From the Neuropsychiatric to the Analytic: Three Perspectives on Dissociative Identity Disorder

Jhilam Biswas, MD, James A. Chu, MD, David L. Perez, MD, and Thomas G. Gutheil, MD

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CASE HISTORY

History of Present Illness

Rosalie is a 21-year-old Dominican woman with current diagnoses of dissociative identity disorder (DID) and post-traumatic stress disorder (PTSD), and past incorrect diagnoses of schizoaffective disorder, bipolar I disorder, and borderline personality disorder. For over a year she has been at a public sector, long-term, partial hospital program with a residential component focused on dialectical behavior therapy (DBT) skills. Rosalie had been admitted to the DBT program due to her refractory pattern of suicidality, variably described hallucinations and dissociative episodes, and eight-year struggle with a near deadly eating disorder.

Since admission to the partial program, Rosalie has been consistently attending skill groups, is on no medication, and has not been hospitalized in the past one-and-a-half years. She has developed her first long-term relationship, which is also her first with a woman. The outpatient world has brought its challenges, but Rosalie has shown tremendous progress. For the first six months of her partial program, Rosalie was ambivalent about getting better. She would binge, purge, and cut, and she was hospitalized once overnight. After six months, however, she began to wean herself off all her medications and refused to reinitiate them.

Through the year Rosalie has had regular outpatient therapy with a therapist who specializes in dissociation. She also attends DBT skills group therapy, where she learns to regulate her emotions, to understand the triggers that lead to her self-destructive impulsive acts, and to stay grounded despite apparent switching between alternate identities. Often, in groups, we will see Rosalie become distant and quiet, and she may stay this way for hours at a time. In our DBT sessions, Rosalie will work hard to talk about events in her day and to stay present, but occasionally she will speak in a different voice, with a different posture, for 15–20 seconds. When asked to come back, she will have experienced no lapse in time and continues on with a sentence without realizing the transition. This particular type of event is frightening for Rosalie. She recognizes the journey to "reintegrate" her identity through outpatient therapy will be arduous. Sometimes she wonders, with a shudder, whether she herself is only one of the alternate identities that come out for a period of time before she is "sucked away." She says, "I cannot be who I want to be, and I feel my free will is stolen daily by these parts. I would not wish dissociative identity disorder on anyone."

During her time at the partial program, Rosalie has been more vocal about problems that she recognized earlier during her hospitalizations but could never fully express. She reports trouble with "losing time" during the day and finds evidence of behaviors she does not remember doing. She has problems with controlling "the noise of the other alters, the voices" in her head and with focusing on the external world, and has "fuzzy" vision. She describes an elaborate "system of alters," 13 at last count, which maintain various emotional states and personalities that "come out when they need to say something." Rosalie knows some alternate identities better than others. She remembers one, "Jo," from the age of eight years, and considers her to be "the boss" of all the other alters. Rosalie reports that Jo was the one who helped her navigate through the multiple, recurrent sexual abuses by men in her family and community throughout her 17 years of childhood. There are several other "parts," as Rosalie calls them, who are different ages and have different stories and personalities. They emerge frequently, and she discovered each by name during her several hospitalizations (see Table 1). When these personalities emerge, Rosalie reports to be "gone." Rosalie highlights her varying state of awareness by saying that sometimes she is

From Harvard Medical School; Harvard Longwood Psychiatry Residency Training Program, Boston, MA (Drs. Biswas and Perez); McLean Hospital, Belmont, MA (Dr. Chu); Department of Neurology, Brigham and Women's Hospital, Boston, MA (Dr. Perez); Massachusetts Mental Health Center, Boston, MA (Dr. Gutheil); Department of Psychiatry, Beth Israel Deaconess Medical Center, Boston, MA (Dr. Gutheil).

Correspondence: Jhilam Biswas, MD, Department of Psychiatry, Beth Israel Deaconess Medical Center, Rabb-2, 330 Brookline Ave., Boston, MA 02215. Email: jbiswas@partners.org

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completely unaware of time passing. At other times, she dissociates so slowly that she is aware of the "alter taking over" her consciousness.

During her twice-weekly DBT therapy sessions at the partial program, Rosalie has described how painful it is to deal with fragmentation of her identity. Though she recognizes that the "alters" helped her deal with the recurrent traumas that she faced growing up, she does not need them anymore. Rosalie grieves the time that she loses to dissociation. She is exhausted from the alters' constant "noisiness" in her head and the vigilance she needs to employ when allowing her alters to "come out" and wreak havoc on her world.

Personal and Family History

Rosalie was born in the Dominican Republic of an uncomplicated, full-term pregnancy and met all her developmental milestones early or on time. Her father left for the United States when Rosalie was four years old, and she did not properly meet him until the age of nine. Records and family discussions indicate that she became sad and withdrawn after having been raped at the age of four by a teenage cousin, an incident that was witnessed by family members. No legal charges were brought against the cousin, and the incident was rarely mentioned in the family—much like the subsequent abuses throughout her life. Rosalie reports being repeatedly touched and assaulted by her grandfather, a wealthy business owner with whom she lived from age seven to nine. She was also assaulted by five other men who worked for her grandfather. At age eight, tired of dealing with the abuses, Rosalie can distinctly remember taking a knife to her stomach in the kitchen when she heard the voice of "Jo" in her head for first time. She recalls it saying, "You deserve to bleed." As an eight-year-old, it had seemed like "Jo was my god" or, at the very least, "an adult." From then on, Rosalie describes thinking of this voice as a parent figure and diligently doing what it told her to do.

Laura, Rosalie's aunt—but also both a friend of the family and a counselor who coached Rosalie through her teenage years later in the United States—notes that men and some women, particularly her abusers, frequently told Rosalie that none of her experiences had ever happened. Rosalie says, "It was hard to understand what was real versus what was my imagination, because everything was twisted into lies. My paternal grandmother warned me never to talk about this, and when I said something, the community was told that I was crazy." Laura says that even today it is difficult for Rosalie to admit to and describe the assaults committed against her, because the fear of repercussions from the men in her life is so deeply ingrained.

Within the patient's family there had been several mental health problems. Rosalie's mother, Maria, was frequently sexually assaulted by her own grandfather and father, and today is known to dissociate, as reported by Rosalie and the extended family. Rosalie describes her mother's experiences as "dissociating without personalities." Rosalie's father, Jorge, was also sexually abused at the age of nine. Later in life he sexually and emotionally abused Rosalie for many years, per patient and family report.

At age nine Rosalie and her brother left the Dominican Republic to live in an urban suburb in the United States with their parents. She remembers enjoying school and understanding concepts without trying. She actually found herself learning more when she was not paying attention in class and would do well on tests without knowing how she learned the information. Rosalie found writing and mathematics effortless but never considered herself "smart." "People who study all the time, they're smart, but they don't matter in the social world." Rosalie's urban environment taught her street smarts as she "got used to getting jumped." In this world, the "people who matter don't read books" but show their strength in their ability to fight physically and win. She reports that she had many friends and that people around her liked her and would listen to her with respect. Rosalie did well from age 9 through 12, and though her teenage years became tumultuous, she always did well in school.

At age 13 Rosalie was hospitalized twice at a community hospital for two suicide attempts on acetaminophen. The first was precipitated by an intense argument with her father, and the second occurred after a friend committed suicide (see Table 1). After this difficult year Rosalie notes that, over the next three years, she was able to wean herself off the antidepressants that had been started, to stop therapy, and to live her life without treaters. Yet in that period, she also reports that Jo commanded her three times to kill her father, with one episode resulting in Rosalie impulsively putting a knife to his neck. She began to put her energy into dancing, particularly flamenco, which she had learned at a young age, and began to rise to local stardom in her community. Rosalie describes getting on stage, the strong, capable beats of the flamenco guitar starting—and suddenly, the performance would be over. Everyone would be clapping, and she would not remember what she had performed. "I just knew what to do and would not remember doing it or enjoying it." Rosalie notes that this dissociative amnesia occurred in all creative endeavors, including writing and theater.

In high school Rosalie was dancing all the time and began developing an eating disorder. She notes that it was Jo's voice that told her to start restricting and that would explain, in detail, how to go about cleverly avoiding food. Rosalie says it was the "alter's way" of getting her out of her "horrible home life and get[ting] me away from my father." By the end of 2007, this disorder had become a major problem. Between December 2007 and March 2008, Rosalie had lost 50 pounds. She was admitted directly to a medical unit at a big city hospital in a dire condition, thus embarking on a series of psychiatric hospitalizations that lasted until her 20th birthday in 2011 (see Table 1).

Table 1

Treatment History by Hospitalizations

	Reason for admission	Events of significance	Hospital course	Discharge diagnosis	Discharge medications
Community hospital (twice at age 13 in 2004)	Both times for overdosing on acetominophen and cutting her wrists	First hospitalization: father threatened to kill Rosalie when she was cutting her wrists, and she overdosed Second hospitalization: a friend had killed herself	First hospitalization: Rosalie was discharged after 2 weeks Second hospitalization: 2 months' duration	Unknown	"An antidepressant," which Rosalie unilaterally discontinued after stepdown
Large tertiary care center (August–December 2008)	Eating disorder: lost 50 lbs in 5 months (medical hospitalization)	In October 2008, was found under the covers of her bed, not breathing, strangulated with pantyhose; was resuscitated via a code Department of Children and Families was called when Rosalie described an explicit scene with her father; all was denied during the investigation	Had episodes of staring; sleep-deprived EEG was negative Stayed on eating disorder protocol throughout admission Aripiprazole was titrated up to 10 mg during hospitalization and then discontinued	Axis I: major depressive disorder, recurrent type without psychosis; eating disorder; PTSD Axis II: ruled out Borderline traits	Citalopram 40 mg daily Risperidone 1 mg at bedtime Clonazepam 1 mg tid
State hospital for adolescents (December 2008–March 2010)	Needed to be transferred for prolonged care	Rosalie's parents separated in 2009, destabilizing her Graduated high school; high statewide scores allowed scholarships to universities Began hearing all of the voices in her head	Stopped her eating disorder for a period of time because "Jo" told her to stop Hospital notes confusion between auditory hallucinations and "self-created" entity	Axis I: mood disorder NOS; eating disorder NOS; complex PTSD with possible dissociation Axis II: deferred	Aripiprazole 15 mg daily Risperidone 2 mg at bedtime Citalopram 40 mg daily
Transitional program in central state (March–October 2010)	Transferred for prolonged care in the hopes of stepdown	Participated in family therapy: father was described as "heartfelt, poignant"; Rosalie reported feeling disloyal to her father for keeping in touch with her mother	Noted to have periods of hypomania and traumatic flashbacks Started on lithium but developed polyuria; responded to haloperidol	Axis I: bipolar I with psychotic features, bulimia, anorexia; schizoaffective disorder and dissociative identify disorder ruled out	Sodium valproate 750 mg in morning and 1250 mg at bedtime Haloperidol 7.5 mg in morning and 5 mg as needed Prazosin 4–6 mg po at bedtime Lamotrigine 50 mg (stopped)

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Table 1
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	Reason for admission	Events of significance	Hospital course	Discharge diagnosis	Discharge medications
State hospital in city (October 2010–January 2011)	Patient was too acute for stepdown; aged out of the transitions program	Continued to have auditory hallucinations No longer had manic episodes; no eating disorder; no suicidal behaviors Discharged home to father; was seen to be extremely "clingy" toward him	Rosalie began to stabilize during the hospitalization and was maintained on the same medications Staff noted Rosalie was "overly attached to her father"	Schizoaffective disorder, bipolar type PTSD Eating disorder in remission Alcohol abuse in remission	Haloperidol decanoate 50 mg IM every 2 weeks Sodium valproate 750 mg in morning and 1250 mg at bedtime Haloperidol 7.5 mg in morning and 5 mg as needed Benztropine 1 mg bid Prazosin 4 mg po at bedtime

bid, twice a day; NOS, not otherwise specified; po, orally; PTSD, posttraumatic stress disorder; tid, three times a day.

Throughout this time, Laura describes Rosalie as regularly switching between "alters." The switches in personality were so distinct that Laura reports that the family could easily tell which alternate identity was present and talk to it by name. Rosalie says, however, that she knew about Jo and one other alter in her early teens but did not realize the extent of switching personalities until many years later (See Table 1). Rosalie says that now, when she looks back at family photographs, she can tell exactly which "alter is posing" in the picture, as they have such distinct mannerisms, postures, and facial expressions.

Rosalie's relationship with her father, Jorge, is of particular interest. Family members report that Jorge tended to treat Rosalie more as a girlfriend than as a daughter. Rosalie remembers that whenever he closed the door to a room with her in it, her mother knew she was not allowed to open the door. Rosalie says she does not have memories of what occurred behind closed doors, as she would dissociate, but she believes her various "alters" are withholding this secret from her. Laura says that when Rosalie would dissociate into another alter, each would give "clear descriptions of the assaults." Rosalie barely remembers any pleasant memories of her father and says that he would make her feel "crazy and wrong" when she would try to get away from him. She notes that the only reason that she maintains a relationship with him is that her four-year-old sister Katarina—the child her parents had before their divorce—still visits him. Rosalie reports that "I couldn't stop him from hurting me, but I can stop him from getting near her," and feels that the only way she can prevent any more harm is to keep a close eye on her father.

Rosalie's parents separated in 2009, which destabilized her during her hospital stay at a transitional unit. This divorce led to a better relationship with her mother and allowed Rosalie to detach from her father. During the divorce, however, notes from a hospital say that Rosalie was "overwhelmed with guilt for being disloyal to her father" and ambivalent about keeping in contact with her mother, who was undergoing disciplinary action by the Jehovah's Witnesses for the separation. Now out of the hospital and more stable, Rosalie often takes on the caretaker role in the family—particularly for Katarina and often for her mother—and describes herself as not religious, although she identifies as a Jehovah's Witness. Rosalie was on track to graduate from high school a semester early when she was admitted to the hospital in 2007. She did the last two years of her school work within the confines of the hospital and eventually graduated with a scholarship to any state school, based on her high test scores. Due to Rosalie's illegal immigrant status, however, she is unable to qualify for financial aid and has thus not applied to college.

Today, after a year of living in a local shelter, Rosalie lives in a residence dedicated for women involved in the partial hospital program. She is currently in a year-long

relationship with another female member of the partial program and reports that "I can finally be exactly who I am in the relationship without always needing to hide my real self." She has recently been able to call the Department of Child and Families to investigate her father's relationship with Katarina—after her younger sister began to act out. Though the process of outpatient treatment has challenged her, Rosalie has made progress through her efforts as described in this case report. She continues, however, to grieve over the time she loses from dissociating and to feel a loss of control as her various alters "take over" her consciousness.

Of note, Rosalie has completed several questionnaires at her partial program to assess her level of dissociation. She scored 79.6 out of 100 on the Dissociative Experience Scale, on which scores over 30 can indicate dissociative disorder.[1] She scored 64 on the Toronto Alexithymia Scale.[2] On that basis she would be considered alexithymic—that is, unable to identify and report discrete emotions—and it has been shown to occur in female adolescents who have been recurrently abused and now dissociate.*,[3]

QUESTIONS TO THE CONSULTANTS

1. To Dr. Chu: Given the controversy around this diagnosis, how should we understand dissociative identity disorder? How do we correctly make the diagnosis and treat the illness with therapy? How do we differentiate it from other dissociative diagnoses?
2. To Dr. Perez: How do we understand the neurobiology of DID? Are there specific brain regions that we can target for treatment?
3. To Dr. Gutheil: How can we approach a patient with DID from a psychodynamic perspective, and what are some ways to contain the patient during the session?

James A. Chu, MD†

The case presentation of Rosalie includes many typical features of dissociative identity disorder, including a long history of psychiatric impairment with multiple diagnoses and only partially successful treatment. The true diagnosis emerged when dissociative symptoms were recognized: lifelong amnesia ("lost time") and observable, alternate identities. As typical in virtually all cases of this disorder, there is a personal history of extreme childhood abuse, beginning at an early age and continuing through multiple developmental periods. The diagnosis of DID in this case can be differentiated from other dissociative diagnoses in that there are multiple dissociative symptoms, not predominantly single symptoms such as amnesia (as is found in dissociative amnesia) or depersonalization and derealization (as is found in depersonalization disorder). There are full-blown and clearly differentiated identity states, which indicates that the appropriate diagnosis is DID rather than dissociative disorder, not otherwise specified.

DID is not a rare condition. Clinical studies have found that generally between 1% and 5% of patients in clinical programs may meet DSM-IV-TR diagnostic criteria for DID.[5–10] Many of the patients in these studies had not previously been clinically diagnosed with a dissociative disorder. The undiagnosed DID patient may undergo a prolonged period of unsuccessful treatment. The difficulties in diagnosing DID primarily result from lack of education among clinicians about dissociation, dissociative disorders, and the effects of psychological trauma, as well as from clinician bias. These factors lead to limited clinical suspicion about dissociative disorders and to misconceptions about their clinical presentation. In addition, unless patients are specifically examined for dissociative symptomatology, the typical DID patient usually presents a mixture of diffuse problems such as depression, panic attacks, substance abuse, somatoform symptoms, and eating-disordered behaviors. The prominence of these highly familiar symptoms often leads clinicians to diagnose only these comorbid conditions, with the consequence that patients may be treated with only limited success.

Almost all practitioners use the standard diagnostic interviews and mental status examinations that they were taught during professional training. Unfortunately, these standard interviews sometimes do not include questions about dissociation, posttraumatic symptoms, or a history of psychological trauma. Since DID patients rarely volunteer information about dissociative symptoms, the absence of focused inquiry about dissociation prevents the clinician from diagnosing dissociative disorders. Moreover, because most clinicians receive little or no training about dissociation and DID, they have difficulty recognizing the signs and symptoms of DID even when they occur spontaneously. At baseline, in order to make the diagnosis of DID, the clinician must inquire about the symptoms of dissociation.

Most experts propose a dynamic or developmental model for DID, hypothesizing that alternate identities result from the inability of many traumatized children to develop a unified sense of self that is maintained across various behavioral states, particularly if the traumatic exposure first occurs in early childhood. The difficulties in developing a sense of self often occur in the context of relational or attachment disruption that may precede and set the stage for abuse and the development of dissociative coping.[11–13] Fragmentation and encapsulation of traumatic experiences may serve to protect relationships with important (though inadequate or abusive) caretakers and allow more normal

* The case history was prepared by Jhilam Biswas, MD

† Portions of this discussion have been adapted from *Guidelines for Treating Dissociative Identity Disorder in Adults, Third Revision,* from the International Society for the Study of Trauma and Dissociation;[4] the author of this comment was the first author and editor of the guidelines.

maturation in other developmental areas, such as intellectual, interpersonal, and artistic endeavors. In this way, early life dissociation may serve as a type of developmental resiliency factor, despite the severe psychiatric disturbances that characterize DID patients.

Severe and prolonged traumatic experiences can lead to the development of discrete, personified behavioral states (i.e., rudimentary alternate identities) in the child. The dissociated states allow the child to encapsulate intolerable traumatic memories, affects, sensations, beliefs, or behaviors and to mitigate their effects on the child's overall development. Secondary structuring of these discrete behavioral states occurs over time through a variety of developmental and symbolic mechanisms, ultimately resulting in the characteristics of the specific alternate identities. The identities may develop in number, complexity, and sense of separateness as the child proceeds through latency, adolescence, and adulthood.[14,15]

There has been considerable controversy and skepticism about the DID diagnosis. Some authors have claimed that clinicians who believe strongly in DID implicitly or explicitly influence patients to enact DID symptoms. According to this "sociocognitive" model,

> DID is a socially constructed condition that results from the therapist's cueing (e.g., suggestive questioning regarding the existence of possible alternate personalities), media influences (e.g., film and television portrayals of DID), and broader sociocultural expectations regarding the presumed clinical features of DID. For example, some proponents of the sociocognitive model believe that the release of the book and film Sybil in the 1970s played a substantial role in shaping conceptions of DID in the minds of the general public and psychotherapists.[16(p117)]

Despite these arguments, there is no actual research that shows that DID's complex phenomenology can be created, let alone sustained over time, by suggestion, contagion, or hypnosis.[17–19]

A number of lines of evidence support the trauma model for DID versus the sociocognitive model. These include studies that demonstrate DID in children, adolescents, and adults with substantiated maltreatment, with evidence that DID symptoms predated any interaction with clinicians.[20,21] In addition, there are studies of psychophysiology and psychobiology in DID,[22–24] as well as studies of discriminant validity of the dissociative disorders using structured interview protocols,[25–27] that strongly suggest that DID is an authentic and valid construct.

A careful clinical interview and thoughtful differential diagnosis can usually lead to the correct diagnosis of DID. Assessment for dissociation should be conducted as a part of every diagnostic interview, given that dissociative disorders are at least as common, if not more common, than many other psychiatric disorders that are routinely considered in psychiatric evaluations. At a minimum, the patient should be asked about episodes of amnesia, fugue, depersonalization, derealization, identity confusion, and identity alteration. Additional useful areas to explore include spontaneous age regressions; hearing consistent voices inside the head; passive-influence symptoms (e.g., "made" thoughts, emotions, and behaviors that do not feel attributable to the self); and somatoform dissociative symptoms such as bodily sensations that are related to strong emotions and past trauma. Loewenstein[28] has described an office mental status examination that inquires about many DID symptoms, including evidence of alternate identities, amnesia, autohypnotic phenomena, PTSD, somatoform symptoms, and affective symptoms.

Although studies on treatment for DID date back more than a century, rigorous research on DID treatment is still in its infancy. However, results from a meta-analysis of eight studies[29] and a large naturalistic outcome study[30] strongly suggest that treatment is effective in reducing dissociative, posttraumatic stress, and general psychiatric symptoms in dissociative disorder patients, and in improving adaptive functioning. Given that DID most often derives from severe and chronic early childhood trauma, most DID patients also meet the description of complex PTSD, with major difficulties with dissociation, affect regulation, body image distortions, self-injury, chronic suicidality, somatization, relational pathologies, and negative self-identities. Thus, they require a stage-oriented treatment approach that is the standard of care for complex PTSD.[31–34] In addition, specialized interventions for DID enhance integrated functioning and eventually help achieve a workable form of integration or harmony among alternate identities.[4,35]

Treatment for DID and complex PTSD is often of longer-term duration, multimodal, and relatively eclectic, designed to address the multitude of clinical difficulties with which these patients struggle. A typical stage-oriented treatment approach for patients with DID and complex PTSD would have the following structure, consisting of three stages:[4] (1) establishing safety, stabilization, and symptom reduction; (2) working through and integrating traumatic memories; and (3) identity integration and rehabilitation. The goals of stage 1 treatment include maintaining personal safety, symptom control, affect modulation, building stress tolerance, enhancing basic life functioning, and building or improving relational capacities. Maintaining a sound treatment frame in the context of a therapeutic holding environment is critical to establishing a stable therapy that maximizes the likelihood of a successful outcome. Interventions include: (a) education about the nature of PTSD and dissociation; (b) assessing self-harm or risky behaviors and the development of behavioral interventions to remain safe; (c) addressing comorbid conditions such as addictions or eating disorders, which may involve referral to adjunctive specialized treatment programs; (d) gently exploring the system of alternate

identities, identifying alternate identities who behave in unsafe or dysfunctional ways, and developing agreements between alternate identities to help the patient become more functional; and (e) using strategies such as grounding techniques, crisis planning, DBT, and medications to manage impulsivity, unsafe behaviors, and posttraumatic and dissociative symptomatology.

In stage 2 of treatment, the focus turns to working with the DID patient's memories of traumatic experiences. Effective work in this phase involves remembering, tolerating, processing, and integrating overwhelming past events. Working through past trauma involves cognitive change and mastery in addition to the intensive discharge of emotions and tensions related to the trauma; intense emotional discharge for its own sake may simply retraumatize and is contraindicated. Successful working through of trauma permits the integration of fragmented and dissociated elements of traumatic memories into a comprehensible and coherent narrative. In DID patients, formerly dissociated identity states become more integrated, and they often begin to fuse—either spontaneously or assisted by therapeutic processes.

Many tasks of stage 3 treatment of DID are similar to the those of nontraumatized patients who function well but experience emotional, social, or vocational problems. In addition, DID patients make additional gains in internal cooperation, coordinated functioning, and integration. They usually begin to achieve a more solid and stable sense of self and how they relate to others and to the outside world. In this stage, DID patients continue to integrate alternate identities and improve their functioning. As patients become less fragmented, they usually develop a greater sense of calm, resilience, and internal peace. They may acquire a more coherent sense of their past histories and deal more effectively with current problems. The patient may begin to focus less on the past traumas, directing energy to living better in the present and to developing a new future perspective.

David L. Perez, MD

This clinical case study depicts a 21-year-old, Hispanic, right-handed woman with a family history of mood and dissociative disturbances and a personal history of severe, early-life sexual trauma who developed poor impulse control, affect dysregulation, and prominent dissociative phenomena exemplified by disrupted and fragmented memory and self-identity. From a neuropsychiatric perspective, this patient's presentation may be conceptualized, at least in part, as a childhood-onset, posttraumatic, neurodevelopmental disorder.[36] Insights into the neural circuit disturbances mediating her dissociative symptoms may be deduced by reviewing neuroimaging studies in DID, in other dissociative disorders such as depersonalization disorder (DPD), and in related conditions with prominent dissociation, including PTSD. Furthermore, converging, basic science studies in animal models of chronic stress suggest circuit-specific, experience-dependent, aberrant neuroplastic changes that may help elucidate the emergence of this patient's symptom complex.

Case report and case-control cohort neuroimaging studies in DID, though limited to date, implicate hippocampal-based declarative[37–39] and amygdalar-based emotional[40] memory circuit dysfunction. In addition, cortical fronto-parietal disturbances in regions mediating higher-order attentional/perceptual awareness,[40] self-referential processing,[40] and affect regulation[23,41] have been implicated in the neurobiology of DID. Several studies have used a within-subject design to compare neutral identity states to traumatic identity states (i.e., states with preserved awareness of previously experienced trauma). In the first published neuroimaging study of DID, Mathew and colleagues[37] identified increased right anterior temporal regional cerebral blood flow (rCBF) selectively in the alter with preserved recollection of previously experienced sexual trauma. Using a symptom-provocation paradigm design, Reinders and colleagues[40] compared positron emission tomography rCBF group differences in 11 females with DID in neutral and traumatic identity states while listening to autobiographical trauma scripts. The neutral identity state, as compared to the traumatic identity state, was associated with diminished activation of dorsomedial, prefrontal, and posterior parietal cortices, suggesting that those in a neutral identity state may have attended less to the material and found it potentially less personally relevant.[42] In a series of resting-state single photon emission computed tomography studies, diminished bilateral rCBF was identified in the orbitofrontal cortex,[23,41] a region implicated in emotional regulation and behavioral control/inhibition in the context of changing contingencies. Finally, hippocampal and amygdalar volumetric reductions were identified in patients with DID and comorbid PTSD compared to healthy controls.[39]

Neuroimaging studies in depersonalization disorder have similarly identified a pattern of limbic, prefrontal, and posterior parietal cortex dysfunction. A positron emission tomography study examining metabolic profiles in 8 patients with DPD compared to 24 healthy controls during performance of a verbal learning task identified angular gyrus hypermetabolism in patients with DPD. The inferior parietal lobule (including the angular gyrus) has been implicated in multimodal sensory integration and perceptual awareness.[43] Dysfunction in this region has also been characterized in other disorders with prominent dissociation, including conversion disorder.[44] Functional magnetic resonance imaging studies of patients with DPD compared to healthy controls using emotionally valenced stimuli have demonstrated diminished amygdalar, insular, and hypothalamic activity,[43,45–47] with parallel hyperactivation of regulatory prefrontal regions.

A network model for dissociation has been suggested by Lanius and colleagues[48] in a series of functional MRI

studies examining neural circuit differences in dissociative and hyperarousal/reexperiencing PTSD subtypes. Pathological hyperarousal and reexperiencing symptoms have been linked to emotional undermodulation (impaired top-down inhibition); diminished rostral anterior cingulate cortex and ventromedial prefrontal cortex activity may lead to disinhibited amygdalar activity. Dissociative symptoms have been proposed to emerge in the setting of hyperactivity in the anterior cingulate cortex and medial prefrontal cortex (overmodulation), with subsequently dampened amygdalar function[48] resulting in diminished retrieval of emotionally laden memories. Dissociative and hyperarousal/reexperiencing PTSD subtypes, however, are not mutually exclusive and have been described at different instants within the same individual.[49]

Animal models of chronic stress suggest that both the medial prefrontal cortex and the medial temporal lobes—key regions implicated in the neurobiology of dissociation—exhibit neuroplastic changes in response to prolonged stress. The medial prefrontal cortex and the hippocampal CA3 regions in rodents exhibit reduced dendritic spine density following repeated stress exposure.[50,51] Amygdalar stress-related, experience-dependent neuroplastic changes, while less well understood, may exhibit an opposite effect. Studies suggest region-specific hypertrophy with particular involvement of the basolateral amygdala.[52]

Based on the neuroimaging literature in DID and related disorders with prominent dissociative symptoms, Rosalie's fragmentation of memory and self-identity suggests large-scale brain network dysfunction across prefrontal, medial temporal, and posterior parietal cortices implicated in emotional regulation, self-referential processing, salience, memory, attention, and perceptual awareness. Furthermore, her symptom complex may be conceptualized, at least in part, as an acquired disturbance in the context of aberrant, experience-dependent neuroplastic changes with particular involvement of regulatory medial, prefrontal, and medial temporal regions. It is important to note, however, that circuit-based disturbances in DID and related dissociative disorders remain underinvestigated and that future research is necessary both to clarify intra- and intercircuit dysfunction (with a particular emphasis on potential insular involvement) and to delineate common and disorder-specific neural circuit dysfunction across dissociative disorders.

Finally, although a detailed discussion of pharmacologic treatment options for patients with DID is beyond the scope of this article and has been formalized in 2011 in international treatment guidelines,[4] neuropsychiatrists and like-minded clinicians may consider using a symptom-based, dimensional therapeutic approach when treating patients with DID; an example includes the use of pro-serotonergic agents to target medial prefrontal cortex dysfunction in a patient with prominent negative affect and impulsive behavior. The possibility also exists for targeted, noninvasive neuromodulation of circuit-specific disturbances as a form of therapeutic intervention. It has been studied with some success using repetitive transcranial magnetic stimulation applied to the right temporoparietal junction in patients with DPD.[53]

Thomas G. Gutheil, MD

A number of psychodynamic theoretical approaches to DID[14,15] make it possible to engage empathically with such persons in ways that permit processing of the very conflicts that have led to dissociation without directly engaging in multiplicity.[54] Only a summary can be attempted here. Dissociation can be seen as temporarily altering one's sense of one's personal identity to avoid some forms of emotional distress. A common theme in the literature addresses the defensive nature of dissociation in this context, in that dissociation allows "disowning or disavowal of overwhelming or unacceptable affects and sensations such as fear, rage, shame, helplessness, grief and pain; unacceptable impulses, thoughts, or unbearable feelings such as sexual feelings during abuse."[55(p464)] Howell[56] calls dissociation a survival strategy arising from the need to continue the relationship with feared but needed others; unlike, say, stranger sexual abuse, molestation in the home may require containment of intense feelings while the child is sitting at the breakfast table with the abuser. Brenner[57] refers to an autohypnotic, defensive, altered state of consciousness that originates in response to the overstimulation of external trauma. Dissociation has also been described as a deficit involving "the integrative functions of memory, consciousness and identity."[13(p473)]

In attachment theory, disturbed relationships, including "disorganized attachment," "insecure attachment," and "insecure-ambivalent attachment" of infants with caretakers, are posited as leading to later dissociative experiences.[13] Putnam[15] suggests that childhood trauma interferes with integration among differing behavioral states. Others allude to the massive use of repression, resulting in splitting off of emotional content and associated anxiety from awareness. Jung addressed the role of dreams in relation to the treatment of these patients.[58] He

> thought that dreams pulled together the affects and fragmented experiences of waking life and, using symbolic functions unavailable to consciousness, held these 'pieces together in one dramatic story [that] is a kind of miracle of psychological life which we too easily take for granted. Usually, when dreams do this, no one is listening. In depth psychotherapy, we try to listen.[58(p123),59(p3)]

On the issue of technique, in interviewing DID patients one may actively avoid dealing with the personae and related matters, and focus on the linkages between affects and those body experiences that locate and literally embody those affects as somatic symptoms. The quality of relationships

in the patient's life and his or her functional capacities are, as always, highly relevant. An example might be drawn from the first few exchanges of my recent interview with the subject patient, condensed for this article:

Dr. Gutheil: I have heard about what you have been through, but I am not clear in my own mind what is troubling you the most.
Rosalie: Forgetting; yesterday I had a stressful day, and it's so frustrating because I can't remember what it felt like. I can't savor the good memories.
Dr. Gutheil: So your forgetter is working overtime. How do you cope?
Rosalie: I talk to people, I write stuff down, but I freak out.
Dr. Gutheil: What kind of freak-out: mad, sad, or scared?

[The patient elaborates: mad means frustrated; sad means both grieving and savoring losses; scared means both being scared to wake up in the morning and not knowing your own day yesterday and also being scared of doing something bad (i.e., guilt). The fear is explored.]

Dr. Gutheil: Where in your body do you feel it most?
Rosalie: My head, my chest.
Dr. Gutheil: What are you feeling in your head?
Rosalie: Chaos.
Dr. Gutheil: What are you feeling in your chest?
Rosalie: Butterflies, tingly and uncomfortable.
Dr. Gutheil: That is fear expressing itself inside you, a reaction to not feeling your own feelings.
Rosalie: I'm so frustrated that I'm scared. I can't make [the feelings] better, and I'm pissed off. That's just me, though. I'm tired of it, it's an old feeling.

Subsequent material elicited family pressures not to feel or to tell others about feelings, nightmare contents, and physical reactions (e.g., the impulse to vomit when she talks about the nightmares). Discussion focused on addressing the huge hole in the patient's affective life, the importance of focusing on the patient's numerous regrets about the lack of protection from abuse, and the need to "detoxify" the feelings.

Her nightmare offered useful material for a dynamic exploration:

> A homeless dude, smelly, is kissing me, and my grandmother watches, and then she blames me for him doing that. Grandmother is a bitch. (Patient feels impulse to vomit upon being told that it is her fault that she did this.)

No attempt to interpret this dream was made during the (public) interview, but some themes would be worth pursuing in private therapy sessions:

1. The dream contains a smell reference. References to smells are usually very important at primitive levels of awareness since smells are among the most evocative sensations, and the rhinencephalon is closely tied to memory. Description of, and association to, the smell would lead to potentially useful content.
2. The abuser's being "homeless" struck me as an attempt to deny that the abuser is, in fact, in the home, in the house—that is, one of the family. Within the dream the grandmother's accusation counters the erotic force of the dream itself, while simultaneously tracing its origin to the patient herself: this is about you.
3. Equally important is the patient's impulse to vomit when describing the dream, which constitutes direct bodily participation in the experience and is thus highly significant. Is this reaction a symbolic rejection of the dream, the content, the person? Was some oral sexual abuse involved in her troubled history to which she is responding in this way? These speculations must be viewed as hypotheses that are to be tested over the long therapeutic haul.

Overall, treatment would aim at working through the excluded feelings, coming to a great acceptance of them,[54] and replacing dissociation with higher-level defenses of those feelings. A leading teacher, Elvin Semrad (personal communication, 1968), expressed it as acknowledging, bearing, and putting in perspective the intolerable and excluded affects that led to the disorder and coming to terms with one's past experiences. In the present context, dissociation is just one of several protective mechanisms, such as psychoses, aimed at putting intolerable affects out of awareness. The treatment goal would be to allow these affects safely back into awareness to permit working through them. This process could be fostered by avoiding the reification of the dissociated content as a named persona and by talking, instead, about the "feelings you have under the heading of Susie."

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