laboratory studies using role-players, for example, are not generalizable to clinical populations.
- Possibilities for Rapprochement and Integration**
Recently, proponents of the PTM (Dalenberg et al., 2012)

and SCM (Lynn et al., 2014) have made important concessions and converged, to some extent, in their thinking about dissociation. Consensus now exists that biological (e.g., genetic) vulnerabilities, family environment, social support, developmental factors, and psychiatric history, may play a role in dissociative experiences and symptoms. Some adherents of the PTM acknowledge that: (a) Individuals with DID come to mistakenly believe they are more than one person and that DID is in part a disorder of self-understanding (Dalenberg et al., 2012, p. 568), views compatible with the SCM; and (b) “fantasy proneness—among other factors—may lead to inaccurate trauma reports” (p. 551); (c) the effects of a pathological family environment may be difficult to isolate from the effects of trauma on dissociation; and (d) therapists should eschew suggestive methods in psychotherapy.

SCM theorists (Lynn et al., 2014), in turn, have conceded that trauma may play a nonspecific causal role in dissociation by increasing stress levels and negative emotionality, particularly with regard to depersonalization/derealization in the face of high-impact aversive events (e.g., natural disaster). Moreover, the SCM acknowledges that brief dissociative reactions may persist on a longer-term basis in individuals predisposed to negative emotionality (e.g., trait anxiety, depression), especially when accompanied by comorbid psychopathology (Lynn et al., 2014). Another possibility is that fantasy proneness, suggestibility, and cognitive failures may contribute to an overestimation of a genuine, albeit weak or modest, association between dissociation and trauma (Lynn, Lilienfeld, Merckelbach, Giesbrecht, & van der Kloet, 2012). Alternatively, early trauma may predispose individuals to develop high levels of fantasy proneness or absorption, which may increase vulnerability to the iatrogenic (therapist-induced) and cultural influences posited by the SCM, thereby increasing the likelihood that DID will be diagnosed following exposure to these influences. Finally, the SCM and PTM concur that individuals with DID typically do not consciously role-play or feign the condition, but actually come to believe they possess multiple selves. In short, the subjective experience of “multiplicity” is real (Lynn et al., 2014).

Sleep and Dissociation: An Integrative Model

Recent findings regarding the link between sleep and dissociation may pave the way of integrating elements of the PTM and the SCM in a more encompassing perspective. van der Kloet, Merckelbach, Giesbrecht, & Lynn (2012) reviewed 23 clinical and nonclinical studies using a variety of measures of dissociation that assess sleep and dissociation. With only one exception, the 23 studies yielded correlations between measures of sleep disturbance and dissociation in the range of $r = .30-.55$. van der Kloet and colleagues (2013) tested patients experiencing insomnia who stayed one night in a specialized sleep clinic and obtained measures of a range of sleep

electroencephalograph parameters along with self-report measures of dissociation, unusual sleep experiences, sleep quality, and trauma history. Dissociative symptom levels were elevated in patients suffering from insomnia, and dissociative symptoms were correlated with unusual sleep experiences (e.g., narcoleptic symptoms, sleep paralysis, nightmares) and poor sleep quality. Moreover, longer rapid eye movement (REM) sleep periods predicted dissociation.

Additional studies suggest that dissociation and sleep-related disturbances are causally related. After one night of sleep deprivation, sleep loss engendered a substantial increase in dissociative symptoms in participants that could not be attributed to changes in mood or demand characteristics (Giesbrecht, Merckelbach, & Geraerts, 2007). van der Kloet, Merckelbach, and colleagues (2012) found that when volunteers were deprived of 36 hours of sleep, dissociative symptoms, sleepiness, and mood deterioration all followed the same oscillating pattern of the sleep-wake cycle, remaining stable during the day and increasing during the night. Moreover, feelings of sleepiness preceded an increase of dissociative symptoms and deterioration of mood. van der Kloet, Giesbrecht, and colleagues (2012) examined the relation between sleep experiences and dissociative symptoms in a mixed inpatient sample at a private clinic evaluated on arrival and at discharge 6–8 weeks later. Following participation in a sleep hygiene program, decreases in unusual sleep experiences (e.g., narcoleptic symptoms, hypnagogic imagery) accompanied a reduction in dissociative symptoms. van der Kloet, Giesbrecht, Merckelbach, and Soontjens (2015) replicated decreases in dissociation in a college sample following 4 days of implementing rules of sleep hygiene. Combined, these findings imply a causal relation between sleep experiences and dissociation.

Based on the available evidence, researchers (Giesbrecht et al., 2008; Koffel & Watson, 2009a; van der Kloet, Merckelbach et al., 2012) have proposed that individuals with a labile sleep-wake cycle and unusual sleep experiences (e.g., hypnagogic hallucinations) experience intrusions of sleep phenomena (e.g., dreamlike experiences) into waking consciousness that promote fantasy-proneness linked with dissociation (see Giesbrecht et al., 2008; Koffel & Watson, 2009) and symptoms of depersonalization/derealization (see also Soffer-Dudek & Shahar, 2011). Disruptions of the sleep-wake cycle also impair memory and attentional control, producing the attention deficits, cognitive failures, and memory fragmentation experienced by highly dissociative individuals and patients (Lynn et al., 2014). Sleep disruptions, particularly in REM sleep, which affects the processing of emotional information (Walker & van der Helm, 2009), may account for the breakdown in cognitive inhibition in an emotional context that is evident in dissociative patients (Dorahy, McCusker, Loewenstein, Colbert, & Mulholland, 2006). Deficient processing of stressful events due to sleep loss also may explain the chronically increased levels of

anxiety and physiological arousal, which Giesbrecht et al. (2010) observed in patients with DPD. Moreover, daily stress interacts with trait dissociation to predict dissociative phenomena (e.g., hypnagogic hallucinations, nightmares) associated with sleep (Soffer-Dudek & Shahar, 2011). According to Lynn and colleagues (2014), this integrative perspective may explain (a) how highly aversive events or daily stressors disrupt the sleep cycle and promote errors in memory, (b) the intrusion of dissociative experiences into consciousness (e.g., fantasy and daydreaming), and (c) cognitive failures—all of which the SCM posits increase sensitivity to sociocognitive influences (e.g., suggestive psychotherapeutic techniques, media influences) and the likelihood of a diagnosis of a dissociative disorder.

Dissociation as Hyperassociation: A Novel Hypothesis

In this section, we turn the idea of dissociation on its proverbial head by positing that the tendency to hyperassociate increases the likelihood of garnering a DID diagnosis and may be an important substrate or mechanism of dissociative symptoms. The first author's (SJL) observations of six people in clinical and forensic contexts with the diagnosis of DID is the source of this hypothesis; yet there is also some support for this notion in the literature. SJL observed that all six patients exhibited a strong tendency to hyperassociate. That is, they often responded in a rapid-fire manner with associations to their thoughts, feelings, and behaviors in response to internal and external stimuli. Such hyperassociations were often accompanied by strong affect, or occurred in response to cues that elicited strong affect. At times, such associational shifts were marked by avoidance of the topic at hand and were followed by a period of silence, whereas at other times, the flow of associations led to the discussion of emotionally charged material. Occasionally, the conversation turned so far afield from the original topic that the patient lost the thread of the discussion and occasionally reported feeling "unanchored in reality" (i.e., depersonalization/derealization) or experienced difficulty in recalling elements of the conversation, implying a lack of cognitive control or coherence of associative processes. In the DID literature, this hyperassociative phenomenon has been called "switching," which might easily imply that the person is experiencing distinct "personality states."

Spitzer and colleagues (2007) observed that rapid shifting of attention in response to negative emotions during psychotherapy is why high dissociators do not achieve gains comparable with low dissociators in treatment. Hyperreactivity with respect to schema-related triggers, such as interpersonal situations and traumas, is also manifested in borderline personality disorder, a condition that is highly comorbid with DID (Saue, Arens, Stopsack, Spitzer, & Barnow, 2014). In borderline personality disorder, identity disturbance is correlated with affective instability and mood reactivity (Koenigsberg et al., 2001),

which we posit are associated with poor impulse control and hyperassociativity.

Other evidence is consistent with the hyperassociation hypothesis. van Heughten-van der Kloet, Merkelbach, and Lynn (2013) suggested that excessive REM sleep during the night and/or minor REM sleep episodes during the day "fuel the type of fluid and hyperassociative cognition that is typical for dissociative disorders" (p. 630). Chiu, Heh, Huang, Wu, and Chiu (2009) reported that when experiencing negative emotion, high dissociators are particularly adept at disengaging from one task to rapidly shift to another task. According to Soffer-Dudek's (2014) review, highly dissociative individuals, especially when confronted with negative emotion, display impairments in sustained attention, focused attention when exposed to distracting stimuli, and attentional control (e.g., decreased theta brain wave activity; Krüger, Bartel, & Fletcher, 2013), as well as deficits in inhibitory functions, implying difficulties in steering and modulating mental associations.

A particular dimension of fantasizing or fantasy proneness associated with psychopathology and the tendency to engage in vivid and compelling imagery overlaps with dissociation (Klinger, Henning, & Janssen, 2009) and can be conceptualized as a tendency to fluid thinking and hyperassociation to a degree that lacks clear boundaries and can be disconnected from reality (see also Lynn, Neufeld, Green, Sandberg, & Rhue, 1996). Starker (1979) observed that emotion-loaded imagery disrupts the normal flow of imagery that ordinarily remains intact. In extreme terms, as in schizophrenia, for example, Starker hypothesized that the emotional content of the imagery process is manifested in dissociated form as hallucinations. In short, people who hyperassociate will appear to be "dissociated," particularly in response to stressors, negative emotions, and sleep disruptions that tax limited cognitive resources and the ability to impose control over mentation.

More specifically, we suggest that aspects of fantasy proneness, cognitive failures and degraded executive control, heightened suggestibility, hyperarousal, and intrusions of sleep-related mentation into everyday consciousness, lower the threshold for hyperassociation (and thereby dissociation) and account for the link between dissociation and memory errors. The combination of (a) hyperassociative tendencies, (b) a therapist who interprets associative shifts as manifestations of dissociated selves, (c) the use of suggestive methods that reify the existence of distinct identities, (d) attempts to recover memories associated with "dissociated identities," and (e) puzzling coexisting psychopathology, may be a perfect recipe for the iatrogenic creation of DID in psychotherapy. Clearly, investigating hyperassociative mechanisms in dissociation and impulse control disorders (e.g., borderline personality, bipolar disorder) is an important avenue for future research.

Psychotherapy and Dissociation

Treatments for dissociative conditions have received scant empirical attention, almost certainly less than

interventions for most major psychological disorders. Dissociative disorders are notoriously difficult to treat with pharmacotherapies. Research on medication treatment for dissociative amnesia is nonexistent, and little is known about the response of DID patients to medications. Moreover, DPD has largely proven refractory to pharmacological treatments (Simeon, 2009).

No well-controlled psychotherapy studies of DPD exist, although case studies (e.g., family therapy, paradoxical intervention, flooding) are scattered throughout the literature (Lynn, Merckelbach et al., 2015). In a study of PTSD, women with high levels of depersonalization appeared to respond better to a multimodal cognitive processing therapy compared with cognitive therapy alone (Resick, Suvak, Johnides, Mitchell, & Iverson, 2012). TMS, a procedure discussed earlier, may be a promising treatment for DPD, but controlled studies are lacking.

Numerous case studies of the treatment of DID have been reported, representing a wide swath of therapies, and all reporting positive outcomes. Yet Brand, Classen, McNary, and Zaveri (2009) were able to identify only eight studies that evaluated treatment for DID and other dissociative disorders. None of these studies was a randomized controlled trial. Accordingly, it is not possible to evaluate the reasons for symptom reduction, stemming from many potential alternative explanations, including placebo effects, regression to the mean, and the passage of time (for additional reasons, see Lilienfeld, Ritschel, Lynn, Cautin, & Latzman, 2014).

Since their earlier review, Brand and her associates (Brand, McNary et al., 2013) reported their findings of decreased levels of dissociation, PTSD, general distress, and depression over the course of a 30-month community treatment and follow-up study of patients with DID and dissociative disorder not otherwise specified. A subsample of patients aged 18–30 progressed at a faster rate than did their older counterparts (Myrick et al., 2012). In another reanalysis of the data, patients who experienced revictimization, stressors, or both revictimization and stressors over the course of treatment fared worse than did patients who did not experience such events (Myrick, Brand, & Putnam, 2013). Although the findings of this large non-controlled study are promising, no clear-cut conclusions can be drawn from the broader outcome research because of the lack of randomized trials, dropout rates as high as 68%, the variability in treatments provided, and the failure to document clinically meaningful changes following treatment (Lynn et al., 2014).

Proponents of the SCM have roundly criticized some PTM-based interventions for being highly suggestive in recovering supposedly repressed memories, identifying and speaking with alters, and encouraging “personalities” to interact (Lynn, Condon, & Colletti, 2013). Support for such concerns comes from a study in which the majority of patients developed “florid posttraumatic stress disorder during treatment” (Dell & Eisenhower, 1990, p. 361). Moreover, after treatment commences with

some PTM-based approaches, patients tend to report an increased frequency of suicide attempts, hallucinations, severe dysphoria, and chronic crises (Lynn et al., 2014). Nevertheless, Brand and Loewenstein (2014) contended that DID treatment, including interacting with “dissociated self states,” improves clinical outcomes and that depriving DID patients of such treatment may cause “iatrogenic harm” (see also Brand, Loewenstein, & Spiegel, 2014). As noted elsewhere (Lynn et al., 2014), research that compares negative sequelae across classic DID and conventional therapies (e.g., cognitive-behavioral) would be worthwhile. Finally, the intriguing findings we reported regarding the links among sleep, dissociation, and hyperassociation imply that interventions that ameliorate insomnia, reduce the frequency of nightmares, address other unusual sleep-related problems (e.g., narcolepsy), and promote cognitive control and affect regulation should also be a high treatment and research priority.

Conclusion

Despite, or perhaps because of, increased empirical attention devoted to dissociative disorders over the past few decades, controversy persists. It is nevertheless encouraging that some proponents of the SCM and PTM have now called for wide-ranging investigation into dissociative phenomena and agree that a multi-pronged investigatory approach that considers multiple determinants of dissociative disorders is the best way forward. There is little doubt that tension between competing perspectives will continue to generate provocative questions, healthy debate, and ultimately a more comprehensive and nuanced understanding of dissociative disorders.

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