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Deficits in visual functions and neuropsychological inconsistency in Borderline Personality Disorder

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Abstract

For Borderline Personality Disorder (BPD) cognitive and perceptual impairments were reported in some but not all studies. The aim of the present study was to analyze the neuropsychological performance of BPD patients in different domains. Predominant impairments of visual functions and an increased intra-individual variation of test performances within neuropsychological domains were expected. We investigated 22 patients with BPD and a matched sample of 22 healthy control subjects. A comprehensive clinical and neuropsychological test battery was administered. Effect sizes indicate primarily deficits of visual functions such as visual memory (Wechsler Memory Scale-Revised, WMS-R: Visual pair associates and visual reproduction, Complex Figure Test: Recall) and visuo-spatial abilities (Leistungspruefsystem, LPS 9 and 10: Spatial imagination and embedded figures), but also of executive functions (Tower of Hanoi, Trail Making Test-B, semantic and figural fluency, LPS 4: Reasoning). In addition, the intra-individual ranges of neuropsychological test results in BPD patients were increased compared to those of healthy subjects. This finding might be due to a high degree of temporary stress that interferes with effective cognitive processing. Further research is needed to confirm the present results and to control for stress during the test procedure.

Keywords: Borderline Personality Disorder; Neuropsychology; Visual functions; Tests

1. Introduction

Patients with Borderline Personality Disorder (BPD) show a pervasive pattern of instability in their interpersonal relationships, self-image, and affective states, a reduced ability to inhibit impulsive behavior, self-harm, and a wide range of comorbid psychiatric disorders (Zimmerman and Mattia, 1999). The majority of these patients reports to be victim of abuse of different kinds (Driessen et al., 2002; Golier et al., 2003). Clinical reports characterized BPD patients as temporarily suffering from psychotic and dissociative symptoms, with disturbances of perception and of cognition, including abnormalities of language, memory, attention, and executive functions (Zanarini et al., 1990; Sternbach et al., 1992; Kernberg et al., 2000).

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Although these reports suggest neuropsychological deficits in BPD, the number of controlled neuropsychological studies is few, and these demonstrate heterogeneous results: Whereas some authors found deficits in most neuropsychological functions (Judd and Ruff, 1993; Swirsky-Sacchetti et al., 1993; van Reekum et al., 1996), others reported performance similar to that of healthy subjects (Cornelius et al., 1989; Sprock et al., 2000; Kunert et al., 2003). Characterizing the neuropsychological profile, O'Leary et al. (1991) found salient deficits of memory and of visual perceptual tasks; Bazanis et al. (2002) reported executive dysfunctions. Dinn et al. (2004) observed deficits of nonverbal memory and nonverbal executive functions. Stevens et al. (2004) reported perceptual and visual working-memory deficits. Interestingly, working-memory deficits did not extend with increasing cognitive load. Furthermore, deficits in attentional functions were also found (Judd and Ruff, 1993; Swirsky-Sacchetti et al., 1993). Recently, Posner et al. (2002) specified that these deficits primarily affect conflict resolution, rather than other attentional functions such as alertness. In a meta-analysis Ruocco (2005) stated that BPD patients demonstrate deficits across a wide range of neurocognitive domains, but also concluded that nonverbal functions are predominantly affected.

The reasons for these rather diffuse, and in part inconsistent, findings still remain unclear, but some factors might be of special importance. BPD is known for its complexity and wide range of comorbid symptoms and disorders. For example, many patients additionally suffer from posttraumatic stress disorder (PTSD) or depression (Zimmerman and Mattia, 1999), each of which is accompanied by neuropsychological deficits (Veiel, 1997; Golier and Yehuda, 2002). Berg (1983) noted that patients with BPD show a temporary decline in cognitive efficiency, which also may contribute to the heterogeneity of findings.

The present study was conducted to analyze the neuropsychological performance of BPD patients with a comprehensive neuropsychological and clinical test battery. We expected nonverbal functions to be primarily impaired. In addition, based on clinical experience and the remark by Berg (1983), we hypothesized a decreased intra-individual consistency of test performance within neuropsychological domains (memory, executive functions, attention, visuo-spatial abilities).

2. Methods

2.1. Subjects

Twenty-two female patients with BPD and 22 healthy control subjects were included in the study. Patients were treated for BPD as inpatients in the Gilead Hospital Bethel, or in the Ev. Johannes Hospital, both Bielefeld, Germany, and all patients met DSM IV criteria of BPD as assessed by trained psychotherapists within the first week after admission. Healthy subjects were recruited by advertisements in the local newspaper and were matched to patients with regard to sex, age and education. Exclusion criteria for participation in the study were acute or lifetime schizophrenia, schizoaffective disorder, major depressive disorder with psychotic symptoms, anorexia, and drug or alcohol abuse within the six months before testing. Subjects were neither pregnant, nor did they have any of the following current or previous medical conditions, which were assessed by the medical history, by careful clinical examination, and by laboratory means: endocrine system disorders, malignant diseases, liver cirrhosis, a history of neurological disorders with central nervous system involvement, loss of consciousness (lifetime), mental retardation, and current infectious diseases. In addition, all subjects underwent magnetic resonance imaging (MRI, Siemens Magnetom Symphony, Erlangen, Germany) to exclude structural brain abnormalities. On the day of testing all subjects were free of medication. After complete explanation of the study, written informed consent was obtained from all subjects. The study was accepted by the IRB (University of Muenster Ethics Committee).

2.2. Instruments

2.2.1. Clinical examination

Psychiatric diagnosis was made using the Structured Clinical Interviews for DSM IV, SCID I for Axis I disorders, and SCID II for personality disorders (Wittchen et al., 1997) applied by trained psychotherapists. Patients were assessed for Axis II psychopathology at Axis I acute symptom remission. General psychopathology was assessed by means of the Symptom Checklist (Franke, 1995), severity of depressive symptoms by means of the Beck Depression Inventory (Beck and Steer, 1994), and the Hamilton Depression Rating Scale (HDRS; Hamilton, 1996). To assess dissociation we administered the Dissociative Experiences Scale (DES; Bernstein and Putnam, 1986; Freyberger et al., 1999). The severity of posttraumatic stress disorder (PTSD) was assessed by means of the Impact of Event Scale (IES-R; Maercker and Schuetzwohl, 1998; Weiss and Marmar, 1996). In all subjects urinary drug screenings (Triage©-Test, Merck, Germany) were performed, and a venous blood sample was obtained as clinical routine, without any pathological measures in any participant.