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High Prevalence of Dissociative Amnesia and Related Disorders in Immigrated People

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Abstract

Across various cultures, dissociative amnesic disorders have been shown to be triggered by psychological stress or trauma. In immigrant populations, stressful experiences can arise during pre-emigration, migration or post-migration phase. Preliminary data suggest that stresses related to various phases of migration and acculturation could trigger dissociative amnesic disorders via a dysregulation of hormonal stress responses. These findings are highly relevant in the era of increased globalization and call for culturally sensitive approaches, in order to accurately diagnose and optimally manage these conditions in the future.

Introduction

“Memory connects innumerable single phenomena into a whole, and just as the body would be scattered like dust in countless atoms if the attraction of matter did not hold it together so consciousness – without the connecting power of memory – would fall apart in as many fragments as it contains moments.” (Hering, 1870/1895, p. 12).

“Just as everything participates in memory, so memory participates in everything: every last thing. In doing so, it draws the world together, re-remembering it and endowing it with a connectiveness and a significance it would otherwise lack – or rather, without which it would not be what it is or as it is” (Edward Casey, 2000, p. 313).

Dissociative disorders are characterized by failures of integration of memory, perception, consciousness, emotion or identity and are regarded as being causally-bound to psychological trauma or stress. This view is rooted in Janet’s understanding of dissociation as “an inability of the personal self to bind together the various mental components in an integrated whole under its control” (Janet 1907, p.23; see also Maldonado & Spiegel, 2008; van der Hart & Horst, 1989). Janet is credited by several authors with a superior understanding of the dissociation (Maldonado & Spiegel, 2008; van der Hart & Dorahy, 2006), which only partly found its way in the recent international classification of diseases [e.g., DSM-IV-TR (2000), ICD-10(1982)]. Several diagnostic entities were included under the heading of dissociative disorders in DSM-IV-TR (2000), such as dissociative amnesia, dissociative fugue, depersonalization disorder, dissociative identity disorder and dissociative disorder not otherwise specified (such as Ganser syndrome). In contrast to DSM-IV-TR, ICD-10 (1982) also listed under the category of dissociative (conversion) disorder the entity of conversion disorder (with its various forms), which was in DSM-IV-TR (2000) captured under the heading of somatoform disorders.

Herein we will primarily focus on the relationship between migration and the dissociative disorders, which feature amnesia as part of their symptoms. These dissociative disorders include: dissociative amnesia, dissociative fugue, dissociative identity disorder, Ganser Syndrome and trance and possession dissociative disorders.

Dissociative Amnesic Disorders and the Diversity of Memory

The clinical picture of dissociative amnesic disorders reflects the fact that memory is not a unity, but can be classified along a content and time axis, respectively (for a review of the memory systems and their neural correlates, see Markowitsch and Staniloiu, 2012). The time-related partitioning of memory into short-term, working and long-term memory was empirically supported long time ago (Atkinson & Shiffrin, 1968). Along the time dimension, there is another well-established division into anterograde and retrograde memory, or new and old memory, respectively. The construct anterograde amnesia was reportedly advanced by Jean-Martin Charcot, a famous French neurologist from the end of the 19th century, to account for the “pathological forgetting” of events that happened after the traumatic event (Janet, Nicolas, & Penel, 2001). Following Etienne Eugène Azam (1822-1899), Charcot reportedly utilized the construct “retrograde amnesia” (Janet et al., 2001).

Along the content dimension, five distinct long term memory systems have been described: procedural, priming, perceptual, semantic and episodic. These memory systems are considered to build up ontogenetically and phylogenetically onto each other. The episodic memory system is currently viewed as being equivalent to the episodic-autobiographical memory (EAM) system and EAM is construed as the conjunction of subjective time, auto-noetic consciousness and the experiencing self (Tulving, 2005). EAM is a superior neurocognitive ability, which is likely affected by genetic factors, environmental conditions and their interplay. Its emergence and evolving are modulated by the socio-cultural-linguistic milieu (Nelson & Fivush, 2004). Being the most advanced acquisition both ontogenetically and phylogenetically, the EAM system is more susceptible to various types of insults (such as physical injuries or psychological stress) than other memory systems. It is therefore not surprising that processing of information within this system is the most affected in dissociative amnesic conditions, as we will detail below.

Variety and Unity within Dissociative Amnesic Disorders

Dissociative amnesia – one of the dissociative disorders – has as its central feature the inability to recollect personal information. The disturbance is precipitated by stressful experiences or psychological trauma and cannot be explained by normative forgetfulness. It cannot be better accounted for other psychiatric or medical conditions (such as traumatic brain injury). However, comorbidity with other conditions (such as affective disorders or personality disorders) may exist. Furthermore, it is not uncommon for dissociative amnesia to arise after an objectively mild physical injury, such as a mild traumatic brain injury (Staniloiu, Bender, Smolewska, Ellis, Abramowitz, & Markowitsch, 2009). Traditionally, dissociative amnesia has been characterized by the absence of significant brain damage, as evidenced by *standard* structural brain imaging methods. Although feigned amnesia has to be ruled out, there are situations where this is a challenging task (Barbarotto, Laiacina, & Cocchini, 1996; Spiegel et al., 2011). The symptoms of dissociative amnesia might lead to significant impairment of functioning or distress. The degree of experienced distress may be modulated by comorbid conditions, personality features (Stone, Smyth, Carson, Warlow, & Sharpe, 2006) and culturally-shaped views of dissociative experiences, selfhood and past (Kleinman, 1980). A lack of concern (indifference) about the current condition was described in several cases of dissociative amnesia (Janet, 1907; Wilson, Rupp, & Wilson, 1950), but its underpinnings still wait to be unraveled.

Dissociative amnesia can be further classified according to the degree and timeframe of impairment of EAM and the co-occurrence of deficits in semantic memory (personal or general knowledge). The most frequently diagnosed dissociative amnesia has a retrograde nature. This type of amnesia was termed ‘mnestic block syndrome’ (Markowitsch, Kessler, Russ, Frölich, Schneider, & Maurer, 1999b). The ‘mnestic block syndrome’ is characterized by an impairment of EAM, often spanning the whole past life. This impairment is attributed to a stress hormone-mediated memory retrieval blockade. Sometimes the ‘blocked’ episodic-autobiographical material is content-specific (selective) and/or is restricted to specific life epochs (Markowitsch, Thiel, Kessler, von Stockhausen, & Heiss, 1997b). This memory blockade may be reversible, either spontaneously or after the timely implementation of adequate treatment strategies.

Patients with ‘mnestic block syndrome’ usually have largely spared intellectual functions. They can read, write and calculate. They usually *know* how to behave in social situations. Old general knowledge might be preserved. The patients can acquire new EAM’s for long term storage; however, the newly acquired events may be less imbued with emotion in comparison to the ones of normal participants (Brand & Markowitsch, 2009; Reinhold & Markowitsch, 2009).

Some retrograde dissociative amnesic conditions may be accompanied by variable anterograde memory deficits, which could be detected with *standard* tests for anterograde memory. However, cases of dissociative anterograde amnesia, occurring in the absence of retrograde memory impairments seem to be much rarer (Markowitsch, Kessler, Kalbe, & Herholz, 1999a; Janet et al., 2001).

Amnesic disturbances of dissociative nature occur not only in dissociative amnesia, but also in other dissociative disorders, such as dissociative identity disorder, dissociative fugue, Ganser syndrome, and dissociative trance disorder and possession trance. When retrograde dissociative amnesia is accompanied by sudden and purposeful travel and compromised knowledge about personal identity – the condition is called dissociative fugue (Markowitsch, Fink, Thöne, Kessler, & Heiss, 1997a). Several terms had in the past been used in relationship to this condition, such as *les alienés voyageurs*, *determinismo ambulatorio*, *Wanderlust* (cf. e.g., Burgl, 1900). The disorder had initially been attributed to epilepsy, but later a hysterical (psychogenic) origin was suspected (Hacking, 1996). Currently there are debates about its superordinate category in international classifications. Some clinical observations have shown that, after the episode of fugue resolves, patients with a dissociative fugue condition present with profound retrograde amnesia for personal events. Additionally the neuropsychological and neurobiological profiles of these patients were found to bear similarities to those of patients with dissociative amnesia (Markowitsch, Fink et al., 1997a; Markowitsch, Thiel et al., 1997b; Hennig-Fast et al., 2008). Other authors however noted that a history of dissociative fugue was in their sample much more common among patients with a diagnosis of multiple personality disorder (dissociative identity disorder) than a diagnosis of psychogenic (dissociative) amnesia (Coons & Milestein, 1992). Subsequently, some clinicians made predictions that dissociative fugue may later be re-diagnosed as a dissociative identity disorder (Spiegel et al., 2011)

Dissociative Identity Disorder (DID) or multiple personality disorder is assumed to have its onset in childhood, but it is usually diagnosed in the fourth decade. It typically runs a chronic, waxing and waning course. Apart from marked impairments in the sense of identity and self (in the form of the existence of two or more distinct identities or personality states), inability to recall personal information (amnesia) is a common occurrence in DID. Until recently included under the separate entity of dissociative trance disorder, the possession trance seems to be an equivalent of dissociative identity disorder and to have trauma-related psychological and neurobiological underpinnings (Spiegel et al., 2011) Possession trance involves episodes of altered consciousness and perceived replacement of the usual identity by a new one, which is assigned to the influence of a supernatural entity (deity, spirit, power) (DSM-IV-TR, 2000).

A particular type of dissociative disorder that may be accompanied by memory disturbances is Ganser Syndrome, a condition that has been submitted to several diagnostic revisions. As Dwyer and Reid (2004) stated, “Ganser’s syndrome remains an enigma, but despite its rarity it should not be forgotten, for it serves to highlight the limitations of our understanding of the disordered mind” (p. 473). The Ganser syndrome was included under the category of Dissociative Disorders Not Otherwise Specified in DSM-IV-TR, where it was simply defined by giving approximate answers to questions (*vorbeireden*). Ganser’s (1898, 1904) original description of the syndrome however consisted of a constellation of impairments of consciousness (a hysterical semitrance), giving approximate answers to questions (*vorbeireden*), hallucinations and amnesia, suggestive of a “brief reactive psychosis to stress” (see also Staniloiu et al., 2009). Nowadays the relationship of Ganser Syndrome to dissociative amnesia is controversially discussed. The working groups for DSM V seemed to have tried to distance themselves from the Ganser’s initial description of the syndrome, by proposing that Ganser syndrome should solely be defined by giving inappropriate answers to questions and amnesia should be an exclusion criterion (Spiegel et al., 2011).

Stress, Dissociative Amnesic Disorders and the “Breakdown of Adaptation”

Dissociative disorders have been described in a variety of cultures and have been acknowledged to occur in response to traumatic stress (Spiegel et al., 2011). As Goldsmith, Cheit and Wood (2009) remarked, Pliny the Elder (23-79 A.D.) already had talked about “fright” as being one of the causes of partial or total memory “loss”.

Dissociative symptoms and conditions tend to affect younger people (Reinhold & Markowitsch, 2007). Dissociative amnesia was reported to be most frequently diagnosed in the third and fourth decade of life (Putnam, 1997). The younger age clustering may reflect developmentally-dependent differences in the windows of vulnerability to stress of the essential brain structures involved in autobiographical-episodic memory processes and/or the changes in the effectiveness of psychological mechanisms of suppression/repression over the life span. Although several studies reported a direct relationship between the severity of exposure to trauma and incidence of dissociative amnesia, cases of patients who developed dissociative amnesia after a seemingly minor stressor are however not such a rare occurrence. In a substantial number of the latter cases the collateral information revealed a history of repeated traumatic experiences with early onset (cumulative trauma) (Lupien, McEwen, Gunnar, & Heim, 2009).

Both stress and dissociation have been linked to adaptation as well as pathology. While some authors regarded dissociation as being part of a continuum, others have argued in favor of a categorical division into normal (e.g., day dreaming, absorption, reverie) and pathological dissociation, respectively (Spiegel et al., 2011; Seligman & Kirmayer, 2008). Several defensive functions of dissociation, such as behavioral automatism, compartmentalization of information and affect, analgesia and self-detachment were described. These functions were hypothesized to be recruited together in an acute traumatic situation in order to alleviate extreme psychological and probably physical pain (Putnam, 1997). Though these functions may be adaptive initially, a breakdown of adaptation (van der Kolk & van der Hart, 1989) may later ensue, being conducive to the illness.

Similarly to dissociation, stress hormones, such as glucocorticoids could have an adaptive or pathogenetic role. Glucocorticoids are involved in processes of brain maturation and remodelling, learning and memory. During acute stress glucocorticoids hormones are released to reset the homeostasis of the organism in the face of a challenge (a process called “allostasis”; McEwen, 2000). Persistently elevated levels of glucocorticoids could however have detrimental effects on brain function and/or structure as well as on other systems of the body (such as immune, endocrine or cardiovascular system).

The degree to which chronic repeated stress or massive acute stress may affect an individual’s homeostasis and lead to diseases may depend on a gamut of factors, such as genes, developmental phase, prior experiences, personality features, resilience, social support (e.g., Becker-Blease, Deater-Deckard, Eley, Freyd, Stevenson, & Plomin, 2004; Pacheco, Beevers, Benavides, McGeary, Stice, & Schnyer, 2009; McGowan et al., 2009; Dalenberg et al., 2012). Key brain structures for EAM and emotional processing are sensitive to the consequences of exposure to negative or stressful experiences (such as amygdala and hippocampal formation, prefrontal cortex and specific white matter tracts). Reductions in hippocampal volumes and episodic-autobiographical memory impairments were reported in patients with stress-related psychiatric conditions, such as post-traumatic stress disorders (Bremner et al., 1997), recurrent major depressive disorders (especially the ones with history of trauma) (Vythilingam et al., 2002; Campbell, Marriott, Nahmias, & MacQueen, 2004) and dissociative identity disorder (Vermetten, Schmahl, Lindner, Loewenstein, & Bremner, 2006). Glucose hypometabolism in hippocampal formation (in addition to other memory sensitive brain areas) was also reported in a patient with dissociative amnesia with both retrograde and anterograde memory impairments (Markowitsch, Kessler, Van der Ven, Weber-Luxenburger, & Heiss, 1998). In a study which reviewed data from 14 patients with dissociative amnesia with prominent retrograde memory impairments, functional brain imaging obtained in resting state showed evidence of metabolic changes in the right temporofrontal regions with a common significant hypometabolic zone in the right inferolateral prefrontal cortex (Brand, Eggers, Reinhold, Fujiwara, Kessler, Heiss, & Markowitsch, 2009). Furthermore, subtle structural changes within the white matter of the

right prefrontal region were identified in patient with retrograde dissociative amnesia (Tramoni, Aubert-Khalifa, Guye, Ranjeva, Felician, & Ceccaldi, 2009).

We and other authors have argued that the stage of development or declining of the key brain structures for conscious memory processing influences their susceptibility to the stress effects (Lupien et al., 2009; Staniloiu & Markowitsch, 2012). This may partly explain why the same type of traumatic experiences results in different brain morphological or functional changes and a chameleonic psychopathology (Magnin et al., 2014).

The Universality of Dissociative Disorders

It has taken a substantial amount of time and work to prove that dissociative disorders are not just “cameo” illustrations (Hacking, 1996) of a socially created malady. In 2006, Brandt and van Gorp asserted that “all the dissociative disorders are extremely rare” (p.332). Some authors concluded that certain dissociative disorders simply do not exist in their countries (Takahashi, 1991) and others viewed their existence as being the product of cultural contamination (Pope, Poliakoff, Parker, Boynes, & Hudson, 2007). Recent data however suggest that dissociative disorders occur across a variety of cultures and are etiologically linked to psychological stress. In a recent review article, Spiegel et al. (2011) noted that the reported prevalence values for dissociative amnesia range between 1.8% and 7.3%. Johnson et al. (2006) reported for dissociative amnesia a 12 month-prevalence of 1.8% in a USA community of 658 adults who were assessed with psychiatric interview. Sar et al. (2007) conducted a study in Turkey where forty-three of the ninety-seven consecutive outpatients admitted to the psychiatric emergency department were initially screened for dissociative experiences using the screening tool Dissociative Experiences Scale (DES). The patients who had a DES score higher than 25 (39.5% out of 43 assessed) were further evaluated with the Dissociative Disorders Interview Schedule and then the Structured Clinical Interview for Dissociative Disorders (the gold standard diagnostic instrument for dissociative disorders). Seven percent (3 patients) of the 43 patients met diagnostic criteria for dissociative amnesia. The average DES score of patients who met criteria for dissociative disorders was reported to be 43.7.

While many data support the trauma model of dissociative disorders (Dalenberg et al., 2012), the manifestations of dissociative disorders in a particular context may be shaped by social learning and expectancies and culturally-moulded sensation schemas and explanatory models of illness (Hinton, Howes, & Kirmayer, 2008).

Immigration and Stress

Migrants’ physical and mental health reflects the interplay between their genetic predispositions and environmental factors. While certain factors related to migration seem to be protective (the so-called “healthy immigrant effect”), others appear to increase the risk for certain physical and mental diseases (Breslau, Aguilar-Gaxiola, Borges, Kendler, Su, & Kessler, 2007; Alegria et al., 2008). Stressful life experiences could occur during any of the following stages associated with migration, such as during pre-emigration, migration itself or post migration (Lindert, Schouler-Ocak, Heinz, & Priebe, 2008). Legal status, income, living situations, the degree of disruption of the community network, language proficiency (as a measure of acculturation), cultural factors, perceived discrimination, nutrition modulate the risk for physical and mental health problems.

“The price the body pays for being forced to adapt to adverse psychosocial or physical situations” is defined as “allostatic load” and “it represents either the presence of too much stress or the inefficient operation of the stress hormone system” (McEwen, 2000, p. 110f). Data from the field of epigenetics (an area concerned with the influences of the environment on gene expression) point to a high developmental plasticity of the hypothalamic–pituitary–adrenal axis, which plays a significant role in hormonal stress responses (Charney, 2012). Various lived stressful experiences (including the social ones) can – especially if they had their onset in the early life – alter the expression of different genes involved in stress hormone responses, sometimes with long-lasting consequences. However not only lived experiences and familial and socio-economic factors might shape the phenotype. Weather, light and day cycles, eating habits, toxins, radiation, ethnic density, urban design may also interplay with genes and affect their product (Dealberto, 2007; Veling, Susser, van Os, Mackenbach,

Selten, & Hoek, 2008; Charney, 2012). All these factors listed above might be part of the new “ecological niche” (Charney, 2012), to which a migrant might need to adapt.

Studies in Canada and other countries have reported substantial risk for psychopathology in young refugees (Kirmayer et al., 2011). For certain psychiatric conditions it was noted that the risk in migrants might increase with the duration of residence in the new country. This raises the hypothesis that at least in the case of certain psychiatric conditions, chronic stress related to immigration and acculturation might play a role. Higher rates of psychoses among certain immigrant populations and their descendants were reported by several studies (Zolkowska, Cantor-Graae, & McNeil, 2001; Veling, 2013) and posited to be underpinned by complex environment-gene interplays (epigenetic mechanisms).

Apart from the brain, several other body systems can be targets of the allostatic load (including cardiovascular, immune and endocrine system). Evidence for an increased allostatic load in migrants comes from several studies that showed an increased risk for cardiovascular diseases in immigrants. In one study the risk was still significant after adjusting for variables, such as age, sex, ethnicity, income, education, family history of heart disease, diabetes, smoking, physical activity, body mass index, visceral adipose tissue, lipids, insulin, glucose and blood pressure (Lear, Humphries, Hage-Moussa, Chockalingam, & Mancini, 2009). The risk for cardiovascular disease was found to be higher among migrants with lower levels of adjustment (as determined by language proficiency). High prevalence of diabetes mellitus was identified among immigrants, which in one study correlated with the length of residence in the new country (Oza-Frank, Stephenson, & Narayan, 2011). In another study the levels of acculturation predicted hormonal stress responses and pregnancy outcomes among pregnant Hispanic women (Ruiz, Dolbier, & Fleschler, 2006).

Immigration and Dissociative Disorders

A possible connection between immigration and dissociative disorders was suggested long time ago by several psychoanalysts, who remarked that immigration posed a significant threat to feelings of identity and self-cohesiveness (Grinberg & Grinberg, 1989). Dissociative symptoms have extensively been studied as part of posttraumatic stress disorder in immigrant populations or refugees. A higher propensity of certain ethnic groups to react to distress with dissociative symptoms has been described (Guarnaccia, Rivera, Franco, & Neighbors, 1996). This propensity was noted to inversely correlate with successful acculturation to a Western society in some studies (Marshall & Orlando, 2002). Data about the occurrence and characteristics of other dissociative amnesic disorders in migrants remain however limited.

During, Elahi, Taieb, Moro, and Baubet (2011) wrote a recent review on dissociative trance and possession disorders where they included 28 articles with 402 cases with this condition. They concluded that patients with this condition can be found in each continent and culture. They remarked that 18% (73) of patients had a migrant background or belonged to a minority (ethnic or religious). Case reports pointed out to a higher frequency of Ganser syndrome among ethnic minorities (Deibler, Hacker, Rough, Darby, & Lamdan, 2003; Sigal, Altmark, Alfici, & Gelkopf, 1992; Nardi & Di Scipio, 1977; Tsoi, 1973). A number of patients with Ganser syndrome described in single case reports were male subjects with a background of immigration (Assion & Schmidt, 2004; Butzke, Hoffmann, Offinger, & Stanga, 2005; Weller, 1988; Staniloiu et al., 2009). Cases of dissociative amnesia or fugue occurring on a background of immigration were reported by several authors (Fujiwara et al., 2008; Thomas-Antérion, Guedj, Decousus, & Laurent, 2010; Arzy, Collette, Wissmeyer, Lazeyras, Kaplan, & Blanke, 2011; Modai, 1994).

We have described several patients with dissociative amnesic conditions (dissociative amnesia, dissociative fugue, Ganser syndrome) occurring on a background of immigration (Staniloiu, Borsutzky, & Markowitsch, 2010; Markowitsch & Staniloiu, 2013; Staniloiu & Markowitsch, 2012). All these patients underwent extensive medical and neurological work up (including conventional structural brain imaging studies), thorough psychiatric evaluations and comprehensive neuropsychological evaluations. Own gathered data showed that in a substantial number of patients whom we investigated, the dissociative amnesic condition occurred on a background of immigration, several years after the patients had immigrated to the new country of residence. In most cases, the country of new residence was Germany. In two cases, the host countries were located in North

America (Canada and USA) and in one case the host country was Switzerland. The countries of origin were represented by Poland (2 cases), Bulgaria (1 case), former Soviet Union (Kazakhstan; 1 case), former Yugoslavia (Albania; 1 case), United Kingdom (1 case), Portugal (1 case), Spain (1 case) and South America (Venezuela; 1 case). One patient was a second generation immigrant; all the others were first generation immigrants. Most first generation immigrants immigrated during young adulthood; one first generation immigrant came to Germany during childhood. Two patients with migration background were women; seven were men. Age at the time of the onset of dissociative amnesic disorder ranged from 15 years to 48 years. All patients lived in an urban environment in the host country. Most of them were married or in a long term romantic relationship. Two patients belonged to a sexual minority. The educational level ranged from 8 to 17 years. In all cases, but one, the dissociative amnesia occurred after a seemingly objective minor physical insult (e.g., mild concussion). The physical insult was apparently work-related in five patients. A careful anamnesis revealed in all cases a history of recurrent stressful experiences, usually with onset in childhood, youth or young adulthood. These experiences included childhood trauma, loss of parent before age nine years, vicarious exposure to partner's trauma, civil-war related trauma, business or job loss, financial difficulties, loss of income or work status, school related difficulties, illness of partner, interpersonal difficulties with family members or peers, perceived discrimination due to belonging to an ethnic minority or sexual minority. All patients searched for a biological somatic explanation of their symptoms and rejected or were very reluctant to accept any proposals for a psychological or psychiatric mechanism. Most patients showed evidence of severe retrograde dissociative amnesia. One patient developed severe anterograde dissociative amnesia, in the absence of significant retrograde memory impairments (Markowitsch & Staniloiu, 2013). One case presented with both retrograde and anterograde dissociative memory impairments (Staniloiu & Markowitsch, 2012). The neuropsychological profile of patients revealed, in addition to severe memory deficits, impairments of executive functioning, cognitive flexibility, emotional processing and social cognition. Findings from standard structural imaging were in all cases unremarkable. Available data from newer imaging techniques however suggested metabolic and microstructural alterations in brain areas involved in mnemonic processing. All our cases of dissociative amnesic disorders occurring on an immigration background have followed a chronic course, despite various treatment approaches.

Our findings have spoken in the favor of the trauma model of dissociative amnesic disorders (Dalenberg et al., 2012), while leaving open the possibility that the relationship between trauma and functional amnesia may have been moderated by factors such as genetic polymorphisms, culturally- shaped models of personhood, past and illness (Seligman & Kirmayer, 2008; Yehuda et al., 1995). The relationship between age and the onset of trauma has been shown by several studies to play a pronounced role in modulating the trauma-related pathology. While in 1995, Yehuda and colleagues conjectured that culturally-shaped behaviors and traditions, such as commemorating may explain the distribution of abnormalities in mnemonic processing in the Holocaust survivors, in 1997 Yehuda and co-workers found an association between the nature of memory impairment and the age at the time of the trauma onset (Yehuda et al., 1997). In particular, they showed that the survivors who had been younger at the time of the Holocaust were more likely to report symptoms of (dissociative) amnesia and emotional detachment.

The fact that the patients described by us developed the dissociative amnesic condition several years after the immigration to the new country is consistent with both the lag or incubation model of trauma (van der Kolk & van der Hart, 1989) and the cumulative models of trauma. Cumulative trauma in migrants may result from premigration, migration and postmigration stressful experiences (including acculturative stress). As mentioned above acculturative stress has been linked to the emergence of a variety of medical or psychiatric conditions, including dissociative disorders (Haasen, Demiralay, & Reimer, 2008; Ruiz et al., 2006; During et al., 2011). Data on acculturative stress and associated pathology support a trauma explanatory model for dissociative disorders in migrants. They offer a potential understanding of this condition as an acculturation-bound syndrome (During et al., 2011) rather than a culture-bound syndrome (Pope et al., 2007). Specific environmental components of the host country, such as social stress related to social exclusion, defeat or discrimination or to socio-economic disadvantage may interact with genetic vulnerabilities and mediate the onset of dissociative

amnesic disorders, by modifying neurotransmitters' activity and brain connections (Veling, 2013). Disruptions of prefrontal cortex and amygdala connections may arise in predisposed individuals as a result of social defeat or rejection (Hsu et al., 2013; Markowitsch & Staniloiu, 2011). These disruptions may then lead to various abnormalities in processing social and emotional cues, with consequences for the emotional well-being of migrant in the new environment. Furthermore, they may lead in extreme cases to a desynchronization during retrieval, between the processing of fact-like mnemonic information and affect-laden mnemonic information; this desynchronization may result in dissociative amnesic conditions (Brand et al., 2009).

Conclusions

Albeit they were for a while “dissociated” from the research and clinical area (Spiegel, 2006), dissociative disorders presently stir a renewed interest. Epidemiological studies suggest that they continue to be under diagnosed. A substantial number of cases follow a chronic course and evidence based data on the treatment of these conditions remain scant (Markowitsch & Staniloiu, 2012, 2013). Preliminary findings suggest that migration and acculturative stress may represent a risk factor for their development (see, e.g., Ritsner et al., 1996). We conjecture that migration-related stresses interact with genetic predispositions and produce a shift in the expression of biological vulnerabilities for dissociative amnesic conditions. We hypothesize that premorbid risk factors for the development of dissociative amnesic conditions encompass: genetic vulnerabilities for dissociation, a biological biasing towards increased sensitivity to stress, young age, a history of trauma with early onset, impairments in emotional processing, traits of decreased cognitive flexibility, a repressive cognitive style, which may be partly culturally shaped (Beere & Pica, 1995; Fujiwara et al., 2008; Markowitsch, 2002, 2008). There is currently a bulk of data on the relationship between sex/gender and trauma (Spitzer & Freyberger, 2008). Our own results suggest that dissociative amnesia affects men at least as frequently as women. These findings are consistent with results from other working groups (Kritchevsky, Chang, & Squire, 2004) and remind of Charcot's sayings (Illis, 2002). “Male hysteria is therefore not very rare-quite the contrary”, stated Charcot (1999, p. 255). Furthermore, Charcot (1999) opined that hysteria in men is remarkable in its “permanence” and “tenacity”. Based on currently accumulated data, it is however difficult to come up with a conclusion regarding the sex or gender differentiated course of dissociative amnesia. This may be a topic for further explorations. Other questions that might need to be addressed in the future include the following: How do experiences of social adversity or exclusion related to being an ethnic minority affect the risk for dissociative amnesic disorders (Veling, 2013)? What about the social stress related to loss of status or dominance (McEwen & Gianaros, 2010)? How do culture and ethnic features mediate the relations between dissociation and psychological adjustment (Seligman & Kirmayer, 2008; Douglas, 2009)? What about the degree of ethnic identification? For migrants from Poland, there appears to be a decrease in happiness when they move to Western European countries (Bartram, 2013). Is this decrease in happiness a potential risk factor for traumatization or dissociation (Sharot, Riccardi, Raio, & Phelps, 2007)? Which roles play the source country, the host country and the duration of residence in the host country in well-being? Future longitudinal, well-designed studies that incorporate social, biological and ecological models are warranted to shed light on these questions. In the current era of globalization, these studies might be of high importance and they should be guided by paradigms and methodologies that pay increased attention to cultural issues.

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